

**DO “LIBERATION TECHNOLOGIES”
CHANGE THE BALANCE OF POWER BETWEEN
REPRESSIVE STATES AND CIVIL SOCIETY?**

A Thesis Presented to the Faculty
Of
The Fletcher School of Law and Diplomacy

By

PATRICK PHILIPPE MEIER

In partial fulfillment of the requirements for the
Degree of Doctor of Philosophy

NOVEMBER/2011

Dissertation Committee

DANIEL DREZNER, Chair
CAROLYN GIDEON
LARRY DIAMOND
CLAY SHIRKY

Patrick P. Meier, PhD

Patrick@iRevolution.net • (+1) 617.440.4442 • www.iRevolution.net

SUMMARY OF QUALIFICATIONS

- PhD in International Affairs from The Fletcher School with Doctoral Fellowship from Stanford University.
- World-class expert on application of technology to humanitarian crises, human rights and development.
- Extensive professional experience in early warning, crisis mapping and disaster response over 10+ years.
- Consultant for UN, EC, OSCE, OECD, World Bank and major international nongovernment organizations.
- Director of Crisis Mapping at Ushahidi—rated by MIT as top 50 most innovative company in the world.
- Co-founder and co-director of Harvard University's Program on Crisis Mapping and Early Warning.
- Co-founder and co-director of the International Network of Crisis Mappers and Standby Task Force.
- Excellent public speaker with numerous keynote addresses and conference presentations worldwide.
- Professional blogger and author of most respected blog on humanitarian technology: iRevolution.
- Experienced lecturer at undergraduate, graduate and professional levels on cutting edge subjects.
- Accomplished author with dozens of peer reviewed publications in journals and edited books.
- Regularly interviewed by leading media including New York Times, BBC and al-Jazeera.

INTERNATIONAL EDUCATION

The Fletcher School of Law and Diplomacy, Tufts University Ph.D., International Affairs with focus on Crisis Mapping and Revolutions	Boston 2012
Stanford University, Center for Democracy, Development and Rule of Law (CDDR) Hewlett Pre-Doctoral Fellow, Program on Liberation Technologies	Stanford 2011
Columbia University, School of International and Public Affairs (SIPA) M.A., International Affairs with focus Conflict Prevention	New York 2004
University of York, School of Politics, Economics and Philosophy B.A. (Honors), Political Science, Economics and Philosophy	York, UK 2001
University of California at Berkeley Exchange Abroad Program, Political Science, Economics and Philosophy	Berkeley 2000

ADVANCED CERTIFICATES

Fletcher Summer Institute for Advanced Study of Nonviolent Conflict <ul style="list-style-type: none">• Intensive course on theory, strategy and tactics for civil resistance	Boston 2009
Santa Fe Institute (SFI), Complex Systems Summer School (CSSS) <ul style="list-style-type: none">• Intensive quantitative course for PhDs on modeling complexity	Santa Fe 2006
New England Complex Systems Institute (NECSI) <ul style="list-style-type: none">• Intensive course for graduate students on complex systems	Boston 2006

PROFESSIONAL EXPERIENCE

Ushahidi – Crowdsourcing Crisis Information

Director of Crisis Mapping and Strategic Partnerships

Global
2009-present

- Pioneering the field of crisis mapping and humanitarian technology. Catalyzing partnerships with international humanitarian and development organizations, human rights groups, media companies and the technology sector. Providing strategic support to crisis mapping projects in dozens of countries worldwide. Spearheaded major international crisis mapping efforts in Haiti, Chile, Libya and Somalia. Liaising and directly collaborating with multiple UN organizations including Secretary General's Office, OCHA, UNDP, WFP and UNHCR. Acting as principal advisor on international applications of PeaceTXT Project with Cease-Fire and PopTech. Presenting at numerous international and world-class conferences and providing frequent interviews to the international media. Served on Ushahidi's original Advisory Board in 2008-2009.

International Network of Crisis Mappers

Co-Founder and Co-Director

Global
2009-present

- Launched the premier international network for crisis mapping research and applications. Grew the network to more than 1,500 member organizations working in over 150 countries. Co-organized and curated the first, second and third International Conferences on Crisis Mapping held in the United States and Europe. Secured more than \$200K funding from over 10 key sponsors to support the conferences. Launched Standby Volunteer Task Force to support humanitarian crisis mapping efforts.

World Bank

Research Coordinator

Global
2010-present

- Coordinating research project on implications of new technologies for human rights space. Developing appropriate framework, methodology and identifying key case studies. Managing two research assistants to co-author final report. Expecting to provide consulting services to new project on open data, technology and disaster resilience.

UN Office of the Special Advisor on the Prevention of Genocide

Early Warning Consultant

Kyrgyzstan
2010-present

- Carried out comprehensive conflict risk assessment for Kyrgyzstan. Developed proposal to apply crisis mapping technologies for conflict early warning and people-centered conflict prevention. Carried out official fact-finding mission in Bishkek to formulate implementation strategy. Launching customized crisis map.

Standby Volunteer Task Force for Live Mapping

Co-Founder and Co-Director

Global
2010-present

- Launched international volunteer network to support live crisis mapping operations. Established partnership with UN OCHA Colombia to participate in joint disaster exercise. Spearheaded Task Force deployment to support OCHA's humanitarian response in Libya. Represented Task Force at key UN meetings and workshops in New York and Vienna. Grew the membership of the Task Force to more than 600 volunteers in over 60 countries. Co-leading the Humanitarian Standby Task Force initiative for OCHA Geneva and spearheading joint efforts with UNHCR in Somalia and AI-USA in Syria.

UN Secretary General's Office (UN Secretariat)

Crisis Mapping Consultant

Europe

3-6/2010

- Contributed to the conceptual design and development UN Global Pulse, an international initiative by the UN Secretary General to monitor and respond to vulnerable communities in real-time. Produced deliverable on lessons learned and best practices in crisis early warning systems. Participated in first high-level workshop with experts to formulate basis for Global Pulse.

UNDP Crisis and Risk Mapping Assessment (CRMA)

Crisis Mapping Consultant

Sudan

3-8/2009

- Carried out comprehensive evaluation of CRMA methodology. Provided detailed feedback on lessons learned and best practices of crisis mapping. Evaluated role of the United Nation's Information Management Working Group. Assessed viability of crisis-mapping data for conflict early warning and geospatial analysis. Carried out field-evaluations of crisis mapping focus groups in Eastern Sudan.

Harvard Humanitarian Initiative (HHI), Harvard University

Co-Founder and Co-Director of Program on Crisis Mapping and Early Warning

Global

2007-2009

- Co-directed cutting-edge research project on crisis mapping and conflict early warning. Directly contributed to proposal that secured the \$250K to run the new research program. Played pivotal role in pioneering the field of crisis mapping and humanitarian technology. Developed applied research agenda to formalize the field and catalyze innovative research. Carried out 300+ consultations with humanitarian, human rights and technology groups. Formally partnered with Ushahidi and Humanitarian Sensor Web to incubate both projects. Identified best practices in technology use for humanitarian and human rights initiatives. Co-founded and co-organized the first International Conference on Crisis Mapping. Co-founded and co-launched the International Network of Crisis Mappers.

United Nations Foundation (UNF)

Co-author

Europe

05-10/2009

- Published major report on New Technologies in Emergency Response and Disaster Relief. Carried out extensive research on information, social networks and new media in crises. Identified innovative cases to highlight challenges and opportunities in humanitarian tech.

Development Alternatives Inc. (DAI)

New Media Advisor

Boston

5-9/2009

- Acted as independent advisor to USAID democracy and contingency planning program. Advised on integration of technology into program activities in repressive environments. Provided guidance technology applications for transitions to democratic governance.

Organization for Economic Co-operation and Development (OECD)

Early Warning Consultant

Boston

8-10/2008

- Critically reviewed major report on Future of Operational Conflict Early Warning Systems. Added content on people-centered approaches and untapped potential of new technologies. Carried out gap analysis, made corrections and incorporated missing information.

European Commission (EC) State Fragility Project

Early Warning Consultant

Boston, MA

5-10/2008

- Co-authored major report on monitoring mechanisms for state fragility. Mapped donors, actors, financial instruments and assessment tools in situations of fragility. Identified gaps in mapping by drawing on six pilot countries: Burundi, Sierra Leone, Guinea Bissau, Haiti, Timor-Leste and Afghanistan. Developed on the needs and possibilities to diagnose and assess fragile situations through joint analysis, mechanisms to liaise and coordinate, and inter-linkage of tools.

International Federation for Elections Systems (IFES)

Early Warning Consultant

East Timor

1-3/2008

- Collaborated with local NGO to design people-centered conflict early warning system. Provided training on best practices and lessons learned in the field of conflict early warning. Supported development of strategy for implementing the system at the national level. Facilitated outreach efforts with regional and international organizations.

Peace Research Institute, Oslo (PRIO)

Research Assistant

Norway

2006-2007

- Collaborated with former Secretary of State and Deputy Foreign Minister Helga Hernes. Carried out research on direct and indirect causes of death in armed conflict by gender. Crisis mapped Armed Conflict Location and Event Data (ACLED) using Google Earth. Updated Lacina-Gleditsch battle-deaths dataset for Center for Study of Civil War. Published book review and refereed an article for the Journal of Peace Research.

Economic Community of Central African States (ECCAS)

Early Warning Consultant

Norway

6-7/2006

- Developed full conceptual and operational framework for Central African early warning system to collect, analyzes data for early detection and prevention of crises.

United States Agency for International Development (USAID)

Early Warning Consultant

Boston

2-3/2006

- Co-developed full conceptual, operational framework for second phase of Colombia's early warning system for the prevention of massive and systematic violations of human rights.

Consortium for International Conflict Prevention (CICP)

Independent Consultant

Global

2004-2006

- Established Early Warning Working Group with International Crisis Group (ICG), International Alert (IA) and Swisspeace.

Intergovernmental Authority on Development (IGAD)

Early Warning Consultant

East Africa

2004-2005

- Scaled up the Horn of Africa's CEWARN regional conflict early warning system. Provided technical training, analytical support. Set up GIS and crisis mapping project. Enhanced quantitative conflict indicators and integrated environmental indicators. Initiated partnership with IGAD Climate Prediction and Impact Assessment Center. Liaised with government officials to assess capacity for national early response units. Secured important USAID contract renewal to scale up network.

Center for International Conflict Resolution (CICR), Columbia University
Research Fellow

New York
2003-2005

- Acted as research assistant to David Hamburg and UN Committee on Genocide Prevention. Actively participated in Global Partnership for Prevention of Armed Conflict meetings. Carried out research on UN's capacity for conflict early warning and rapid response. Contributed to Secretary-General's report on Prevention of Armed Conflict.

Economic Community of West African States (ECOWAS)
Early Warning Consultant

Gambia
2004-2005

- Initiated the development of West Africa's regional conflict early warning network. Drew on lessons learned and best practices developed by the Horn of Africa's CEWARN. Briefed ECOWAS Secretariat, military personnel and NGOs on conflict early warning. Developed methodology for West Africa Network for Peacebuilding (WANEP). Secured USAID contract to develop regional warning system in West Africa.

United Nations Headquarters (UNHQ)
Conflict Prevention Consultant

Ethiopia
2004-2005

- Briefed Office of Special Advisor for Prevention of Genocide on conflict early warning. Designed early warning framework for Millennium Secretariat to monitor MDGs. Provided recommendations on early warning and sustainable development. Developed field-based early warning proposal for UN OCHA.

Organization for Cooperation and Security in Europe (OSCE)
Early Warning Consultant

Austria
2004-2005

- Briefed Office for Economic Activities and UN Economic Commission for Europe (UNECE). Proposed framework to develop joint OSCE-UNECE conflict early warning system. Evaluated early warning systems for Conflict Prevention Situation Room.

The Swiss Peace Foundation at the United Nations (SPF)
United Nations Representative

New York
2003-2004

- Established UN Liaison Office and secured CEO approval to apply for UN affiliation. Presented lessons learned in conflict prevention and early warning to UN Secretariat. Designed strategic plan to promote FAST Conflict Early Warning International. Coordinated public and donor relations with major international donors.

Organization for Cooperation and Security in Europe (OSCE)
Early Warning Consultant

Austria
2003-2004

- Briefed Office for Environmental Activities, UNDP and UNEP on early warning systems. Evaluated potential of early warning systems to monitor environmental security. Provided Environmental Security Initiative with strategic guidance on early systems. Presented recommendations at international conference on environmental security.

Center for Globalization and Sustainable Development, Earth Institute
Research Assistant

New York
4-6/2004

- Carried out research on conflict prevention report for Millennium Development Goals. Co-organized workshop on conflict & development with Professor Macartan Humphreys. Developed conference theme on conflict early warning for sustainable development.

Center for Earth Science Information Network (CIESIN), Earth Institute
Research Assistant

New York
9-12/2003

- Carried out research on multiple conflict early warning systems and methodologies. Evaluated early warning systems for USAID Office of Conflict Management and Mitigation Recommended Watch List of Watch Lists model to network conflict early warning systems.

The Swiss Peace Foundation (SPF)
Research Associate

Switzerland
06-08/2003

- Collaborated with UNICEF-Somalia to develop project proposal to implement a conflict early warning system for field security in Somalia. Took lead in establishing Business and Peace project and established joint research agenda with Economists for Peace and Security. Analyzed potentials and challenges of business engagement in conflict prevention and assessed impact of economic activities on violent conflict.

United Nations International Children Emergency Fund (UNICEF)
Research Associate with Somalia Support Office

Kenya
05-06/2003

- Carried out study on Somali conflict from perspective of environmental degradation. Drafted proposal to mainstream environment and conflict early warning systems. Designed conflict prevention training strategy for Somali youth.

United Nations International Children Emergency Fund (UNICEF)
Independent Consultant

Western Sahara
06-08/2002

- Carried out field research to assess influence of protracted conflict on women and children. Conducted interviews with local groups, UN peacekeepers and returned Polisario fighters. Authored and presented 30-page report on findings and recommendations.

Global Policy Forum at the United Nations (GPF)
Senior Research Associate on Security Council

New York
2001-2002

- Participated in weekly preventive diplomacy forum with Ambassadors on Security Council and senior representatives of major international non-governmental organizations. Actively monitored international security policy-making in UN Security Council. Performed daily conflict research and analysis on Iraq, Afghanistan, Sudan, Congo-DRC and other hotspots.

Foreign Affairs Division, Congressional Research Service (CRS)
Research Analyst

Washington DC
05-09/2000

- Authored weekly Congressional Briefs for Members of Senate and House Committees. Carried out research on international conflicts, security, trade and human rights. Attended Senate and House hearings and networked with congressional staff.

Informatique, Télématique, Bureautique (IBT)
Computer Software Programmer

Belgium
06-08/1996

- Designed and programmed professional statistics-based software package using Visual Basic and Microsoft Access. Authored technical manual and developed bilingual user manual. Networked with clients and attended company board meetings.

ACADEMIC HONORS

Stanford University – Program on Liberation Technologies	Stanford
• Pre-Doctoral Visiting Fellowship	2010-2011
Tufts University – Fletcher School of Law and Diplomacy	Boston
• Recipient of competitive Provost PhD scholarship	2005-2011
• PhD student representative on Admissions Committee	
• Robert E. Stuart Prize for outstanding graduate student	
• Recipient of conference presentation grants totaling more than \$15K	
Columbia University – School of International and Public Affairs	New York
• Scholarship and Program Assistantship for International Economics	2003-2004
University California at Berkeley	Berkeley
• Full competitive scholarship	1999-2000

TEACHING EXPERIENCE

Tufts University: “Digital Democracy” Co-lecturer with Google colleague	Boston Spring 2009
• Designed and co-taught new 14-week undergraduate seminar. Developed full syllabus, teaching notes and all powerpoint presentations. Core topics taught included new media, citizen journalism, digital activism, humanitarian technology, censorship and circumvention, cybersecurity and technology for development. Made extensive use of multimedia including wikis, blogs, videos and Twitter. Graded all in class presentations and final research projects.	
The Fletcher School: “Managing Complex Systems” Co-lecturer with Professor Moomaw	Boston Fall 2007
• Proposed, designed, co-taught 7-week, 14-lectures graduate seminar on complex systems. Developed 10-page syllabus and identified reading materials with list of further readings. Core topics taught included principles of complexity science, stocks and flows, agent-based modeling and social network analysis. Designed problem sets to introduce and demonstrate how to develop and simulate complex systems using systems thinking software and agent-based modeling program. Took lead in developing all lecture slides and used other multimedia extensively. Co-taught all core lectures and taught six full lectures. Graded all problem sets, final research papers.	
Tufts Nutrition School: “Disaster and Conflict Early Warning/Response” Co-lecturer with Professor Patrick Webb	Boston Fall 2007
• Designed and co-taught 6-week professional distance learning course for UN professionals. Introduced methods of risk analysis, highlighted distinction between hazards & disasters. Used case studies of early warning systems for earthquakes, famine, pandemics & conflict. Presented on the challenges and opportunities of new technologies for early warning. Assessed causes of warning-response gap and potential policy measures to close gap. Used multimedia extensively including animations, simulations and documentaries. Developed slides and teaching notes for all lectures.	

Tufts University: “From Disaster to Conflict Early Warning”

Lecturer

Boston

Fall 2006

- Designed and taught new 14-week undergraduate seminar. Developed syllabus and made extensive use of multimedia to enhance understanding. Core topics included disaster and conflict theory, disaster and conflict analysis, crisis mapping in theory and practice, evaluation of operational disaster and conflict early warning systems and methodologies, people-centered approaches to early warning, tactical early warning, response, strategic nonviolent action, linking warning to response. Graded presentations, final research papers.

Tufts University Osher Institute: “Disaster and Conflict Early Warning”

Lecturer

Boston

Fall 2006

- Designed and taught 8-week distance learning seminar to UN professionals on 4 continents. Developed 10-page syllabus to cater to working practitioners in the field. Core topics included disaster and conflict theory, disaster and conflict analysis, crisis mapping in theory and practice, evaluation of operational disaster and conflict early warning systems and methodologies, people-centered approaches to early warning, tactical early warning and response, strategic nonviolent action and linking warning to response. Made extensive use of multimedia to complement readings and discussion board.

Tufts University Osher Institute: “Disaster and Conflict Early Warning”

Lecturer

Boston

Spring 2006

- Designed and taught 8-week seminar to high-powered retired professionals on disaster and conflict early warning systems. Developed 8-page syllabus to cater to the more professional audience and taught all lectures using slides. Core topics included disaster and conflict theory, disaster and conflict analysis, crisis mapping in theory and practice, evaluation of operational disaster and conflict early warning systems and methodologies, people-centered approaches to early warning, tactical early warning and response, strategic nonviolent action and linking warning to response. Made extensive use of multimedia encouraged discussion on current disasters and conflicts.

PROFESSIONAL BLOGGER

iRevolution2008-*present*

- Published close to 500 blog posts on topics ranging from crowdsourcing and crisis mapping to digital activism, civil resistance and humanitarian technology. Considered one of the premiere blogs on these topics. Cited across the blogosphere and by the mainstream media. Top result: 30,000+ hits per month.

Ushahidi2009-*present*

- Published over 50 blog posts on the topic of crisis mapping, crowdsourcing and Ushahidi deployments. The Ushahidi blog received the Best of Blogs Award for 2010.

EarlyWarning

2008-2010

- Published over 200 blog posts on the topic of conflict early warning and rapid response. The EarlyWarning blog is still the only blog in the world dedicated to this topic.

SELECTED PUBLICATIONS

- Faris, David and Patrick Meier. 2011. Digital Activism in Authoritarian States. In *Routledge Handbook of Participatory Cultures*. Routledge, *forthcoming*.
 - Heinzelman, Jessica, Rachel Gordon and Patrick Meier. 2011. Mobile Technology, Crowdsourcing and Peace Mapping: New Theory and Applications for Conflict Management. In *Mobile technologies for conflict management: new avenues for online dispute resolution*, ed. Marta Poblet. London: Springer. [Available online](#).
 - Heinzelman, Jessica and Patrick Meier. 2011. Crowdsourcing for Human Rights Monitoring: Challenges and Opportunities for Verification. In *Human Rights and Information Communication Technologies: Trends and Consequences of Use*, ed. John Lannon. IGI Global, *forthcoming*.
 - Meier, Patrick. 2011. Networking Disaster and Conflict Early Warning in Response to Climate Change. In *Coping with Global Environmental Change, Disasters and Security Threats*, ed. Hans Gunther Brauch *et al.* London: Springer. [Available online](#).
 - Meier, Patrick. 2011. The Role of Ushahidi as a Liberation Technology in Egypt and Beyond. In *Liberation Technology*, ed. Larry Diamond. Stanford University, *under review*.
 - Lambert, Nona and Patrick Meier. 2011. Information and Communication Technology in Haitian Earthquake Relief: Organizational Experience. In *Information, Telecommunications and Social Networks in Haitian Relief*. NDU Press, *forthcoming*.
 - Meier, Patrick. 2011. Early Warning Systems and the Prevention of Violent Conflict. In *Peacebuilding in the Information Age: Sifting Hype from Reality*, ed. Daniel Stauffacher *et al.* Geneva: ICT4Peace. [Available online](#).
-
- Norheim-Hagtun, Ida and Patrick Meier 2010. Crowdsourcing for Crisis Mapping in Haiti. *Innovations* 5, no. 4: 81-89. [Available online](#).
 - Meier, Patrick. 2010. Lessons for Journalists in the Crowdsourcing of Crisis Information. In *Brave New Worlds: Navigating the New Media Landscape*. Vienna: International Press Institute and Poynter Institute. [Available online](#).
 - Meier, Patrick and Rob Munro. 2010. The Unprecedented Role of SMS in Disaster Response: Learning from Haiti. *SAIS Review of International Affairs* 30, no. 2: 91-13. [Available online](#).
-
- Doyle Diane and Patrick Meier. 2009. New Technologies in Emergencies and Conflict: The Role of Information and Social Networks. UN Foundation & Vodafone Foundation Technology Report, Washington DC. [Available online](#).
 - Greenough, Gregg, Jennifer Chan, Patrick Meier, Laura Bateman, and Sayon Dutta. 2009. Applied Technologies in Humanitarian Assistance: Report of the 2009. *Prehospital and Disaster Medicine* 24, no. 4: 206-209.
 - Leaning, Jennifer and Patrick Meier. 2009. "Application of Crisis Mapping and Early Warning in Humanitarian Settings." Working Paper Series, Harvard Humanitarian Initiative (HHI), Harvard University. [Available online](#).

- Leaning, Jennifer and Patrick Meier. 2009. "The Untapped Potential of Information Communication Technology for Conflict Early Warning and Crisis Mapping," Working Paper Series, Harvard Humanitarian Initiative (HHI), Harvard University. [Available online.](#)

—

- Leaning, Jennifer and Patrick Meier. 2008. "Community Based Conflict Early Warning and Response Systems: Opportunities and Challenges." Working Paper Series, Harvard Humanitarian Initiative (HHI), Harvard University. [Available online.](#)
- Leaning, Jennifer and Patrick Meier. 2008. "Conflict Early Warning and Response: A Critical Reassessment." Working Paper Series, Harvard Humanitarian Initiative (HHI), Harvard University. [Available online.](#)
- Meier, Patrick. 2007. From Disaster to Conflict Early Warning: A People-Centred Approach. *Monday Developments* 25, no. 4, 12-14. [Available online.](#)
- Meier, Patrick and Helga Hernes. 2007. "An Empirical Study on the Direct and Indirect Causes of Death in War and Armed Conflict Disaggregated by Gender." Working Paper, Peace Research Institute, Oslo (PRIO).

—

- Bond, Doug and Patrick Meier. 2006. Peacekeeping Intelligence for the Stakeholders: An Underutilized Resource. In *Peacekeeping Intelligence: New Players, Extended Boundaries*, ed. David Carment. London: Taylor and Francis Books. [Available online.](#)
- Meier, Patrick and Daniel Linotte. 2006. Early Warning Mechanisms and Conflict Prevention with Reference to the OSCE Economic and Environmental Dimension. *Central Asia and the Caucasus* 3, no. 39: 34-41. [Available online.](#)
- Meier, Patrick. 2006. Conflict Early Warning and Resource Related Conflicts. In *Resource-Related Conflicts in Southeast Asia*. Southeast Asian Conflict Studies. Canada: CIDA.

—

- Meier, Patrick, Doug Bond and Joe Bond. 2005. The Influence of Environmental Factors on Conflict in the Horn of Africa. *Political Geography* 26, no 6: 716-735. [Available online.](#)
- Bond, Doug and Patrick Meier. 2005. CEWARN: IGAD's Conflict Early Warning and Response Mechanism. In *Conflict Prevention in Practice*, ed. James Sutterlin and Bernie Ramcharan. Boston: Martin Nijhoff Publishers. [Available online.](#)

—

- Levy, Marc and Patrick Meier. 2004. Early Warning and Assessment of Environment, Conflict and Cooperation. In *Understanding Environment, Conflict and Cooperation*. Washington DC: UNEP and The Woodrow Wilson Center. [Available online.](#)
- Meier, Patrick. 2004. "Integrating Risk Assessment and Early Warning for Sustainable Development." Conflict Prevention Program Working Paper, Center for International Conflict Resolution (CICR), Columbia University, New York.

INTERNATIONAL CONFERENCES

Humanitarian Action Summit (HAS)	Boston
• Speaker: The New Generation of Humanitarian Practitioners	03/2011
Amnesty International 50th Annual Meeting	San Francisco
• Panelist: Bearing Witness in the Era of New Media	03/2011
Skoll World Forum 2011	England
• Panelist: Changing the World, One Map at a Time	03/2011
Re:Publica Conference	Germany
• Speaker: Changing the World, One Map at a Time	04/2011
Where 2.0	Santa Clara
• Speaker: Disaster Response 2.0	04/2011
Berkeley Human Rights Conference	Berkeley
• Speaker: Disaster Response 2.0	04/2011
TEDx Silicon Valley	Palo Alto
• Speaker: Changing the World, One Map at a Time	05/2011
Mapping as a Peacebuilding Tool	Washington DC
• Speaker: A Brief History of Crisis Mapping	06/2011
New Tech at Work: Liberia's Elections and Beyond	Liberia
• Speaker: Ushahidi and Crisis Mapping	06/2011
UN/SPIDER: Crowdsourced Crisis Mapping for Emergency Response	Austria
• Participant: Standby Volunteer Task Force	07/2011
TTI/Vanguard: Real Time	Paris
• Presenter: Time Critical Crowdsourcing for Crisis Mapping	07/2011
MORE 25: Modeling Disaster Risk	Bermuda
• Presenter: Using Crowdsourced Data to Model Risk	07/2011
TEDxKC: If and Only IF	KC
• Presenter: Changing the World, One Map at a Time	08/2011
ICRC Global Communications Forum	Geneva
• Keynote: Changing the World, One Map at a Time	09/2011
The Same Wavelength	London
• Presenter: Crowdsourcing Social Media for Good	09/2011
LSE: Every Casualty Counts	London
• Presenter: Using Crowdsourcing to Estimate Casualty Counts in Conflict	09/2011
ICT4D: The Power of Information	London
• Presenter: Using Crowdsourcing and Crisis Mapping for Human Rights	09/2011

Qatar Foundation	Doha
• Presenter: Operational Crisis Mapping	09/2011
IPI World Congress	Taipei
• Presenter: Role of New Media in Crisis Management	09/2011
Net Impact	Portland
• Panelist: Next Generation of Mobile Innovations in Emergencies	10/2011
World Affairs Council	San Francisco
• Panelist: Role of Technology in Poverty Alleviation	10/2011
Club de Madrid	New York
• Panelist: Role of Technology in Democratic Change	11/2011
Information Ecologies of Crises	Washington DC
• Participant: Ushahidi Haiti and Ushahidi Chile	03/2010
Where 2.0	Jan Jose
• Presenter: Ignite Talk and presentation on Ushahidi Haiti	03/2010
UN Global Pulse (previously GIVAS)	Italy
• Participant: Blogged live from the conference	04/2010
Twitter Chirp Conference	San Francisco
• Panelist: Technology for social change	04/2010
Clinton Global Initiative University	Miami
• Panelist: Technology for social change	04/2010
HIVOS: New Media for Human Rights	Netherlands
• Panelist: Technology for social change	04/2010
Gov 2.0 Expo	Washington DC
• Panelist: Technology for disaster response	05/2010
Mobile Phones and Peacebuilding in Afghanistan	Washington DC
• Panelist: Role of crowdsourcing	05/2010
Emergency Management Conference	Australia
• Keynote: Crowdsourcing crisis response	06/2010
Red Cross Emergency Social Data Summit	Washington DC
• Presenter: Crisis Mapping, Crowdsourcing and Crowdfeeding	08/2010
Mashable & 92Y Social Good Summit	New York
• Panelist: Lessons Learned from Haiti Disaster Response	09/2010
Google Crisis Response Conference	New York
• Presenter: Ushahidi and CrisisMappers Network	09/2010
International Conference on Crisis Mapping (ICCM 2010)	Boston
• Co-Organizer and Speaker	10/2009

Validating Geo-Information for Crisis Management	Italy
• Keynote and moderator: Crowdsourcing and Crisis Mapping for Crisis Response	10/2010
Pop!Tech 2010	Camden
• Panelist: Crowdsourcing and Crisis Mapping in Haiti	10/2010
Early Warning for Protection: Technology and Practices	Cambodia
• Presenter and moderator: Role of Technology in Prevention of Mass Atrocities	11/2010
HURIDOCs: New Challenges in Human Rights Communication	Switzerland
• Panelist: Trends in Information Technology and Human Rights	02/2009
Internews: Improving Humanitarian Information in Crises	New York
• Panelist: Actively contributed to conversation	03/2009
Humanitarian Action Summit (HAS)	Boston
• Panelist: Presentation on crisis mapping for Applied Technology panel	03/2009
ICT for Development (ICT4D)	Qatar
• Co-presenter: Impact of New Technology on Democratic Tendencies	04/2009
Soul of the New Machine: Human Rights, Technology and New Media	Berkeley
• Participant: Blogged live from conference	05/2009
International Conference on Crisis Mapping (ICCM 2009)	Cleveland
• Co-Organizer and Speaker	10/2009
ALNAP: Innovation in International Humanitarian Action	England
• Presenter: Utilizing New Technologies for Humanitarian Action	11/2009
International Humanitarian Response: A New Era	Boston
• Co-organizer of panel held at Harvard Business School	03/2008
USIP Panel on Community-Centered Conflict Prevention	Washington DC
• Panelist: presentation on tactical conflict early warning/response	05/2008
Global Partnership for the Prevention of Armed Conflict (GPPAC)	Guatemala
• Keynote Speaker: The Future of Conflict Early Warning	09/2008
OCHA Symposium on Humanitarian Information	Switzerland
• Active participant in closed working group on technology	10/2007
Conflict, Health and Human Security Workshop, Human Security Center (HSC)	Canada
• Participant: early warning for conflict and health	10/2006
Expert Meeting on Early Warning (GPPAC)	Netherlands
• Presenter: Lessons Learned and Best Practices in Early Warning	04/2006
Third Early Warning Conference on Disaster Early Warning (EWC3)	Germany
• Participant: Mainstreaming Early Warning of Hazards and Conflicts	03/2006
Natural Resources Related Conflict Management in Southeast Asia	Thailand
• Paper: "Resource Conflicts and Early Warning." South East Asian Network	09/2005

Conflict Early Warning in the OSCE

- Paper: “Early Warning in the Economic Domain”

Austria

11/2004

ECOWAS/WANEP Conference on Conflict Early Warning Systems

- Presentation: “IGAD-Conflict Early Warning and Response Mechanism”

The Gambia

08/2004

Understanding Environment, Conflict and Cooperation

- Presenter: “Early Warning and Environmental Security”

Washington DC

01/2004

LANGUAGES

- Native English and Fluent French: born and raised in English- and French speaking Africa
- Studied Modern Standard Arabic for 3 years including accelerated courses in Morocco
- Intermediate fluency in German

REFERENCES

- Available upon request.

ABSTRACT

Do new information and communication technologies (ICTs) empower repressive regimes at the expense of civil society, or vice versa? For example, does access to the Internet and mobile phones alter the balance of power between repressive regimes and civil society? These questions are especially pertinent today given the role that ICTs played during this year's uprisings in Tunisia, Egypt and beyond. Indeed, as one Egyptian activist stated, "We use Facebook to schedule our protests, Twitter to coordinate and YouTube to tell the world." But do these new ICTs—so called "liberation technologies"—really threaten repressive rule? The purpose of this dissertation is to use mixed-methods research to answer these questions.

The first half of this doctoral study comprises a large-N econometric analysis to test whether "liberation technologies" are a statistically significant predictor of anti-government protests in countries with repressive regimes. If using the Internet and mobile phones facilitates organization, mobilization and coordination, then one should expect a discernible link between an increase in access to ICTs and the frequency of protests—particularly in repressive states. The results of the quantitative analysis were combined with other selection criteria to identify two country case studies for further qualitative comparative analysis: Egypt and the Sudan. The second half of the dissertation assesses the impact of "liberation technologies" during the Egyptian Parliamentary Elections and Sudanese Presidential Elections of 2010. The analysis focused specifically on the use of Ushahidi—a platform often referred to as a "liberation technology." Descriptive analysis, process tracing and semi-structured interviews were carried out for each case study. The results of the quantitative and qualitative analyses were mixed. An increase in mobile phone access was associated with a decrease in protests for four of the five regression models. Only in one model was an increase in Internet access associated with an increase in anti-government protests. As for Ushahidi, the Egyptian and Sudanese dictatorships were indeed threatened by the technology because it challenged the status quo. Evidence suggests that this challenge tipped the balance of power marginally in favor of civil society in Egypt, but not in the Sudan, and overall not significantly.

DEDICATION

This dissertation is dedicated to Khaled Mohamed Saeed and Mohamed Bouazizi.

ACKNOWLEDGEMENTS

My sincere thanks go to Professor Daniel Drezner, the Chair of my dissertation committee, Professor Carolyn Gideon, Professor Larry Diamond and Clay Shirky. I am particularly indebted to Professor Larry Diamond who invited me to apply for a Pre-Doctoral Fellowship at Stanford University's Program on Liberation Technology during 2010-2011. I wrote the majority of my dissertation during this time. I would also like to thank Professors Peter Uvin, Kelly Garrett, Steven Livingston and Philip Howard for their support and encouragement. I am also indebted to Dr. Elaine Bellucci, Dr. Ben Mazzotta, Miriam Seltzer and Chrissy Martin for their support on the econometric analysis and data development. In addition, I am very grateful to Peter Ackerman and Mary Joyce for their guidance and feedback. Finally, I want to sincerely thank the team at Ushahidi Inc. for giving me the time I needed to complete my dissertation. I hope the findings of this dissertation contribute to the more effective use of the Ushahidi platform in non-permissive environments and beyond.

TABLE OF CONTENTS

Chapter 1: Introduction	1
1.1: Using ICTs in Non-Permissive Environments	
1.2: The Ushahidi Platform in Theory & Context	
1.3: The Research Question and Why it Matters	
1.4: Dissertation Chapters & Methodologies	
Chapter 2: From Evidence to Model	23
2.1: Cross-Disciplinary Literature Review	
2.2: Discussion of Findings	
2.3: Conclusion	
Chapter 3: Quantitative Analysis	90
3.1: The Model	
3.2: The Data	
3.3: Descriptive Statistics, Correlations & Regressions	
3.4: Negative Binomial Regression Analysis	
3.5: Discussion of findings	
Chapter 4: Qualitative Analysis	139
4.1: Case Study Selection	
4.2: Introducing the Ushahidi Platform	
4.3: Qualitative Analytical Framework	
4.4: Qualitative Methodology	
4.5: Egypt Case Study	
4.6: Sudan Case Study	
Chapter 5: Conclusion	192
5.1: Summary & Analysis of Quantitative Findings	
5.2: Summary & Analysis of Qualitative Findings	
5.3: Integrating Quantitative & Qualitative Findings	
5.4: Policy Recommendations & Further Research	

Appendix	219
Bibliography	246

List of Tables and Figures

Table 1: Results of earlier quantitative studies	32
Table 2: Listing of protest-events datasets	97
Table 3: Authority coding and weight scale for Autocracy	106
Table 4: Authority coding and weight scale for Democracy	107
Table 5: Spearman's Rho Correlation Coefficients	117
Table 6: Results of regression analysis on entire sample	121
Table 7: Results of regression analysis on high-protests cluster	122
Table 8: Results of regression analysis on low-mobiles cluster	124
Table 8: Results of regression analysis on high-mobiles cluster	125
Table 10: Results of Likelihood Ratio Test for Internet & Mobiles	127
Table 11: Results of Likelihood Ratio Test for Mobiles & GNI	128
Figure 1: New York Times picture of crowdsourcing	11
Figure 2: Digital Activism Framework	36
Figure 3: Plausible time series of ICTs and Protests	94
Figure 4: Econometric model used for quantitative analysis	95
Figure 5: Distribution of dependent variable	112
Figure 6: Clustering of data for regression analysis	119
Figure 7: Screenshot of the U-Shahid platform	160
Figure 8: Screenshot of the Sudan Vote Monitor Platform	177

Chapter 1: Introduction

“Democracy—and democratization—can no longer be effectively studied without some attention paid to the role of digital information technologies. Not only does the character of this infrastructure have an impact on the opportunity structures for political change and the range of possible outcomes, but the technologies themselves support new forums for political discussion and are themselves politicized media” (Howard 2010, 132). As an activist in Cairo stated during the popular uprising against Hosni Mubarak in early 2011, “We use Facebook to schedule our protests, Twitter to coordinate and YouTube to tell the world.” There’s reason to believe that new information and communication technologies (ICTs) facilitated—and accelerated—the recent revolutions in both Tunisia and Egypt. Clay Shirky believes these ICTs served to create and synchronize shared awareness. This “basic hypothesis is an updated version of that outlined by Jürgen Habermas in his 1962 publication, *The Structural Transformation of the Public Sphere: an Inquiry into a Category of Bourgeois Society*. A group of people, so Habermas’s theory goes, who take on the tools of open expression becomes a public, and the presence of a synchronized public increasingly constrains undemocratic rulers while expanding the rights of that public...” (Shirky 2010a).

That said, the use of ICTs have not resulted in a successful Arab Spring for most countries in North Africa and the Middle East. From Sudan to Bahrain and Syria to Libya, protests have been brutally repressed and thousands of protestors killed. So does more widespread access to ICTs really empower resistance movements at the expense of the coercive control of repressive regimes, or vice versa? A cursory historical analysis does not point to one definite answer either. For example, “mass printing technologies in Europe were accompanied by a rise in civil unrest, while the same technologies led to greater social control for China’s elite” (Eyck 2001, 143). The question thus still stands:

does the change in the means of, and access to, information genuinely threaten authoritarian control by shifting the balance of power between State and society? Are these ICTs truly “liberation technologies”? Do they actually create a “synchronized public” that constrains undemocratic rulers? The normative motivation behind this research agenda is based on the recognition by “many scholars and practitioners [...] that the techniques associated with strategic nonviolent social movements are greatly enhanced by access to modern information communication technologies, such as mobile telephony, short message service (SMS), email and the World Wide Web, among others” (Walker 2007, 6).

Do new ICTs, like the Ushahidi technology, “liberate” in the political sense? In his piece on “Liberation Technology” published in the *Journal of Democracy*, Diamond (2010) defines the term as “any form of information and communication technology (ICT) that can expand political, social, and economic freedom. In the contemporary era, it means essentially the modern, interrelated forms of digital ICT—the computer, the Internet, the mobile phone, and countless innovative applications for them, including ‘new social media’ such as Facebook and Twitter” (70). Diamond also highlights the Ushahidi platform as an example of “liberation technology” (77).

There is certainly growing evidence to suggest that these so-called “liberation technologies” change the balance of power between State and society. “Activists in Indonesia effectively used mobile phones to mobilize to topple Suharto in 1998. During Kyrgyzstan’s Tulip Revolution of March 2005, mobile phones were again used to organize activists to join protests at key moments, helping democratic leaders build a social movement with sufficient clout to oust the president. Kuwait’s women’s suffrage movement was much more successful in 2005 than it had been in 2000, in part because it was able to use text messaging to call younger protesters out of school to attend demonstrations. In Egypt, Tunisia and Kazakhstan opposition groups that face state

ensorship simply move their online content to servers in other countries. Recent elections in Turkey and Malaysia have demonstrated that blogs have a role in entrenching democratic institutions: challenger candidates who blogged on the campaign trail tended to prevail over incumbents from ruling parties who did not run information-rich campaigns” (Howard 2010, 3).

Rheingold (2003), Shirky (2010b) and others add further evidence such as the case of Philippine President Joseph Estrada who faced a “Coup de Text” in which tens of thousands of text messages were used to drive him out of power. Rheingold (2003) also points to the example of the 2004 demonstrations in Spain, which, organized via SMS, led to the quick departure of the then Spanish Prime Minister after he had wrongly accused Basque separatists for the Madrid transit bombings. Five years later in Moldova, massive protests were coordinated via SMS, Facebook and Twitter following elections that had clearly been stolen (Shirky 2010b).

As is well known, however, technology (and lack of access) can also be used to repress. North Korea, Russia and Syria come to mind. To this end, if so-called “Liberation technologies” do exist, then “technologies of repression” must inevitably exist as well. Moreover, if despots perceive liberation technologies as potentially threatening the status quo, they may act to preempt any possible change to the balance of power. This describes Mubarak’s reaction in early 2011 when ordered that Internet access and cell phone network be shut off. But the technology variable may be not the most critical piece. Indeed, underlying organizational structures may matter more. For example, certain structures may enable more effective and strategic uses of new ICTs. Rigid and hierarchical organizational structures are typically unable to adapt as rapidly to fast-changing environments in contrast to more distributed systems. Ultimately, the competition between State and society may be a battle of organizational theory. Indeed, as Diamond (2010) notes, “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” (70). Diamond (2010) also argues that, “in the end, 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” (71). “Accountability Technology” is another term for Liberation Technology in that “it provides efficient and powerful tools for transparency and monitoring,” which is why Diamond (2010) considers Ushahidi a liberation technology (76). But is this indeed the case? Does sufficient and compelling evidence exist to support this claim? And if so, does the Ushahidi platform qualify as a successful liberation technology, particularly in the context of countries under repressive rule?

This chapter is structured as follows. The first section provides a broad description of the various ways that ICTs have been used in non-permissive environments. The second section outlines the dissertation’s research question and explains why addressing this question is important for both academia and policy. Section three places the Ushahidi platform into context from both a theoretical framework standpoint as well as an applied, practical perspective. The fourth and final section provides an outline for each dissertation chapter and associated methodologies.

1.1: Using ICTs in Non-Permissive Environments

This section provides a broad description and documentation of the various ways that ICTs have been used in non-permissive environments—that is, in repressive and/or

resource-constrained contexts. This year's dramatic revolutions in North Africa and the Middle East (along with the recent riots in London) represent some of the most striking, latest uses of ICTs to drive political change in repressive environments. But ICTs have also been used to monitor and address issues related to corruption, unemployment, elections, public health and local governance in several dozen countries around the world. This section first summarizes the most recent statistics on technology diffusion and then describes a variety of use-cases to illustrate multiple applications and possible impacts of ICTs in non-permissive environments.

Mobile communication technology has been the most rapidly adopted technology in history, "far outpacing adoption rates of other technologies, including the Internet" (Livingston 2011, 9). The latest statistics from the International Telecommunications Union (ITU) reveal that over 5 billion mobile phones existed by the end of 2010, a figure that represents a 25% increase over just the previous year. Half a billion people worldwide now access the Internet by mobile phone and this number is estimated to double by 2015. By the end of the decade, some expect the number of mobile wireless devices to pass 50 billion, a staggering ten-fold increase (even though many of these will become collective, "unmanned" sensor technologies rather than be used individually by consumers). The technology adoption statistics for Africa are equally astounding. Indeed, the increasing use of ICTs in the region is what drives the bulk of these remarkable global statistics. During the first decade of this century, the diffusion of mobile communication technology in Africa soared from 2% to nearly 30%, for example.

New ICTs are radically different from traditional communication tools. During World War II, the only technologies that permitted real-time communication were the radio, telephone and telegraph. While one-to-many, the first was controlled by the very few, those who actually owned broadcasting stations, i.e., often the government. The

latter two—the telephone and telegraph—had wider ownership but did not provide the broadcasting capabilities of the radio. In contrast, today’s information ecosystem means that the majority of content (and indeed software) created and shared online is now user-generated, instead of government- or company-created. Ideally, our Web 2.0—read-write—world allows the many to converse with the many without undue centralization and control. The scaling of these conversations is where Shirky (2010b) and others believe the power lies since access to conversations is more important, politically, than access to information. To be sure, mass media alone do not change people’s minds (Katz and Lazarsfeld 1955). Drawing on the thesis advanced by Katz and Lazarsfeld, Shirky (2010b) explains that, “opinions are first transmitted by the media, and then they get echoed by friends, family members, and colleagues. It is in this second, social step that political opinions are formed. This is the step in which the Internet in general, and social media in particular, can make a difference.”

In Zimbabwe, for example, the government controls all radio and television stations. So local activist groups are turning to new media to try and counter state propaganda. Kubatana, for example, is particularly adept at using new technologies to create access to civic and human rights information. “In reality it is difficult to ‘compete’ with mass media tools such as radio and television, but new media allows us to efficiently disseminate information under challenging circumstances,” says a Kubatana representative (Braun 2010). The group publishes a weekly email newsletter to a growing list of 10,000 subscribers. Because most Zimbabweans cannot access email, Kubatana has also developed an SMS-based list serve with more than 14,000 subscribers. This system, based on the FrontlineSMS platform, is used to share information ranging from news headlines to upcoming events. The group also encourages two-way dialogue using the SMS system by posing questions on social justice issues and soliciting opinions from subscribers.

ICTs are also playing a pivotal role in the field of public health and their impact provide insights on how technologies can change the balance of power in non-permissive environments. Medic:Mobile, for example, leverages mobile technologies for healthcare delivery in resource-constrained environments. The rural developing world faces a number of health care challenges such as limited shortage of health workers and significant geographic barriers. “Understaffed hospitals are forced to provide care for patients that reside at a great distance from the institutions themselves, sometimes more than 100 miles away” (Mahmud, Rodriguez and Nesbit 2010, 137). In one project, Medic:Mobile worked with St. Gabriel’s Hospital in Malawi to address these important challenges. By supplying mobile phones and training to a group of 75 community health workers, the hospital was able to save more than 2,000 hours of worker time, close to \$3,000 and also doubled the capacity of a treatment program (Mahmud, Rodriguez and Nesbit 2010, 142). The authors conclude that technology-driven interventions can thus provide important efficiency-maximizing and cost-saving solutions for rural hospitals in Malawi and beyond. This “asymmetric effect” of technology is equally possible in other uses of ICTs, e.g., in digital activism against repressive regimes.

In addition to public health, ICTs are being used to leverage citizen journalism. Souktel, a group based in Ramallah, provides an excellent example. At the start of the 2009 Gaza conflict, with electricity, Internet, and “land lines” operating sporadically, Souktel partnered with leading Middle East media network Al-Jazeera Television to launch a unique SMS “Citizen Reporting” service which let ordinary Palestinians across Gaza text in their views on unfolding events to a central Al-Jazeera media hub. Content, once screened and fact-checked, was uploaded to a dedicated website and streamed live on an Al-Jazeera TV news ticker. Toward the end of the conflict, Al Jazeera also used Souktel’s mobile media tools to deliver rapid civic engagement SMS opinion polls on the prospects for peace: Thousands of citizens were asked via SMS “Do you approve of the

ceasefire? Text Yes/No.” The results were fed into a dedicated Al-Jazeera Gaza media website. On this note, it is important to recognize that “ICTs can no longer be analyzed in opposition to, or even apart from, changes in the ‘mainstream’ media environmental—Jazeera both consumes and produces digital content at such a high rate and across such a large spectrum of sources and recipients that it defeats any attempt to treat it as ‘TV’ in the 20th century sense” (Shirky 2011c).

Official election monitoring organizations are also looking to ICTs to improve the speed and reliability of their efforts, particularly in contested elections. The National Democratic Institute (NDI), for example, increasingly uses SMS to more effectively monitor elections. Indeed, “SMS messaging has demonstrated an impressive ability to help election-monitoring organizations overcome many logistical challenges to effective election oversight and protection of citizens’ rights. The speed of communication and processing, the flexibility, and the coverage SMS can provide gives monitoring organizations a powerful tool for organizing volunteers and responding instantly to an evolving election environment. These tools allow groups to quickly collect a rich dataset of election information. When combined with a reporting methodology that utilizes a representative sample of polling stations, SMS reporting contributes to a deep understanding of how elections are conducted across a country and whether the results reflect the will of the people” (Schuler 2008, 151).

Finally, the use of ICTs figured prominently during the recent revolutions in Tunisia and Egypt. As one prominent Tunisian activist said: “We have one foot on the ground and one on the Internet.” But activists, media groups and others are not just turning to social media tools to document unfolding events and create a “synchronized public,” they are increasingly creating live maps based on this content to create, distribute and improve shared situational awareness. Indeed, dozens of live maps (powered by the Ushahidi technology) were created to monitor the events in Tunisia,

Egypt, Libya, Syria and Yemen, for example. Even al-Jazeera used a live map to document Israeli attacks on Gaza back in 2009. This increasing use of live maps points to the possible rise of a “mapping reflex” as one Russian blogger puts it. “If radio gave each event a sound, TV an image, then this relatively new ‘mapping reflex’ gave each event a geographic location” (Sidorenko 2011). In many ways, this mapping reflex parallels the “Wikipedia effect”, i.e., the creation and real-time editing of Wikipedia articles to document live breaking news. With the Ushahidi platform, contributors simply live-edit a map instead. Ushahidi is Swahili for “witness” or “testimony”.

Take Libya, for example. Social media played a pivotal role during the crisis in 2011. Indeed, Mr. Moreno-Ocampo, the International Criminal Court (ICC) Prosecutor cited Facebook and other social media as a key influence on the ICC’s decision to take action in Libya (Werby 2011). In addition, however, the UN’s Office for the Coordination of Humanitarian Affairs (OCHA) launched a live social media map of Libya (using the Ushahidi platform) to better inform and “synchronize” their humanitarian relief operations.¹ This map was largely based on crowdsourced reports coming from social media sources like Facebook, Twitter and YouTube. In other words, the triad: “synchronize opinion - coordinate action - document the result” is taken to an entirely new level with the live or near real-time geo-location of collated, publicly sourced and publicly accessible information. Just like state-run television serves to synchronize public opinion, these live maps can create a different but unified understanding generated from the crowd itself. The importance of this dynamic and the Ushahidi platform is explained in more detail in the next section and Chapter 4.

¹ A public version of this map was later made available at LibyaCrisisMap.net.

1.2: The Ushahidi Platform in Theory and Practice

The Ushahidi platform was originally launched in January 2008 during the post-election violence in Kenya. A simple web-based map, the tool allowed anyone with access to a mobile phone or the Internet to report on human rights violations they were witnessing. In other words, the team behind the Ushahidi initiative was applying to concept of crowdsourcing to the reporting and documentation of human rights abuses.

The platform, which is free and open source, has since gone through several upgrades. More than 20,000 Ushahidi maps have been launched in over 140 countries since January 2008. As mentioned above, the technology allows individuals, grassroots organizations, media companies and large humanitarian organizations to easily create and publish live multi-media maps of unfolding situations around the world. This multimedia component is important because the Ushahidi technology integrates powerful tools like Twitter, Facebook, SMS and smart-phone apps. In other words, the platform can provide a different frame or narrative—a crowdsourced one—that can counter official state propaganda. In addition, the platform can serve as a powerful recruitment or mobilizing mechanism for social movements and other causes.

As already noted, activists are not only turning to social media to document unfolding events, they are now increasingly *mapping* these events for the world to bear witness. Moreover, the probability that entire crowds can directly testify across multiple media in near real-time is rapidly increasing. Take the article below from the front page of the New York Times on June 22, 2009 reposted on the DigiActive.org blog. The article relates developments following the elections in Iran. Notice the crowd collectively bearing witness in the accompanying picture. What is also striking about this picture is that it was taken more than two years ago. Since then, millions of new smart phones

have been created, not to mention new flip cams, Facebook pages, Twitter accounts, YouTube accounts, blogs, etc.



Figure 1: Crowds are increasingly bearing witness thanks to new ICTs.

The Ushahidi platform is increasingly used to map information generated by crowds in near-real time like the one depicted above. Why is this important? Because live public maps can help synchronize shared awareness, an important catalyzing factor of social movements, according to Habermas (1962) and Shirky (2010). Recall Habermas's treatise that those who take on the tools of open expression (think Ushahidi) become a public,

and the presence of a synchronized public (via a public, crowdsourced map) increasingly constrains undemocratic rulers while expanding the right of that public.

Sophisticated political maps have been around for hundreds of years. But the maps of yesteryear, like the books of old, were created and controlled by the few. While history used to be written by the victors, today, journalists like Anand Giridharadas from the New York Times are asking whether the triangulated crisis map will become the new first draft of history. In the field of geography and cartography, some refer to this new wave of democratized map-making as “neo-geography.” But this new type of geography is not only radically different from traditional approaches because it is user-generated and more participatory; the fact that today’s dynamic maps can also be updated and shared in near real-time opens up an entire new world of possibilities and responses.

Having a real time map is almost as good as having your own helicopter. A live map provides immediate situational awareness, a third dimension and additional perspective on events unfolding in time and space. Moreover, creating a map catalyzes conversations between activists, raise questions about geographic patterns or new incidents, and lead to more questions regarding the status quo in a repressive environment. Recall that political change is a two-step process, with the second—social step—being where political opinions are formed (Katz and Lazarsfeld 1955). As noted earlier, “this is the step in which the Internet in general, and social media in particular, can make a difference” (Shirky 2010b). In addition, the collaboration that takes place when creating a live map can also reinforce weak and strong ties, both of which are important are important for civil resistance.

The Ushahidi platform enables a form of live-mapped “sousveillance,” which refers to the recording of an activity using portable personal technologies—a definition taken from Wikipedia. In many respects, however, the use of Ushahidi goes *beyond*

sousveillance in that it generates the possibility of “dataveillance” and a possible reversal of Bentham’s *panopticon*. “With postmodernity, the panopticon has been informationalized; what once was organized around hierarchical observation is now organized through decoding and recoding of information” (Lyon 2006, 106). In *Seeing Like a State*, James Scott (1999) argues eloquently that this process of decoding and recoding was for centuries the sole privilege of the State. In contrast, the Ushahidi platform provides a participatory digital canvas for the *public* decoding, recoding of information *and* synchronization of said information. In other words, the platform serves to democratize dataveillance by crowdsourcing what was once the exclusive realm of the “security-informational complex.”

In *Domination and the Arts of Resistance: Hidden Transcripts* published in 1990, James Scott distinguishes between public and hidden transcripts. The former describes the open, public interactions that take place between dominators and oppressed while hidden transcripts relate to the critique of power that “goes on offstage”, which the power elites cannot decode. This hidden transcript is comprised of the second step, social conversations that Katz and Lazarsfeld (1955) argue ultimately change political behavior. Scott (1990) writes that when the oppressed classes publicize this “hidden transcript”, they become conscious of its common status. Borrowing from Habermas (1962), the oppressed thereby become a public and more importantly a synchronized public. In many ways, the Ushahidi platform is a vehicle by which the hidden transcript is collectively published and used to create share awareness—thereby threatening to alter the balance of power between the oppressors and oppressed.

The new dynamics that are enabled by “liberation technologies” like Ushahidi may enable a different form of democracy, one which arising from “the inability of electoral/representative politics to keep it promises [has thus] led to the development of indirect forms of democracy” (Rosanvallon 2008, 274). More specifically, Rosanvallon

(2008) identifies three channels whereby civil society can hold the state accountable not just during elections but also between elections and independent of their results. “The first refers to the various means whereby citizens (or, more accurately, organizations of citizens) are able to monitor and publicize the behavior of elected and appointed rulers; the second to their capacity to mobilize resistance to specific policies, either before or after they have been selected; the third to the trend toward “juridification” of politics when individuals or social groups use the courts and, especially, jury trials to bring delinquent politicians to judgment” (Schmitter 2008, 1).

These three phases correspond surprisingly well with the three waves of Ushahidi uses witnessed over the past three years. The first wave was reactive and documentary focused. The second was more pro-active and focused on action beyond documentation while the third seeks to capitalize on the first two to complete the rebalancing of power. Perhaps this final wave is the teleological purpose of the Ushahidi platform or “what technology wants,” as per Kevin Kelly’s (2010) treatise. However, this third wave, the trend toward of the “juridification” of politics bolstered by crowdsourced evidence live-mapped on a public Ushahidi platform, is today more a timid ripple than a tsunami of change reversing the all-seeing “panopticon”. A considerable amount of learning by doing remains to be done by those who wish to use the Ushahidi platform for impact beyond the first two phases of Rosanvallon’s democracy. This dissertation seeks to provide insights into some of the learning that needs to be done by activists.

Following the selection criteria listed in Chapter 4, the countries identified for qualitative case study analysis were Egypt and the Sudan. Both saw the use of the Ushahidi platform which has risen to some prominence in the region and indeed globally. The qualitative comparative analysis thus focuses specifically on the use and impact of Ushahidi in these two countries during periods of contested elections. In other

words, did the use of the Ushahidi platform change the balance of power in Egypt and the Sudan during the Parliamentary and Presidential elections held in 2010? The qualitative study's focus on election periods is deliberate since anti-government sentiment and protests may become more visible during this time. Framed as question: Did the technology facilitate the recruitment, organization and mobilization of civil society actors—factors that facilitate anti-government protests? Did the impact go beyond Rosanvallon's first phase of democracy? Were the regimes threatened and did they react accordingly? Which side ultimately had the upper hand? And how do these answers square with the results of the large-N econometric study?

1.3: The Research Question and Why it Matters

Do “liberation technologies” change the balance of power between repressive regimes and civil society movements? The political science literature provides two competing arguments on how the information revolution affects the relationship between governments and social resistance movements. One school of thought maintains that the dramatic cost-reductions of networked communication implies that social movements can more easily mobilized in to response to government repression. The second school counters with the claim that repressive states are becoming increasingly savvy in regulating the impact of the information revolution (see Morozov 2011). To be sure, authoritarian regimes also benefit from the technology innovation since they gain access to increasingly sophisticated tools with which to censor and control digital information (Diebert *et al.* 2008). As Drezner (2010) rightly notes, these two contradictory trends raise a fascinating question—does the information revolution empower the coercive control of repressive regimes at the expense of citizen activists? Are state imposed “information blockades” as witnessed during the Egyptian and Syrian revolutions of 2011 effective?

Or does the information revolution lead to more frequent, distributed and mobile forms of social resistance—thus changing the balance of power between State and society?

This research question is particularly pertinent and timely given the recent upheavals in North Africa and the Middle East. For policy purposes, understanding the role that new ICTs play in facilitating political change is pivotal to managing future political transitions in repressive states. Indeed, the initial conditions for digital activism today are very different from those that existed even just five years ago. Like the arms race, authoritarian regimes may face increasing opportunity costs by seeking to stay ahead in the information race. They may not remain in control indefinitely. Formulating a clear and realistic understanding of this information race can serve to identify important windows of opportunity and modes of intervention to facilitate peaceful and nonviolent transitions to more democratic governance. Indeed, “many scholars and practitioners have recognized that the techniques associated with strategic nonviolent social movements are greatly enhanced by access to modern information communication technologies, such as mobile telephony, short message service (SMS), email and the World Wide Web, among others” (Walker 2007, 4). Furthermore, there is a widespread recognition that the impact of technology can “be shaped in various ways by explicit policy decisions made in places like Washington D.C. and Brussels” (Walker 2007, 4). This speaks to the logic of the “Dictator’s Dilemma” which is explained in more detail in Chapter 2.

The dissertation question is directly related to two major policy initiatives pursued by The Obama Administration: Internet Freedom and Civil Society 2.0. In addition, the dissertation case studies—Egypt and the Sudan—both high on the policy list, and not only for the US but for Europe as well. Furthermore, the two case studies focus specifically on the use of the Ushahidi platform, which Diamond (2010) refers to as a “liberation technology.” The Ushahidi platform, often used for live, collaborative and

multi-media mapping, is both free and open source. The tool has been used some 20,000 times in over 140 countries including Afghanistan, Burma, Pakistan, Somalia and Libya. In addition, the platform was recently used for independent, citizen-based election observation in both Egypt and the Sudan. Because “information technologies [like Ushahidi] are such an important part of civic organizing [...], political elites seeking to manipulate election results must also attempt to disable cell phone networks and internet connections” (Howard 2010, 148). The case studies thus provide an ideal way to understand how technologies like Ushahidi may change the balance of power between State and society.

The US government has taken increasing interest in the use of the Ushahidi platform and has referred to the technology in a number of policy speeches and conference presentations. The US Department of State, National Endowment for Democracy (NED), Freedom House and the US Institute of Peace (USIP) all continue to hold workshops that include presentations and/or trainings on the Ushahidi platform. For example, the State Department’s series of training workshops around the world, “Tech at State” always includes training on Ushahidi. As this technology is very much part of the policy discourse, an empirical study on its use and impact thus stands to benefit policymakers and activists more broadly. This is even truer today in 2011 than it was just a year ago before the Arab Spring.

The Ushahidi platform is increasingly being used in hostile environments by a growing number of activists and grassroots organizations. But the platform was not initially designed for such applications. To this end, studying how the platform has already been used in countries under repressive rule stands to benefit future users of the technology and hopefully maximize their impact while highlighting the limits of technology and the importance of learning how to communicate securely in politically dangerous environments. This study also contributes more broadly to the use of new

technologies for election monitoring and accountability—the topic of an important and well attended conference held in Washington DC in 2010. Indeed, major organizations like the National Democratic Institute (NDI), the International Forum for Election Systems (IFES) and the Carter Center are all applying new technologies (including the Ushahidi platform) in their election monitoring efforts around the world.

This dissertation also represents an important contribution to the study and theory of technology as a driving force behind democratic change. The information revolution is potentially influencing the frequency and possible impact of social resistance as measured by anti-government protests. Understanding the dynamics generated by the information revolution is pivotal for five reasons. First, from a theoretical (and empirical) perspective, the current political science literature does not adequately explain how new ICTs affect antagonistic state-society relations. The causal conditions are not well understood and neither are all the factors that are thought to influence the balance of power between State and society. In short, “understanding the causal conditions for contemporary democratic transition and entrenchment is one of the most important tasks facing scholars of international studies” (Howard 2010, 80).

Second, the competition between State and society pits a hierarchical organization against a decentralized or loosely connected network. The impact of ICTs on the antagonistic relationship between both organizational structures is an important question that remains largely unexplored from the perspective of network theory and international relations theory (beyond typical studies on net-centric warfare). Third, the dissertation’s qualitative case studies focus on the use of new ICTs—the Ushahidi platform in particular—for citizen-based election observation efforts in both Egypt and the Sudan. This research thus stands to shed light on the study of ICTs during elections—events that provide momentary opportunities for democratic change. The dissertation research also entailed the development of a new dataset for the econometric

study and analyzed two new datasets (Ushahidi data from Egypt & Sudan) that have not been studied by anyone else. Fourth, no compelling theoretical framework exists to align findings from the fields of sociology, political science and communications into a coherent literature that explains the emergence, development and outcomes of social movements, let alone the impact of ICTs on these findings. This dissertation seeks to contribute *and* apply a cross-disciplinary framework that combines findings across different fields of study.

The existing literature on this specific research question is sparse and faces several important limitations. First, the terms information revolution and Internet are used interchangeably, when the latter is in fact only a subset of the former. The majority of the literature and research is therefore restricted to the Internet's impact exclusively. Second, the terms are not differentiated on the basis that the predominant feature of the information society is the spread of the Internet. While this is true of the most industrialized democratic societies, it is not (yet) the case for the majority of developing countries with repressive regimes, where mobile phones are the most widely spread communication technology. Third, the political science literature duly argues that coercive governments have recourse to non-technical means of information control such as intimidation and imprisonment. However, the very rich literature on strategic nonviolent action that suggests social resistance movements also have recourse to non-technical means, strategies and tactics to effectively counter government crackdowns—as witnessed most recently in both Tunisia and Egypt.

At the same time, a notable gap exists in the nonviolence literature vis-à-vis the strategic and tactical use of ICTs in nonviolent movements. The only systematic study carried out on the role of technology in nonviolent action was published 10 years ago by Martin (2001), most of whose references date from the early 1990s, i.e., before the information revolution. Fourth, the social movement literature tends to treat technology

as a black box. The impact of the information revolution on social resistance needs to be disaggregated to generate more fine-grained analysis. Fifth, the sociology, political science and communication literatures have to some extent 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. Sixth, the literature is overwhelmingly qualitative. Apart from Eyck's 2001 study (which focused on empirical trends in the 1970s), there appear to be no other large-N quantitative studies on the impact of information communication technology on protests.

In sum, "the shaky methodological foundations of the understanding of the relationship between new media and contentious politics are a problem for policymakers and activists as well as social scientists. Acting effectively in the world requires getting the causal relationships right. Research design matters. Many claims currently made about the effects of new media are blind to hidden variables, confuse output with impact, or assume causal relationships that may be spurious. The first step must therefore be to get the research design right" (Aday et al. 2010, 6). To this end, this research will analyze ICTs as tools for accomplishing goals, *not* as a substitute for goal-directed behavior.

1.4: Outline of Dissertation Chapters and Methodologies

This dissertation comprises five chapters. This introductory chapter constitutes Chapter 1. Chapter 2 comprises the literature review and framework development. Chapter 3 consists of the large-N econometric study while Chapter 4 includes the qualitative comparative case study analysis. Chapter 5 concludes the dissertation and comprises a

summary and joint analysis of the findings. This final chapter also includes policy recommendations and next steps for further research.

A comprehensive and up-to-date literature review is needed to disentangle and better understand the impact that new ICTs may have on democratic change in countries under repressive rule. Chapter 2 thus provides an in-depth literature review that spans both the quantitative and qualitative literatures. This critical review is used to inform the development of a “Digital Activism Framework” that can be used to more rigorously assess the impact of ICTs on the balance of power between State and society. The framework is developed and explained in Chapter 3 given that it stems directly from the literature review.

This dissertation uses nested analysis as the principal methodology to answer the question formulated above, i.e., does access to new ICTs empower the coercive control of repressive regimes at the expense of social resistance movements, or vice versa? Nested analysis draws on mixed-methods research consists of a large-N quantitative study followed by qualitative comparative case studies. As a first step towards addressing the dissertation question, the large-N analysis—Chapter 3—will test whether the diffusion of ICTs is a statistically significant predictor of anti-government demonstrations. The assumption here is that communication facilitates organization, coordination and mobilization of protest events. The analysis draws on a novel dataset of protest events from 1990-2007. The ICT data is constructed using multiple different data sources including the International Telecoms Union (ITU), World Bank and United Nations (UN).

The result of the statistical analysis guides the case study selection process, which comprises a comparative case study analysis using qualitative methods—Chapter 4. These methods include secondary research, process tracing, descriptive analysis and semi-structured interviews. The two countries selected for the qualitative research are

Egypt and the Sudan. The use of the Ushahidi platform in both countries is evaluated with respect to their possible impact on the balance of power between the State and society. More specifically, the use of the platform for independent, citizen-based election observation is assessed. The survey questions used for the semi-structured interviews with Egyptian and Sudanese activists stem directly from the literature review and Digital Activism Framework developed in Chapter 2.

The fifth and final chapter summarizes the findings from both the quantitative and qualitative analysis. More importantly, the chapter combines the analyses from the application of both methodologies to contrast and compare the overall findings as they relate to the dissertation's core research question. Finally, the chapter lays out some concrete policy recommendations and identifies next steps for further research.

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” (37). Indeed, it is particularly challenging to disentangle political, social and technology factors (Diamond 2010). Howard (2010) explains that, “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” (48).

The goal of this literature review is to make these effects more explicit and thereby 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 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 types of coercive regimes of interest to this research are those that score a Polity2 figure between -5 and -10 for at least one year in the past two decades. The Polity2 variable is described in more detail in Chapter 3. 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 contribution to democratic movements of past centuries (Schudson, 1999) in relation to conceptions of the public sphere (Habermas 1962) 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)” (142).

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, 202). 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.

It is important to emphasize that there are also demand-side factors for mass-mobilization. Indeed, a robust and growing economy with low unemployment will lead to less pent-up demand for political reform and hence fewer incidents of anti-government protests. At the same time, political or cultural differences may still intervene to spur revolts. This is why these demand-side factors are included as control variables in the econometric analysis that follows this chapter.

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, 258). 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”(147). 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'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, 156). 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, 149). 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" (158). 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, 158).

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, 270). Curiously, when analyzing their data for 2001-2002 in isolation, they find 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 270). The study's biggest limitations are: (1) the data used is limited to 2002, i.e., well before the onset of more

participatory technologies that promote user-generated content and like Twitter; and (2) the potential impact of mobile phones is ignored.

Bailard (2009) uses fixed effects regression analysis of panel data at the country level from 1999 to 2006 to test whether the number of mobile phones subscribers has any influence on perceived levels of corruption. The model controls for a handful of factors that are correlated with both mobile phone penetration and corruption, e.g., GDP per capita and strength of democracy. Bailard finds a “significant negative correlation between a country’s degree of mobile phone penetration and that country’s level of perceived corruption.” Is this effect as pronounced in countries with repressive regimes? Unfortunately, this question is not addressed in Bailard’s study.

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 (142). 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” (142). 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” (143). 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, 143).

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” (149). 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)” (158). 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, 158). 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" (83). 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" (Groshek 2009, 83). 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, 89). 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, 2). 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 (2010) 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” (52). Each technology variable was first weighted against the GDP 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 2010, 194). Furthermore, the results show that having a relatively large number of Internet and mobile phone users, "a wired civil society" appears to serve a consistent causal condition across multiple "democratization recipes." For example, a rapidly expanding information infrastructure in countries with large Muslim populations was associated with either democratic transitions or consolidation. "This conclusion makes an explicit link through which technology diffusion can contribute to democratization" (Howard 2010, 195).

More specifically, a good ICT base supported strong democratic movements for countries like Bosnia, Georgia, and Indonesia. However, the lack limited technology access in places like Azerbaijan and the Central African Republic, has according to Howard allowed for deepening authoritarianism. The speed of technology diffusion may also matter since the slow pace seen in countries like Benin, Eritrea, and Gambia is associated with less than successful democratization movements. 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 2010, 55).

This comparative literature review of macro-level, quantitative studies is summarized in Table 1 below.

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

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

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

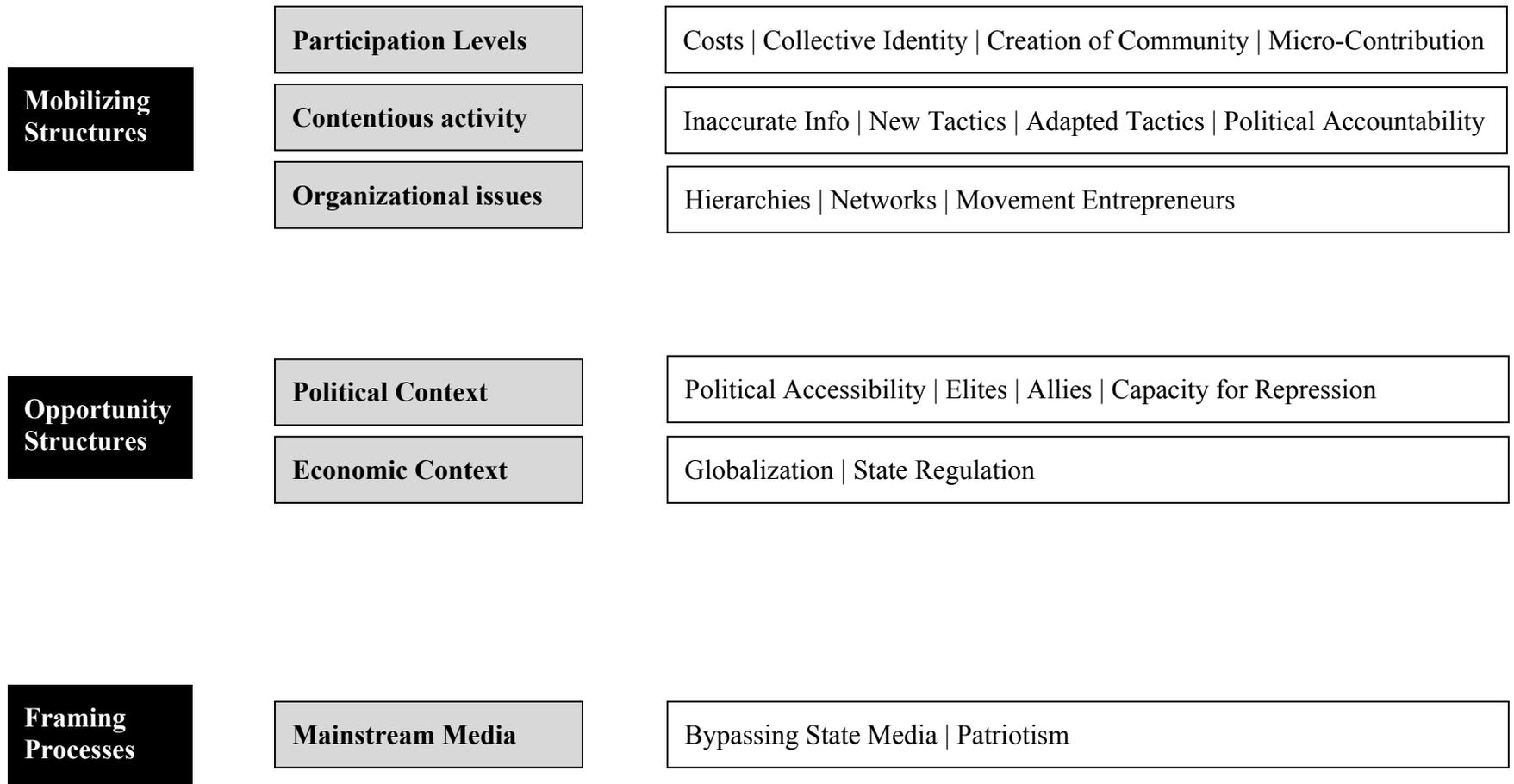
The second section of this literature review takes a more micro-level, qualitative approach and thus follows Garrett's (2006) lead and builds on an informed framework developed by McAdam, McCarthy and Zald (1996). As already noted above, this framework "explains the emergence, development and outcomes of social movements by addressing three interrelated factors: mobilizing structures, opportunity structures and framing processes" (Garrett 2006, 202). In many respects, this triad represents a roadmap that can lead to Rosanvallon's (2008) three waves of democratic change described in Chapter 1 vis-à-vis the Ushahidi platform: oversight, prevention and judgment.

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 represent deliberate efforts to craft, disseminate and counter the language and narratives used to describe a resistance movement.

"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" (Garrett 2006, 205).

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 susceptible 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 2 below.

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



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 clearly reduced the costs of traditional forms of participation, which necessarily contributes to an increase in participation. 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, 207). Just as iPods and iPhones have recruited millions of new consumers, ICTs present an important recruitment mechanism for social movements—one that is not addressed in the traditional literature. 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” (Garrett 2006, 209).

Howard (2010) 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” (140). 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, 209). That said, some scholars contend that ICTs are important, but not essential to contemporary transnational advocacy (Keck 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, 77). “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 2010b).

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, 8).

Participation went further still since even the most non-political bloggers decided to document the demonstrations. 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 2010, 11). 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, history has shown that the defection by the elite is often the beginning of the end of a repressive regime.

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” (46). 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, 93). 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” (1). 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, 17). 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, 145).

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, 211). 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, 211). 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. 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, 208). 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 implies that lower access costs for information is unlikely to significantly influence participation levels.

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, 65). 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, 70). “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, 79).

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*

Almanac than the work of the Committees of Correspondence. But those political works still had an enormous political effect” (Shirky 2010c, 28). 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, 82).

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, 233). “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 2010c, 12). 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 2010c, 17).

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, 7). 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, 148). 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 coordinating action that take advantage of that change.” (Shirky 2008, 20). These social capabilities include many-to-many communication, which was not easily achieved using traditional communication technologies. Indeed, traditional modes of communication restricted our conversations to one-to-one and one-to-many but the information revolution has made many-to-many tools possible that accelerate cooperation and action (Benkler 2006, Shirky 2008).

ii) The promotion of collective identity is the second mechanism thought to link technology and participation. ICTs may foster and synchronize the perception of a larger community, allowing individual to recognize that they not alone in this struggle by virtue of their shared grievances. 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, 51). 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 2010b). Drezner (2010) notes that "at moments when a critical mass of citizens recognizes their mutual dissatisfaction with their government, the ability of the state to repress can evaporate" (40).

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" (Chen et al. 2008, 135). For example, "challenger candidates in Iran [used] Facebook to help their supporters to find a shared sense of community" (Howard 2011, 41). The literature also suggests that ICTs tend to both reinforce existing social networks while also enabling them to link with members of other networks who hold different views." 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, 209).

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” (301).

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” (329). 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 2010b).

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” (196).

Howard (2010) takes issue with this claim. He notes that the opposition in Iran was able to get their message out in unprecedented ways thanks to the Internet” thus allowing them to 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. 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 2010, 8).

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 2010, 9). 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 2010, 11). 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, 210; see also Benkler 2002). 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, 109). The possibility of “micro-contributions” strategies led by “movement entrepreneurs” (Earl and Schussman 2003) can also facilitate “Smart Mobs” (Rheingold 2003) and may thus influence anti-government protests. A Smart Mob, according to Wikipedia, is a group that behaves intelligently or efficiently because of networked and mobile communications, allowing a form of social coordination.

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, 162). 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, 210). 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, 201).

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, 211). 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” (Xu 2007, 38). 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, 211). 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, activists and others can also use the Internet (and other ICTs) to verify information by triangulating across multiple sources and media (Meier 2011). Research by Colvin (2010) and others 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.

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, 29). 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, 73). 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 and Varda 2008, 12). 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 and Varda 2008, 9). 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, 149).

The changing sets of tactics employed by activists can be observed at the level of street-based contention. To be sure, "ICTs have been crucial for the organization of radical youth movements and the use of new protest tactics that undermine authoritarian regimes" (Howard 2010, 155). 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, 2). "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, 9).

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, 213). This was recently evidenced by student protestors who used Google Maps and mobile phones in London in 2010 (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. This importance and application of “maptivism” in repressive environments is discussed in depth in Chapter 4. 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, 9).

“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. 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, 216).

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, 6). 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” (9).

To this end, the only way to stay head may be to “offense, not defense. ‘If it is a cat-and-mouse game, ‘by definition, the cat will adopt the mouse’s technology, and vice versa.’ [...] 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” (William Dobson 2010. *Needles in a Haystack*. *Newsweek*, August 6).

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” (Groshek 2010, 146).

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” (76). 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, 242). 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” (Garrett 2006, 216). The literature on “sousveillance” (watching from below) also suggests that ICTs provide new means for generating political accountability (Blatter 2008). Furthermore, some scholars argue that new ICTs are more conducive to sustaining activity and engagement. 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, 255). 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, 255).

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” (3). 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” (12). But repressive regimes may not have the organizational flexibility to decentralize substantially. Indeed, “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” (William Dobson 2010. Needles in a Haystack. *Newsweek*, August 6). 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, 219; see also; Brafman and Beckstrom 2006). 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, 203). 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, 199).

i) **“The technologies facilitate the adoption of decentralized,** non-hierarchical organizational forms, and make movement-entrepreneur-led activism more likely” (Garrett 2006, 217). While networks are as old as hierarchies and markets, they are “only now coming into their own as a major societal organizing principle” (Ronfeldt and Varda 2008, 2). Several scholars such as Castells (2011) suggest that the information revolution will result in the declining importance and relevance of hierarchical organizations and established institutions. 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, 217; see also Brafman and Beckstrom 2006; Castells 2011).

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 2010, 13). 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). Indeed, 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 [...]” (37).

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 2010, 33; see also Castells 2011). ICTs necessarily increase the density of social networks (Shirky 2010b).

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” (Elting, Faris and Palfrey 2010, 39). 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” (41). 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, 42). They cite the case of Estrada in the Philippines and two other anecdotes.²

² 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 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

Some scholars and activists caution against romanticizing the power of spontaneous smart mob protests. Meier (2010), for example, 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” (42). 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, 49). 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, 224). 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 2010, 4).

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, 218; see also Shirky 2008; 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,

media had helped force out a national leader. Estrada himself blamed “the text-messaging generation” for his downfall.

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 of power, a feature of the information society identified by Benkler (2006). Lastly, a number of case studies suggest that access to new technologies to make collaboration between social movements more likely. (Cleaver 1999, 218; Ayres 1999; Tapscott and Williams 2010; Shirky 2008; Shirky 2010b).

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, 219). 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" (220). 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, 40; see also Lohmann 1994 for original argument). 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, 40). 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, 40; see also Scott 1990). Morozov (2009) 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” (40).

While such opportunities may be short-lived, this is not particularly problematic since social resistance groups and nonviolent movements seek to operate on maintaining a tactical 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 (2006)

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” (222). Howard (2010) concurs: “new information technologies do not topple dictators; they are used to catch dictators off-guard” (12).

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 2010, 35). To be sure, “if governments can raise the cost of Net [or mobile] transactions, they can regulate [these] transactions” (Goldsmith 1998 cited in Drezner 2010, 35). 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 2010; Rheingold 2003). The spread of ICTs may thus increase 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 was true of Egypt before 2011 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 (Sharp 2005).

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 patterns 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, 233; see also Gharbia 2010). These alliances tend to be durable and stable although recent events in Tunisia and Egypt certainly point to important reversals (while not in Bahrain, tellingly). 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, 41). 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” (cited in Drezner 2010). 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 and Varda 2008, 13).

Garrett (2006) rightly shares Eyck’s (2001) concern that, “activists are not the only group capable of using technology to become more fluid and flexible” (219). To be sure, “citizens are not the only ones active in cyberspace. The state is online, too, promoting its 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” (Ronfeldt and Varda 2008, 12). 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, 129). 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 2010, 4). 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 2010). 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 2010b).

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” (38). 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. More recently, Beijing launched the GreenDam project, which sought to install surveillance, and censorship chips on all computers in China (Morozov 2011). At the same time, Shirky (2011c) points out the increasing difficulties that the Chinese regime is experiencing in controlling via the Great Firewall and Green Dam project.

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 2010, 9). 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 2010, 8).

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” (70). 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 2010, 157).

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, 15). 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 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” (Kelly and Elting 2008, 12).

McAdam’s framework suggests that opportunity structures in coercive states are very 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" (3). 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 2010b).

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 2010; Kalathil and Boas 2003; 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 Mulvenon 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 (2010b), Diamond (2010), Ronfeldt and Varda (2008) 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 cited in Garrett 2006, 212; See also 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 2010, 39). 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, 256). To be sure, access to the Internet means that civil society is no longer dependant on state-run media production systems.

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” (James Fallows 2008. The Connection Has Been Reset. *The Atlantic*, March 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” (Abigail Cutler, *Penetrating the Great Firewall* 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” (James Fallows 2008. *The Connection Has Been Reset. The Atlantic*, March 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” (Steve Coll. 2005. *In the Gulf, dissidence goes digital: Text messaging is new tool of political underground. Washington Post*, March 29, 2005).

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 2010, 10). 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 2010, 83). Furthermore, when repressive states invest in information infrastructure to improve their own bureaucratic capacity, doing so may actually be an important driver of contemporary organization.

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” (cited in Best and Wade 2009, 256). 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, 110). 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, 173). In sum, “when forced to choose between a blackout and a coup, many choose the former” (Morozov 2011, 54). As for the link

between oil wealth and the Dictator's Dilemma, Howard (2010) argues that the former is an exemption of the latter.

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 2010b). Indeed, "one could argue, the ability of citizens to communicate, considered against the background of macroeconomic forces, was largely irrelevant" (Shirky 2010b). 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 2010b). 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 2010b).

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, 220). Of course, the ability to circumvent government censorship and regulation are important but historical accounts suggest that these capacities can

be effectively curtailed (Morozov 2011). 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). Econometric analysis carried out by Millner (2006) clearly shows that technology diffusion is highly dependent on a country's regime type, even when controlling for other economic, technological, political and sociological factors. Democratic governments encourage the spread of the Internet in contrast to autocratic regimes. Indeed, "groups that believe they will lose from the Internet try to use political institutions to enact policies that block the spread of the Internet. Some political institutions make this easier to do than others" (Milner 2006, 176).

The regulation of ISPs is another way for repressive regimes to keep the reigns on information access. Indeed, ISPs are typically under state contract and directed to preserve "moral order" as defined by political elites who thus also preserve the political status quo. "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 2010, 171). 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" (Hill and 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, 206). “It used to be that [...] 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 cited in Howard 2010, 103). In his latest book, Castells (2011) argues that social movements can leverage “mass self-communication” to catalyze political change. “In a world marked by the rise of mass self-communication,” contentious social movements “have the chance to enter the public space from multiple sources. By using both horizontal communication networks and mainstream media to convey their images and messages, they increase their chances of enacting social and political change – even if they start from a subordinate position in institutional power, financial resources, or symbolic legitimacy” (302). 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, 212).

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, 78). “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, 23). 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, 144).

The ability to bypass mass state media is one of the most studied topics vis-à-vis the impact of new ICTs. Today’s information and communication technologies have dramatically reduced the required resources to bypass state media. In addition, activists

increasingly employ ICTs to indirectly access or influence established media outlets. 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, 146). On the other hand, the state can employ ICTs to effectively frame movements as unpatriotic, thereby undermining widespread support for anti-government demonstrations.

Perhaps the most striking development with respect to framing, bypassing and ICTs is the rise of Wikileaks. By providing a high profile way to leak sensitive information and render that information public, the group has not only defined the framing of the conversations that have ensued but has also set the agenda that established media companies have adopted. Powerful states including the United States have been virtually powerless in the face of this high profile, networked onslaught. In December 2010, Wikileaks released secret diplomatic cables from the US Embassy in Tunisia. These cables detailed how Ben Ali's extended family was living in luxury while looting the country. According to *Foreign Policy*, this exposed ordinary Tunisians to the true nature of the regime and “pushed [them] over the brink” (Dickinson 2011). Many North African experts heavily contest this claim, however. At most, the public release of those cables might have in part persuaded (or forced) Ben Ali’s Western allies, including the US and France, to sever their support. “The West could no longer ‘turn a blind eye to the regime’ or claim that ‘stability under Ben Ali is better than instability without him’” (Bates 2011).

i) “New ICTs can be an effective tool for generating publicity and news coverage” (Garrett 2006, 223). 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, 223; Vegh 2003). To be sure, activists using the Internet in repressive states have actually been able to frame how local events have been reported and discussed. In Iran, the Mousavi opposition leveraged ICTs precisely because he was barred from accessing state-run television and newspapers. “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 2010, 111). 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, 36). 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, 36); 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, 248). 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, 139). 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 2010, 80). Morozov (2011) argues that “nationalism and the Internet are something of natural allies” (249).

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). As several scholars have shown, non-democratic regimes heavily regulate the use of new ICTs as means new to disseminate propaganda. 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 2010, 122).

In sum, framing processes in contexts of antagonistic state-society relations can be 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.

It is important to note that study of frames is a major field of inquiry and debate in political communication research. This debate goes well beyond the scope of this literature review, which seeks to understand the impact of new technologies on framing in repressive states more specifically. Nonetheless, important contributions to the literature on political communications and framing include Keck and Sikkink (1998), Baumgartner and Jones (1993); Goffman (1986); Gamson (1988); Iyengar (1991), Entman (2003) and Bennett, Lawrence and Livingston (2007). Livingston's (1997) research on the "CNN effect" is certainly central to the framing debate.

Finally, as noted in the introduction of this literature review, Mobilizing Structures, Opportunity Structures and Framing Processes are often interdependent. For example, new ICTs enable political opportunity structures that are, in essence, opportunities to frame political reality in new ways, which is to say in ways that authorities would not prefer" (Livingston 2011).

2.2: Discussion of Findings

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 literature review 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 (2010) 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 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, 7).

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 2010, 49).

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 2010, 49). 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 2010). 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; 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, 115). 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. 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, 218). In short, “the independent role of information technologies on political protests has not been well studied” (Eyck 2001, 147).

- 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 2010, 11). 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 noted earlier, “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” (Howard 2010, 48). This Chapter has thus reviewed the macro-level quantitative and micro-level qualitative literatures. The 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 independent *and* 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 2010, 25). 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 2010, 26).

Meanwhile, the main weakness of the qualitative literature is the heavy reliance on theoretical models than data. Many qualitative studies are focused on the analysis of single cases, the findings of which are not necessarily verifiable. 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 quantitative literature as it stands does not account for the questions posed by this dissertation.

The main drawback of both literatures is 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 2010, 14).

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 authoritarian regimes have repressed their people for decades but now these regimes face more contentious public opinion given the newfound voice provided by ICTs. 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 2010, 148). 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 2010, 148). 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 the technology variable is important to alter the balance of power. In his empirical analysis on election fraud, Simpser (2008) finds that repressive regimes have an incentive to manipulate elections even if they are likely to win because doing so “can influence expectations and consequently impact patterns of political participation” (1). As noted in the literature review, however, one causal link between ICTs and protests is participation—that is, the use of ICTs can help recruit more individuals and increase participation levels (Mobilizing Structure). The following question is therefore apropos: can the use of distributed ICTs before and during an election help counter a repressive regime’s impact on political participation?

Studying protests is also important because these have played an important role in past transitions to democracy. Furthermore, using protest events instead of a democracy measure as the dependent variable follows the recommendation 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, 284). As democracy transition scholars including and Howard (2010) have rightly noted, protests and activists movements are an important part of “democratic insurgencies” many of which rely on the use of new technologies for the timing and logistics of protests. Recall the comment by an Egyptian activist during the early days of the 2011 revolution: “We use Facebook to schedule our protests, Twitter to coordinate and YouTube to tell the world. As both Shirky (2010) has noted, while the outcome of such technology agile activist movements may not consistently be outright democratic transitions, they may nevertheless lead to relatively more openness and respect of human rights by repressive regimes.

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 the number of mobile phone and Internet users facilitated democratic mobilization, then could one determine whether stalled transition to democracy in a given situation was a “technology or social failing?” Having specific technologies in mind and examples of these technologies being applied will facilitate the qualitative research.

Fourth, Howard’s (2010) 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 (2010) 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 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.

Chapter 3: Quantitative Analysis

The literature review in Chapter 2 highlighted important limitations vis-à-vis the quantitative literature on the impact of technology on democratization, dictatorship and activism. The qualitative literature proved more ambiguous, riddled with selection bias and shaky methodological foundations (Aday *et al.* 2010). “And while debate continues, there is no doubt that rigorous and data-driven analysis of this relationship will benefit scholars and policy makers alike. Indeed, the majority of earlier studies of the effects of the Internet on democracy are case studies and/or largely theoretical analyses. Few previous studies approach the issue of Internet and democracy with data-driven analysis” (Best and Wade 2009, 255).

The purpose of Chapter 3 is to carry out a large-N quantitative study that overcomes some of the shortcomings of earlier studies. More specifically, this study will use negative binomial regression analysis to determine whether the greater access to information and communication technology (ICT) is a statistically significant predictor of anti-government protests. If the results of the analysis reveal that an increase in access to ICTs is a significant predictor of protest events in countries under repressive rule, then this may imply that technology is indeed an important explanatory variable. An authoritarian state that is unable to prevent anti-government protests as a result of swelling access to ICTs faces a clear challenge to its power.

This chapter is structured as follows: the first section develops an econometric model based on the findings from the literature review. The second section defines the variables and explains the case selection criteria. Section 3 provides descriptive statistics, correlation analysis and identifies the appropriate regression technique for the analysis. Section 4 lists the results of the negative binomial regression analysis. The fifth and final

section of this chapter reviews the results and lays out the rationale for the comparative qualitative case studies in Chapter 4.

3.1: The Model

The literature review of the quantitative literature in Chapter 2 resulted in decidedly mixed results, with some studies identifying statistically significant relationships between technology and democracy, and others not. The three most important limitations of the data-driven studies reviewed are that: (1) the data analyzed typically stops around 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 information and communication technology (ICT) on repressive regimes. Associated with this limitation is the use of aggregate measures for democracy. This makes it difficult to unpack the conclusions derived from quantitative studies.

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 used tactically and strategically by civil society groups in repressive environments. Collectively, Facebook, YouTube, and Flickr are only about five years old. The study by Howard (2010) is the only one that uses data through 2008. At the other end of the spectrum, the majority of quantitative studies reviewed in Chapter 2 use data series that begin in the late 1990's if not early 2000's. This means that an entire decade of growing Internet and mobile phone use is ignored, which considerably limits the possibility of baseline analysis.

The second limitation is problematic because Internet access in many repressive regimes is typically more limited than access to mobile phones—although this is changing rapidly thanks to smart phones. Indeed, the information revolution is increasingly conceived as an ecosystem of more integrated connection technologies (Schmidt and Cohen 2010). Studying the nodes of this ecosystem in isolation thus presents an important constraint on the analysis. The third limitation is no less problematic with all quantitative studies reviewed in Chapter 3 combining both democratic and non-democratic countries in their analysis. This runs the risk of having important underlying effects cancel each other out. This is perhaps the only drawback with Howard’s (2010) study, which is otherwise particularly robust and overcomes many of the limitations identified in Chapter 2.

To address the first limitation, the quantitative analysis carried out for this dissertation research drew on data from 1990 through to 2007. (As described in Section 3 below, the protest data used for this regression analysis is proprietary data and limited to 2007). The study will draw on both Internet and mobile phone data to overcome the second limitation identified in previous quantitative studies. In response to the third limitation, the study will focus exclusively on authoritarian states. In addition, the study will not use an aggregate or abstract measure of democracy as the dependent variable but will instead use protest events per country year to better understand the linkages between access to ICTs (Internet and mobile phones) and actual, physical events that are more easily quantified than abstract notions of democracy. The use of protest events as the dependent variable also makes the subsequent qualitative case study analysis less abstract.

The purpose of this quantitative analysis is thus to determine whether access to ICTs is a statistically significant predictor of protest events and if so, whether that relationship is positive or negative. The dependent variable is the number of protest

events per country-year. The ICT variables—or predictors—used in the model are: number of Internet users, mobile phone subscribers and telephone landlines per country-year. The control variables, as identified in Chapter 2, are autocracy, unemployment, GNI, GDP, population, internal war and elections.

Factors such as literacy, terrorist events and ownership status of the telecommunication sector were not included in the regression analysis for several reasons. A consistent data series for international literacy rates is virtually impossible to find before 2000, especially for repressive regimes. In addition, the literature review in Chapter 2 did not identify literacy rates as having an important influence on protest events. The influence of terrorist events on subsequent anti-government protests is not a factor that figures in the literature either. Moreover, protests waged against a government in response to a terrorist event are unlikely to be a chronic affair in countries with repressive regimes. Furthermore, such demonstrations are more likely to be organized in protest against terrorist organizations themselves rather than a government—such as the 2008 anti-FARC protests in Colombia. In any case, the protest data used in the quantitative analysis below is limited to protest events carried out by civil society actors against the state specifically. Finally, repressive regimes have repeatedly exerted influence on telecommunications companies regardless of whether or not they formally own the major companies operating in the country. Figure 3 below summarizes the four plausible outcomes of the regression analysis.

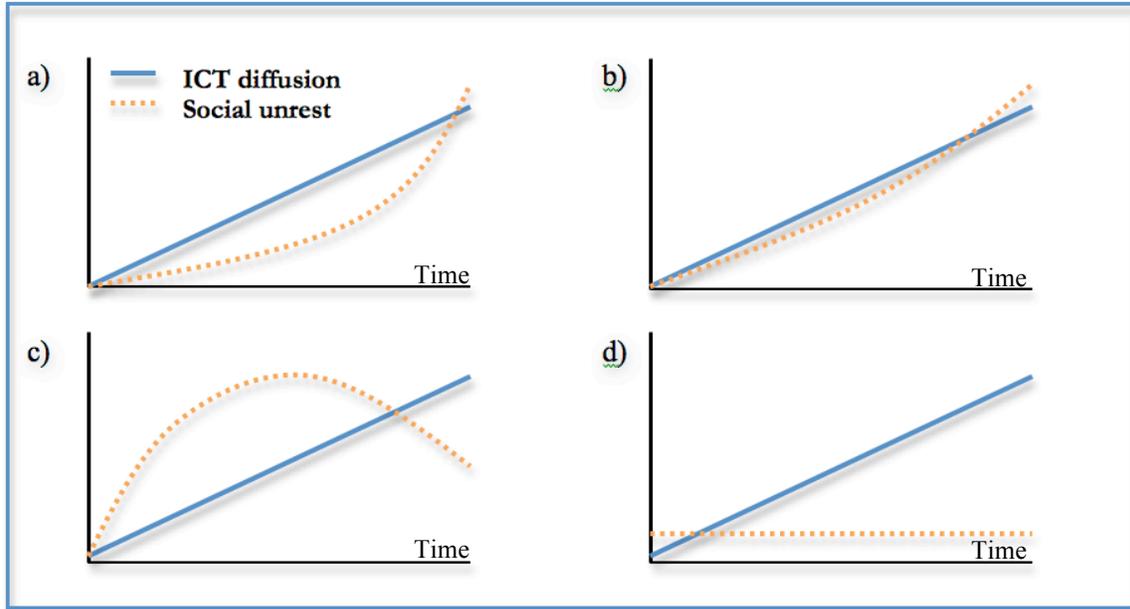


Figure 3: Plausible time series of ICT diffusion versus anti-government protests.

Graph (a) suggests a statistically significant relationship between the use of ICTs and the variation in incidents when controlling for other effects. This may imply that the impact of the information revolution empowers civil resistance movements at the expense of tech-savvy regimes. Graph (b) suggests a marginal increase in the frequency of incidents in response to the diffusion of ICTs, i.e., the relationship is not statistically significant. The graph depicted in (c) suggests a statistically significant—albeit inverse—relationship between ICTs and incidents. This may imply that regimes have been effective repressing anti-government protests. Graph (d) may also suggest that governments have been effective at maintaining their information blockade. The econometric model for this study is specified in Figure 4 below.

Econometric Model

Using negative binomial regression analysis, this large-N quantitative study will test whether the diffusion of information communication technology is a statistically significant predictor of protests (R) in 38 countries between 1990-2007 by estimating the effect of technology (T), political (P), economic vectors/variables on the incidence of protest:

$$(1) R = f(\text{Tech} + \text{Pol} + \text{Econ}) + \varepsilon$$

Or more formally:

$$(2) P_{c,t} = \beta_0 + \beta_1 T_{c,t} + \beta_2 P_{c,t} + \beta_3 E_{c,t} + \varepsilon_{i,t}$$

Where:

$P_{c,t}$ = the number of protest/riot events in a country c , in a given year, t .

$T_{c,t}$ = a vector of information communication technologies relevant for capturing the diffusion of the information revolution in country c , in a given year, t .

$P_{c,t}$ = a vector of political variables to control for influences on social unrest.

$E_{c,t}$ = a vector of economic variables to control for influences on social unrest.

$\varepsilon_{i,t}$ = error term, distribution assumed to be normal.

Figure 4: The econometric model for the quantitative analysis section of the dissertation.

Negative binomial regression analysis is used to carry out the statistical analysis below. This type of regression analysis was selected because the dependent variable, protest events, is highly skewed, which means that regular ordinary least squared regression analysis is not possible. The quantitative study by Miard (2009), see Chapter 2, tested the impact of mobile phones on political protests using negative binomial regression

analysis for the same reason. The rationale for using this type of regression analysis is further articulated in Section 3.

3.2: The Data

This section reviews the datasets for the 10 variables used in this study. The dependent variable is the total number of protest events per country-year. The three independent predictor variables are (1) number of Internet users, (2) number of mobile phone subscribers and (3) number of landlines. The seven control variables are (1) Autocracy, (2) Unemployment, (3) GNI, (4) GDP, (5) Population, (6) Internal war, and (7) No election. A total of 38 countries were included in the study: Algeria, Armenia, Azerbaijan, Bahrain, Belarus, Burkina Faso, Burma, China, Cote d'Ivoire, Cuba, DRC, Egypt, Gabon, Guinea, India, Iran, Iraq, Jordan, Kazakhstan, Kenya, Malaysia, Morocco, Pakistan, Philippines, Russia, Saudi Arabia, Singapore, Sudan, Syria, Tajikistan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Uzbekistan, Venezuela and Zimbabwe. The country selection criteria are explained later in this section.

Dependent Variable Data

One pressing “problem with examinations of new media in contested politics is sparse data. Conclusions are generally drawn from potentially non-representative anecdotes and/or laborious hand coding of a subset of easily identified major (usually English-language) media. At the same time, there is progress in developing viable techniques to collect and analyze vast amounts of data from the Internet. Ideally, these techniques will capture the flow of information and communications in real time, while also reaching back far enough to establish baseline conditions from which significant deviations stand

out” (Aday *et al.* 2010, 8). The same can be said about protest data and the analysis of new information and communication technologies on protest events.

Many empirical studies are limited to examining “protest potential,” which represents an inadequate indicator of actual protest behavior (Norris 2006). Since surveys are usually more appropriate for capturing attitudes rather than actual behavior, this dissertation research must focus on datasets that document past incidents of protests instead of surveys. There are a number of datasets available that focus on (or include) protest event-data. The most commonly used include the *World Handbook of Political and Social Indicators* (Taylor and Jodice 1983), the *Prodat Project* (Kriesi *et al.* 1995), the *Cross-National Time Series* (Banks 2001) and the *Protest and Coercion Data* (multiple contributors, 2008). Table 2 below compares these datasets.

As Nam (2006) rightly notes in his study “What You Use Matters: Coding Protest Data,” a serious debate on the quality of protest datasets has been lacking in the literature. The datasets listed above have several practical and theoretical limitations. We identify five such problems below.

Dataset	Time Period	Countries
1948-1992	156	All members of the United Nations in 1975
Prodat Project	1975-1989	France, Germany, the Netherlands, Switzerland
Cross-National Series	1815-1999	167+
Protest/Coercion Data	Multiple	27 European states (1980-1995), Burma (1988), S. Korea (1990-1991), Colombia (1988-1997), El Salvador (1979-1991), Peru (1980-1995).

Table 2: Available datasets that document past instances of protest events.

Firstly, the categories of events coded in these traditional datasets “are often too general, arbitrary and inaccurate” (Nam 2006, 281). The second problem is that the protest data is only available in annually aggregated numbers, thus “eliminating the possibility of quarterly or monthly, let alone weekly or daily analyses” (Nam 2006, 281). Indeed, “the annual measures omit the substantive ebb and flow of daily and weekly interactions between citizens and authorities” (Dahlerus 2006, 21). Furthermore, for the purpose of this study, “if communication and information technologies are a part of political protests, then we must get more detailed information on the timing of the protests to see if they occur in clusters, which we would expect to happen” (Eyck 2001, 158). Third, and perhaps most importantly, these traditional datasets have typically relied on a limited number of sources. When protests are sampled from just one or two sources, especially non-local sources, the data is very likely to be incomplete and biased (Dahlerus 2006; Nam 2006).

The fourth problem with these traditional datasets is that they are typically developed using “hand-coding” of event-data based on national and international news reports. Strictly speaking, then, event data may be no more than simple observations of media reporting patterns as opposed to a valid sample of protest and repressive events (Danzger 1978; Franzosi 1987; Mueller 1999; Hocke 1998). To complicate matters, “news-sources contain internal biases that influence how protest and repressive events are reported, who is involved, what happened, and why” (Dahlerus 2006, 1; see also Davenport 2001). To be sure, “coverage in Western European and international media sources are more likely to pay attention to larger protests that involve property destruction or other more visible qualities” since these obviously make for good headlines which increases profits (Dahlerus 2006, 2; see also Clutterbuck 1980; Franzosi 1987; Herman and Chomsky 1988; Turow 1997; Wolsfeld 1997).

Fifth and finally, international media coverage of “protest is skewed toward

political contention in established democracies, while protest and in particular repression in authoritarian states receive less attention outside of large scale dramatic events” (Dahlerus 2006, 8). Local media sources also come with a host of issues. Press freedom is endogenous to democratization and consolidation, which means that in the context of repressive or closed regimes, getting accurate reports on anti-government protests from national sources may be difficult to come by. Indeed, national media outlets in nondemocratic countries are almost always state-run and thus virtually guaranteed to omit any indication of resistance against the ruling regime.

While using newspapers for events-based information collection is far from ideal, one must recognize that no other available source could realistically fulfill the stringent requirement of objectivity and completeness. To be sure, it is very well known that biases exist in official state reports, especially in authoritarian systems that seek to restrict the outflow of information (Dahlerus 2006). While police reports may underreport the number of people participating in anti-government protests, social movements tend to inflate crowd magnitude (Beissinger 1998; McPhail *et al.* 1998). Moreover, despite the implicit biases that exist in news-generated events data, “scholars who rely on newspapers for information about contentious [sic] suggest that newspapers are overall accurate in the information they do report” (Dahlerus 2006, 12; see also Franzosi 1987, 7; Wolsfeld 1997; Beissinger 1998; Olzak and Olivier 1998; Ekiert and Kubik 1999). To this end, while all events are not captured by the news media, one can still “rely on an overall accuracy of information contained in reports of the essential ‘who,’ ‘what,’ ‘where,’ and ‘when’ issues of contentious events” (Dahlerus 2006, 12). In short, newspapers may provide biased coverage, but they seldom print false information (Franzosi 1987; Dahlerus).

Since this study focuses on the likely impact of ICTs on the frequency of protest events, the ideal dataset would need to (1) cover the time period prior to the information

revolution and (2) go beyond 2003, which is where most studies stop. In the context of nondemocratic (generally developing) countries, the ICT data (described in more detail below) suggests that the information revolution begins to take off around the year 2000, give or take a few years. None of the traditional datasets listed above include protest events-data beyond 1999. In addition, since there is rich evidence that large-scale protests are valuable in cultivating deliberative and sustainable democracies (Ekiert and Kubik 1999; Ackerman and DuVall 2000; Inglehart and Catterberg 2002; Norris 2006; Stephan and Chenoweth 2008), this study is not particularly interested in small-scale protests that may not be reported by mainstream media. Moreover, sizeable events will typically require more extensive use of ICTs to mobilize, organize and coordinate. This means that using international news as a source for protest data is actually preferred since doing so is tantamount to filtering out small-scale and politically insignificant protests. Using this reasoning, then, the typical constraints of international news media as a source for protest event-data are not particularly problematic.

This dissertation research therefore draws on the conflict event-dataset developed by the private company Virtual Research Associates, Inc. (VRA). VRA uses a patented natural language parsing algorithm to parse Reuters newswires in near real-time for more than 60 countries. The algorithm codes events into a 157-indicator framework called the Integrated Data for Events Analysis (IDEA) framework. For each event, the parser codes the following parameters, “who (source), did what (event), to whom (target), where (country) and when (day)?” (Bond *et al.* 1997; Bond *et al.* 2001; Bond *et al.* 2003; King and Lowe 2003). The dataset thus specifies whether the state or society is the initiator of the event. Unlike traditional datasets on protest events, the VRA data uses automated natural language processing to code events. An important question then is how hand- and automated coding compares in terms of reliability. Harvard University Professor Gary King and Dr. Will Lowe carried out an independent

and comprehensive evaluation of the VRA dataset in 2003. They conclude their in-depth study with some optimism:

“In our view, the results in this article are sufficient to warrant a serious reconsideration of the apparent bias against using events data, and especially automatically created events data, in the study of international relations. If events data are to be used at all, there would now seem to be little contest between the machine and human coding methods. With one exception, performance is virtually identical, and that exception (the higher propensity of the machine to find “events” when none exist in news reports) is strongly counterbalanced by both the fact that these false events are not correlated with the degree of conflict of the event category, and by the overwhelming strength of the machine: the ability to code huge numbers of events extremely quickly and inexpensively.

Although the machine performed approximately equally to our trained human coders in this study, the machine would be far better over the long run. Hiring people of the quality we were able to recruit to code many more events than we asked of them is probably infeasible, and doing so for the many years it would take to do this right would undoubtedly reduce performance to levels significantly below that of the machine. Longer-term coding by human coders would result in lower performance, either because we would have to resort to using less-qualified coders or because their attention to the extremely tedious and boring task would wane over time” (King and Lowe 2003, 636).

Unlike the more common datasets describe above, the VRA parser picks up distinct events as they occur throughout a given day or week. For example, as a demonstration unfolds, the natural language parser will not code one event only but rather a series of events just as long as the underlying news reports are different. Only if two reports are exactly alike does the parser only code the event as one event. To this end, both the frequency and (possibly duration) of protests can be extracted from the VRA database since the data is not pre-aggregated. Furthermore, because the data is generated using newswires, any period of specific interest in the time series data can be interpreted by reading the associated news reports themselves. These can be found using Lexus Nexus and Factiva, as well as Google News archives. Finally, the VRA dataset covers over 60 countries between 1990 and 2007, i.e., from pre-information revolution and through to the current Web 2.0 and mobile technologies revolution. The dataset is thus not limited to Western democracies, which is another distinct advantage over traditional datasets.

The dataset includes the following six directly relevant event types:

- **Protest altruism:** protest demonstrations that place the source (protestor) at risk for the sake of unity with the target.
- **Protest defacement:** performance protests, graffiti and desecration of symbols.
- **Protest obstruction:** sit-ins and other non-military occupation protests.
- **Protest procession:** picketing and parading protests.

- **Protest demonstration:** all protest demonstrations not otherwise specified.
- **Riot:** civil or political unrest explicitly characterized as riots.

These six event types are aggregated to serve as a proxy for protest incidents—the dependent variable used in the regression analysis below.

Independent Variable Data

The data on ICT diffusion is drawn from the 2008 edition of The World Telecommunication ICT Indicators Database produced by the International Telecommunications Union (ITU). This database contains annual time series data from 1975 to 2007 for around 100 communications statistics including the number of mobile phone users and Internet users. Data on Internet users, mobile phone subscribers and total number of telephone lines per country year is taken from this dataset for the regression analysis.

All the quantitative studies reviewed in Chapter 2 make use of this dataset. As Howard (2010) rightly notes, however, this is problematic: “many scholars rely on a few data sources, chiefly the International Telecommunications Union, the World Bank, and the World Resources Institute. Indeed, these organizations often just duplicate each other's poor quality data. Many researchers rely heavily on this data for their comparative or single-country case studies, rather than collecting original observations or combining data in interesting ways. The same data tables appear over and over again” (15). Unfortunately, collecting original data for 30+ authoritarian states is beyond the scope of this dissertation research. The regression analysis is therefore limited to using the ITU data.

Control Variable Data

The analysis includes seven control variables. Based on a thorough literature review (Chapter 2), Autocracy, Unemployment, Gross National Income (GNI), Gross Domestic Product (GDP), Population, Internal war and No election were identified as statistically or potentially significant predictors of protest events. Increasing repression can backfire and trigger protests. Increasing unemployment may also serve to foment anti-government sentiments. Indeed, where quality of life is low and socio-economic disparities exist, the motivation for rebellion is higher. Perceptions of horizontal inequality in particular can motivate people to protest. GNI and GDP per capita also need to be held constant since they may be correlated with increasing access to ICTs. Large country populations may also increase the probability of unrest as regimes are not able to repress effectively beyond their own capitals. The role of “youth bulges” is also sought to contribute to civil unrest. Cohorts of young disaffected you can also pose a threat to repressive regimes. However, Howard (2010) found that this variable did not have a statistically significant impact on the set of countries that democratized. Finally, unrest may be associated with internal wars and presidential or parliamentary elections. The regression analysis will thus employ these variables as control variables.

The autocracy measure used in the subsequent regression analysis is taken from the Polity2 indicator in Polity IV dataset. The Polity data series is a widely used data series in political science research. The latest version, Polity IV contains coded annual information on regime authority characteristics and transitions for all independent states (with greater than 500,000 total population) in the global state system and covers the years 1800-2006. A detailed analysis by Munck and Verkuilen (2002) highlights some of the strengths and weaknesses of existing datasets on democracy and authoritarianism. While the data by Freedom House is widely used, the data conflates multiple problems of measurement and uses an inappropriate aggregation procedure. Worse still, Freedom

House refused to make their disaggregated data public until recently. While certainly not perfect, the Polity IV data is still considered of higher quality than Freedom House (Munch and Verkuilen 2002).

The Polity2 indicator is computed by subtracting PolityIV's Autocracy score from the Democracy score, with the resulting scale ranging from +10 (strongly democratic) to -10 (strongly autocratic). This indicator provides a convenient avenue for examining general regime effects in analyses but researchers should note that the middle of the implied [Polity2] "spectrum" is somewhat muddled in terms of the original theory, masking various combinations of [Democracy] and [Autocracy] scores with the same [Polity2] score" (Marshall *et al.* 2009, 12). Polity IV's Autocracy score is defined "operationally in terms of the presence of a distinctive set of political characteristics" (Marshall *et al.* 2009, 12). The autocracy score is an additive 11-point scale and is derived from these other Polity IV indicators: competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. The additive weights used for coding purposes are listed in Table 3 below.

<p><i>Competitiveness of Executive Recruitment (XRCOMP):</i></p> <p>(1) Selection +2</p> <p><i>Openness of Executive Recruitment (XROPEN):</i> only if XRCOMP is coded Selection (1)</p> <p>(1) Closed +1 (2) Dual/designation +1</p> <p><i>Constraints on Chief Executive (XCONST):</i></p> <p>(1) Unlimited authority +3 (2) Intermediate category +2 (3) Slight to moderate limitations +1</p> <p><i>Regulation of participation (PARREG):</i></p> <p>(4) Restricted +2 (5) Sectarian +1</p> <p><i>Competitiveness of Participation (PARCOMP):</i></p> <p>(1) Repressed +2 (2) Suppressed +1</p>

Table 3: Authority coding and weight scale for Autocracy

Polity IV's Democracy score is also an additive 11-point scale. The operational indicator of this score is derived from codings of competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. The weight scale in Table 4 below is used to code this Democracy score.

<p><i>Competitiveness of Executive Recruitment (XRCOMP):</i></p> <ul style="list-style-type: none"> (1) Election +2 (2) Transitional +1 <p><i>Openness of Executive Recruitment (XROPEN):</i> only if XRCOMP is Election (3) or Transitional (2)</p> <ul style="list-style-type: none"> (1) Dual/election +1 (2) Election +1 <p><i>Constraint on Chief Executive (XCONST):</i></p> <ul style="list-style-type: none"> (1) Executive parity or subordination +4 (2) Intermediate category +3 (3) Substantial limitations +2 (4) Intermediate category +1 <p><i>Competitiveness of Political Participation (PARCOMP):</i></p> <ul style="list-style-type: none"> (1) Competitive +3 (2) Transitional +2 (3) Factional +1

Table 4: Authority coding and weight scale for Democracy

Unemployment, Gross National Income (GNI) and Gross Domestic Product (GDP) are standard variables that are available from the International Labor Organization’s (ILO) labor statistics and the World Bank’s data development indicators. These variables and datasets are frequently used in numerous quantitative political science studies.

The two variables on “Internal war” and “No election” are dichotomous variables. Internal war is coded as 1 if an internal war takes place in a given country-year. No election is coded 1 when there are no major elections in a given country year.

The data for these variables is drawn from the Polity IV dataset, Political Risk Services (PRS) and the International Forum for Election Systems (IFES).

Case Selection

A total of 38 countries were used in the subsequent regression analysis were primarily selected on the basis of the Polity IV and protest datasets. Any country that met the following three criteria were included in the study:

1. *A Polity2 score between -5 and -10 for at least one year between 1990 and 2007.*

Or

2. *Polity2 scores above 0 for all years between 1990 and 2007 but known to be a repressive regime and the frequently the subject of case study analyses in the literature.*

And

3. *Protest data and control variable data available.*

The above selection criteria were used for several reasons. First, the purpose of this study is to assess the impact of ICTs on strong authoritarian states, not weak states or democratic ones. Second, a small number of countries in the Polity IV dataset have Polity2 scores greater than zero but are nevertheless clearly repressive, such as Russia. In addition, these countries figure as principle case studies in the digital activism

literature.³ Third, the dependent variable for this study is the number of protests per country-year. While the study draws on the most comprehensive protest data available, if data is missing for a particular country between 1990 and 2007, it simply cannot be included in the regression analysis. In addition, time series data on unemployment in repressive regimes—an important control variable—is often not consistently available before 2000.

A total of 38 countries were included in this study based on the criteria just explained. These are: Algeria, Armenia, Azerbaijan, Bahrain, Belarus, Burkina Faso, Burma, China, Cote d'Ivoire, Cuba, DRC, Egypt, Gabon, Guinea, India, Iran, Iraq, Jordan, Kazakhstan, Kenya, Malaysia, Morocco, Pakistan, Philippines, Russia, Saudi Arabia, Singapore, Sudan, Syria, Tajikistan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Uzbekistan, Venezuela and Zimbabwe. Of these, 8 were included based on criterion number 2: Malaysia, Philippines, Russia, Singapore, Thailand, Turkey, Ukraine and Venezuela. The following 14 countries from the PolityIV dataset had to be excluded due to criterion 3: Bhutan, Equatorial Guinea, Gambia, Kuwait, Laos, Libya, Mauritania, North Korea, Oman, Qatar, Swaziland, Togo, Turkmenistan and Vietnam.

3.3: Descriptive Statistics, Correlation Analysis and Regression Model

*SPSS v15.0 and STATA v10.0 were used for all descriptive and inferential analyses.*⁴

Descriptive data with measures of central tendency were defined for the variables of the dataset. **Table 1 in the Appendix** shows descriptive data as relates to the overall sample ($N = 684$) and for each of the 38 country sub-groups ($n = 18$).

³ <http://www.meta-activism.org/resources>

⁴ Acknowledgements: Ben Mazzotta and Elaine Bellucci for their guidance on the regression analysis; Ginn Library Research Staff and Christine Martin for their assistance in data development.

For all 38 countries over the 18-year period ($N = 684$):

- **Protests** ranged from 0 -116 per year, with a mean of 10.46 per year ($SD = 15.00$).
- **Internet users** ($M = 4.26$, $SD 9.63$) ranged from 0 to 62%.
- **Mobile subscribers per 100 population** ($M = 12.72$, $SD = 25.12$) ranged from 0 to 173, indication that for some countries the number of mobile phones exceeds one per person.
- **Fixed phone lines per 100 persons** ($M = 9.66$, $SD = 10.18$) ranged in number from 0.12 – 48.44.
- **Autocracy scale values overall** ($M = -1.95$, $SD = 6.02$) ranged from scores of -10 to scores of 10.
- **The percentage change in unemployment rate** for the sample ($M = .09$ $SD = 0.84$) ranged from -1% to 14.08%.
- **The percentage change in Gross Domestic Product (GDP) values overall** ($M = 3.87$, $SD = 7.02$) ranged from -41.3 to 52.3.
- **Gross national income per capita** (GNI, $M = 3173.98$, $SD = 5440.55$) ranged from 128 to 41,031.
- **Population figures** ($M = 942,778.44$, $SD = 3208592$) for the sample ranged from 493 to 19,268,303.

The number of instances of internal wars for the 38 countries according to each of the 18 years included in the study was 157 (23% of all 684 records included in the study). The

number of instances of no elections for the 38 countries according to each of the 18 years included in the study was 529 (77.3% of all 684 records).

Table 2 in the Appendix lists the 5 highest and 5 lowest scoring countries according to mean values on each of the nine continuous variables used in this study.

Assumptions for Inferential Analysis

The mean values were lower than the standard deviations for all nine continuous variables studied as relates to the entire sample. Additionally, the median values for all but one variable (% GDP change) were smaller than the mean values. This information indicates that the variables were not normally distributed. Of interest in this study is the variable *Protests*, which is used as a dependent variable in regression analysis. A histogram of the *Protests* variable indicates a long positive skew, with most values close to the lower end of the scale, but with a number of values dispersed at the high end of the range.

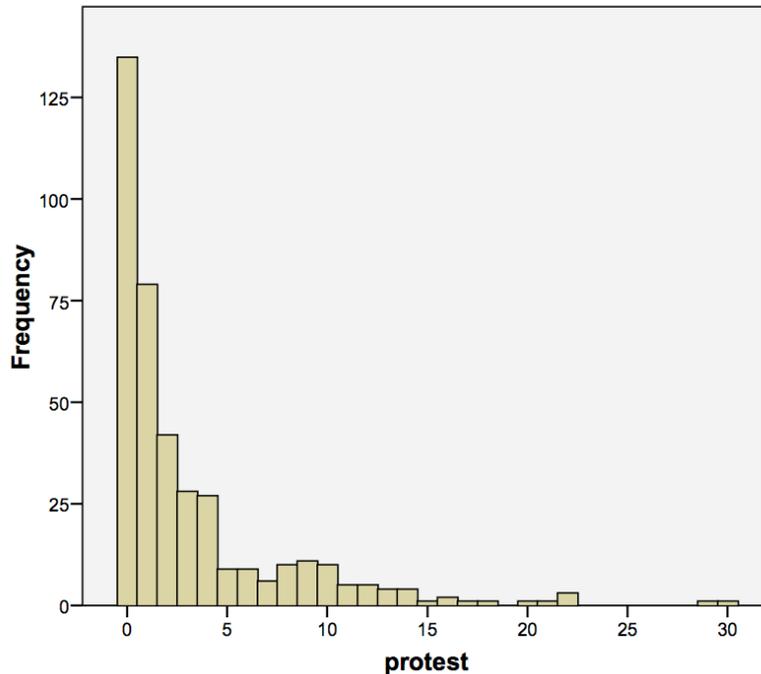


Figure 5: The dependent variable is not normally distributed

The data is count data, and the distribution is a non-normal, highly skewed distribution. Transformations of the Protests variable were performed with logarithms, square roots, and inverse-logarithms, but the distribution did not transform to a normal distribution. This means that ordinary least squares (OLS) regression cannot be used with this dataset. Also of concern is the mean to variance numbers for the dependent variable of Protests. The variance ($s^2 = 225.01$) was almost 22 times larger than the mean ($M = 10.46$) indicating over-dispersion of the data points for the Protest variable. To this end, negative binomial regression was selected to evaluate the data since this type of regression—unlike a Poisson regression model—allows for a variance with a larger value than the mean. STATA command for a negative binomial regression model with panel data “xtnbreg” was used to fit a negative binomial model to the dataset, with the autoregressive (AR1) correlation option chosen due to the repeated measures nature of the data.

Correlation analysis was also performed on the dataset. Normality was not assumed for any of the variables in the data. Also, linearity was not assumed. Spearman's *rho* correlations are based on rank order of data values and not on a normal distribution, so they can be used with count and ordinal data. This nonparametric alternative was specifically chosen for use in this study in order to maintain a conservative approach to assessing correlation significance.

Correlation Analysis

Spearman's rho correlations were performed on the study variables of (a) number of protests (Protests), (b) Autocracy, (c) percentage change in unemployment (Unemployment), (d) GNI per capita, (e) GDP, (e) Population, (f) Internal war, (g) No election, (h) Internet use, (i) phones per 100 population (Phones), and (j) mobile phones per 100 population (Mobile phones). **Table 5** below lists the bi-variate correlations between the variables.

- **The variable of Protests** was significantly directly correlated with Autocracy ($\rho = .282, p < .01$), indicating that when the number of protests increases or decreases, the value of Autocracy moves similarly. The Protests variable was also significantly directly correlated with GNI ($\rho = .104, p < .01$), Population ($\rho = .361, p < .01$), Internal war ($\rho = .303, p < .01$), Internet use ($\rho = .098, p < .05$), and Phones ($\rho = .127, p < .01$).
- **Autocracy** was significantly negatively correlated with Unemployment ($\rho = -.084, p < .05$), and No election ($\rho = -.144, p < .01$). Indicating that higher

numbers of values on the Autocracy variable are associated with lower values of the Unemployment and No Election variables, and vice versa. Autocracy was significantly directly correlated with the variables of Population ($\rho = .240, p < .01$), Internal war ($\rho = .133, p < .01$), Internet use ($\rho = .189, p < .01$), Phones ($\rho = .137, p < .01$), and Mobile phones ($\rho = .208, p < .01$).

- **The Unemployment variable** indicated significant negative correlations with GNI ($\rho = -.112, p < .01$), GDP ($\rho = -.303, p < .01$), Internet use ($\rho = -.185, p < .01$), and Mobile phones ($\rho = -.282, p < .01$).
- **GNI per capita** was significantly directly correlated with GDP ($\rho = .122, p < .01$), Internet use ($\rho = .434, p < .01$), Phone use ($\rho = .686, p < .01$), and Mobile phones ($\rho = .541, p < .01$). A significant negative correlation was found between GNI and Population ($\rho = -.216, p < .01$) and Internal war ($\rho = -.107, p < .01$).
- **GDP** was significantly directly correlated with Internet use ($\rho = .263, p < .01$), Phones ($\rho = .161, p < .01$), and Mobile phones ($\rho = .321, p < .01$).
- **The variable for Population** had a significant direct relationship with Internal war ($\rho = .330, p < .01$) and a significant negative relationship with Phones ($\rho = -.365, p < .01$).

- **Internal war** indicated a significant negative relationship with regular Phone use ($\rho = -.168, p < .01$).

Strong direct significant relationships were found between the variables of Internet use and Mobile phones ($\rho = .883, p < .01$), and Phones and Mobile phones ($\rho = .503, p < .01$). Given this strong statistical relationship between Internet and Mobile phone use, understanding their joint significance is important if both variables exhibit different results in the regressions that follow. Joint significance refers to the significance of two variables in combination. For example, if one of the two variables is found to be significant while the other not, further analysis is required to test for these variables' combined significance. This is done with an F-test, which simply compares the regression with these variables included (Internet and Mobile phone use) to the same regression but excluding these same variables. The point is to assess how much explanatory power is contributed by combining the two variables.

A word of caution is in order, however, as F-tests are *not* robust when there are severe violations of the assumption that the underlying data follows the normal distribution. Indeed, the F-test is extremely sensitive to non-normality (Markowski and Markowski 1990). As demonstrated in Figure 5, the dependent variable in this econometric study is highly skewed and therefore not normally distributed. In addition, six of the seven control variables are not normally distributed. Furthermore, the comparison of models with the F-test can only be carried out on linear regression models. They require the "sums of squares" which come from an ANOVA table, i.e., linear regression. This econometric study thus required the use of negative binomial regression analysis because of the skewed dependent variable, which is another reason why the F-test is not applicable. Miard (2009) employed negative binomial regression

analysis for the same reasons for his Masters Thesis. Note that the earlier introduction of interactive variables did not result in significant changes to the regression results. While nonparametric alternatives exist, these often tend to significantly increase the Type I error rate (Sawilowsky 2002).

After careful consideration and research, the decision was made to use a Likelihood Ratio Test instead, which essentially tests for the same characteristics as the F-test: is one model's fit significantly better than the other model? If not significant, we can say both models are similar and nothing is significantly different between them. The Likelihood Ratio Test is used for generalized linear models instead of linear models and is therefore a better fit given the underlying data. Joint significance for Internet Use and Mobile phones were tested as well as Mobile Phones and GNI. The results of these tests are including in Tables 10 and 11 below.

Table 5: Spearman's Rho Correlation Coefficients of Inferential Study Variables (N = 684)

Variable	1	2	3	4	5	6	7	8	9	10
1. Protest										
2. Autocracy	.282**									
3. Unemployment rate (% change)	.035	-.084*								
4. GNI	.104**	0.63	-.112**							
5. GDP	.017	.001	-.303**	.122**						
6. Population	.361**	.240**	-.017	-.216**	-.027					
7. Internal War	.303**	.133**	-.009	-.107**	.003	.330**				
8. No elections	-.009	-.144**	-.001	-.007	.038	-.036	-.053			
9. Internet use	.098*	.189**	-.185**	.434**	.263**	-.059	-.054	-.057		
10. Phone use	.127**	.137**	-.027	.686**	.161**	-.365**	-.168**	-.035	.498**	
11. Mobile phone use	.060	.208**	-.191**	.541**	.321**	-.028	-.065	-.051	.883**	.503**

Note. GNI = Gross National Income; GDP = Gross Domestic Product

* $p < .05$

** $p < .01$

3.4: Negative Binomial Regression Analysis

A negative binomial regression analysis was performed on the dependent variable of Protests with three independent predictor variables: (1) Internet use, (2) Mobile phones, and (3) Phones, and seven control variables of (1) Autocracy, (2) Unemployment, (3) GNI, (4) GDP, (5) Population, (6) Internal war, and (7) No election. STATA v10.0 was used for inferential analysis with the code “xtnbreg” for panel data with autoregressive correlation (AR1). The negative binomial regression was chosen over a Poisson model because the data for the Protest variable were over-dispersed ($M = 10.46$, Variance = 225.01) and the variable was also zero-inflated, containing 116 (16.5%) records with the number of protests counted as zero.

Five separate regressions were performed using STATA command “xtnbreg” for a negative binomial regression with panel data. The first regression included all 38 countries ($n = 675$). The dataset was then divided into two groups according to number of protests for countries groups as (a) low protest, and (b) high protest. The groups were formed using a median split on the protest variable, with records containing protests of less than six being considered low (21 countries, $n = 370$), and protests as greater than or equal to six as high protest (17 countries, $n = 305$). The split was performed on the median in an attempt to achieve a number as equal as possible between the two country groups while still making use of a parameter of central tendency. The mean was not chosen for the split because the data distribution was not normal, and the mean was inflated due to the over-dispersion of the data. After two regressions were performed on the protest sub-groups, the aggregated data was then divided into two groups using a median split on the mobile phone variable. The two groupings were categorized as (a) mobile use low (25 countries, $n = 441$), and (b) mobile use high (13 countries, $n = 234$). Again the median of the mobile phone variable was used to define the split, with

countries at less than or equal to 1 percent mobile use assigned to the low group, and countries with greater than 1 percent mobile phone use assigned to the high group.

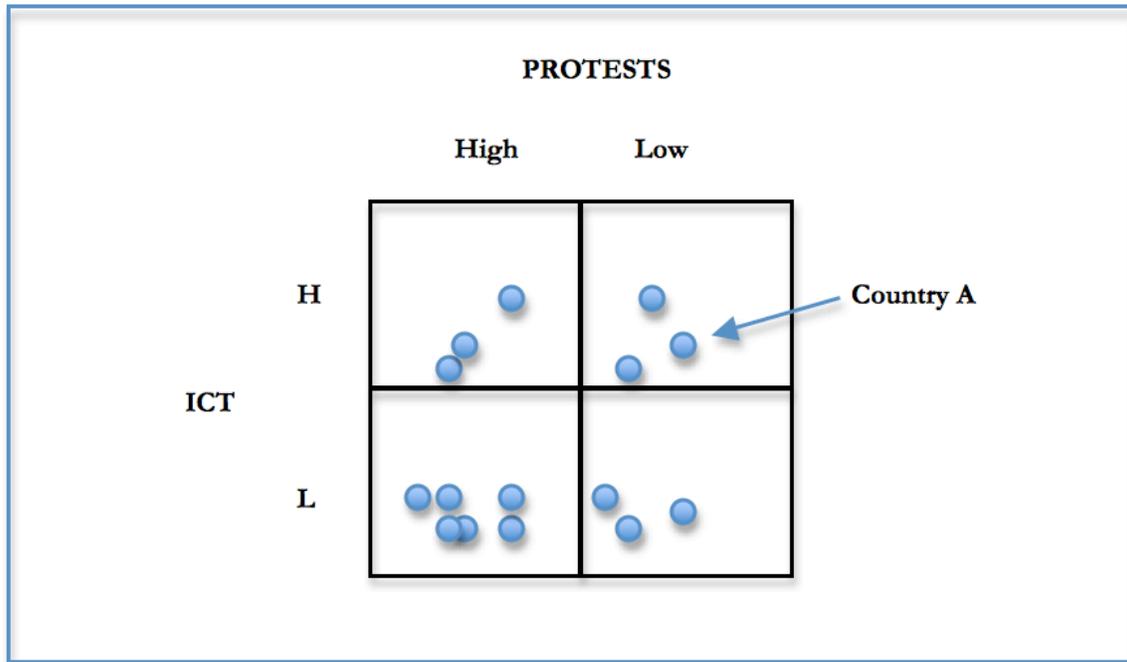


Figure 6: The clustering of data for the regression analysis

The statistical hypotheses for all of the five regression analyses were as follows:

Null Hypothesis: None of the predictors of (a) Internet use, (b) mobile phone use, (c) phone use, are statistically significant predictors of the number or protests, when controlling for additional independent variables of (1) Autocracy, (2) Unemployment, (3) GNI, (4) GDP, (5) Population, (6) Internal war, and (7) No election.

Alternative Hypothesis: At least one of the predictors of (a) Internet use, (b) mobile phone use, (c) phone use, are statistically significant predictors of the number of protests, when controlling for additional independent variables of (1) Autocracy, (2) Unemployment, (3) GNI, (4) GDP, (5) Population, (6) Internal war, and (7) No election.

Note that some interactive variables were introduced in subsequent regression analysis since there is good reason to combine such variables as "mobile phone use" and "GDP", for example. Several combinations of interactive variables were introduced but this did not change the overall significance of the results. In order to avoid data mining and forcing a specific result, further regressions were not run. Moreover, there were no strong social science rationales for testing out other combination of interaction variables. Finally, regressions were not carried out "within" the individual clusters because the N is simply not large enough to produce results that would be considered by most statisticians as reliable or meaningful.

Regression 1, All Data (n = 675)

The model for all data was significant (Wald $\chi^2 = 27.57$, $p = .002$), indicating that the predictor model using the dataset was improved over a model in which all predictors were set to zero. Mobile phone use was a significant predictor ($z = -4.12$, $p < .0005$). Autocracy was a significant covariate ($z = 2.25$, $p = .024$). Incidence rate ratios (IRR) were computed for the two significant variables. The IRR for mobile phone use (.990) indicates that if all other predictor variables are held constant, then a one point increase on the percentage of a country's mobile phone use would decrease the number of protests by a factor of .990. The IRR for autocracy (1.01) indicates that if all other

predictor variables are held constant, then a one-point increase in the autocracy score would increase the number of protests by a factor of 1.01.

Table 6: Negative Binomial Regression Coefficients for Predictors on Criterion of Number of Protests for Entire Sample (n = 675)

Variable	<i>B</i>	<i>SE B</i>	<i>z</i>	<i>p</i>
Internet use	-0.008	0.005	1.42	.155
Phone use	0.010	0.007	1.54	.125
Mobile phone use	-0.010	0.002	-4.12	<.0005
Autocracy	0.019	0.008	2.25	.024
Unemployment rate (% change)	0.005	0.037	0.14	.890
GNI	<0.0005	<0.0005	1.92	.054
GDP	-0.0003	0.005	-0.05	.958
Population	<0.0005	<0.0005	0.53	.599
Internal war	0.079	<0.0005	0.83	.407
No elections	-0.047	0.104	-0.65	.517
Wald $\chi^2 = 27.57$ <i>p</i> = .0021				

Note. GNI = Gross National Income; GDP = Gross Domestic Product.

Regression 2, Low Protest Group (n = 370)

The model for the low protest group was not significant (Wald $\chi^2 = 15.86$, *p* = .10), indicating that the predictor model using the dataset was *not* an improvement over a model in which all predictors were set to zero. Since the overall model was not statistically significant, the model was not investigated further for significant predictors variables.

Regression 3, High Protest Group (n = 305)

The model for the high protest group was significant (Wald $\chi^2 = 20.00$, $p = .03$), indicating that the predictor model using the dataset was improved over a model in which all predictors were set to zero. Mobile phone use indicated significance ($z = -2.99$, $p = .003$), with incidence rate ratios (IRR) of .992 indicating that if all other predictor variables are held constant, then a one point increase on the percentage of a country's mobile phone use would decrease the number of protests by a factor of .992.

Table 7: Negative Binomial Regression Coefficients for Predictors on Criterion of Protests for High Protest Sub-Group (n = 305)

Variable	<i>B</i>	<i>SE B</i>	<i>z</i>	<i>p</i>
Internet use	0.004	0.006	0.73	.463
Phone use	0.004	0.008	0.57	.566
Mobile phone use	-0.008	0.003	-2.99	.003
Autocracy	0.013	0.009	1.47	.142
Unemployment rate (% change)	0.050	0.040	1.29	.198
GNI	<0.0005	<0.0005	0.02	.987
GDP	-0.006	0.006	0.93	.355
Population	<-0.0005	<0.0005	0.17	.862
Internal war	0.125	0.113	1.26	.209
No elections	-0.148	0.072	-1.78	.075
Wald $\chi^2 = 20.00$ $p = .029$				

Note. GNI = Gross National Income; GDP = Gross Domestic Product.

Regression 4, Low Mobile Use Group (n = 441)

The model for the low mobile use group was significant (Wald $\chi^2 = 32.28$, $p = .0004$), indicating that the predictor model using the dataset was improved over a model in which all predictors were set to zero. Significant predictors included phone use ($z = 2.35$, $p = .019$), mobile phone use ($z = -3.05$, $p = .002$), and no elections ($z = -2.01$, $p = .045$). Incidence rate ratios (IRR) were computed for the three significant predictors. The IRR for phone use (1.03) indicates that if all other predictor variables are held constant, then a one point increase on the phone use rate score would increase the number of protests by a factor of 1.03. The IRR for mobile phone use (.988) indicates that, given the other predictors are held constant; a percentage point increase in the mobile phone use rate would decrease the number of protests by a factor of .988. The IRR for no elections (.841) indicates that, given the other predictors are held constant; a year in which a country did not hold elections would result in a decrease the number of protests by a factor of .841.

Table 8: Negative Binomial Regression Coefficients for Predictors on Criterion of Protests for Low Mobile Use Sub-Group (n = 441)

Variable	<i>B</i>	<i>SE B</i>	<i>z</i>	<i>p</i>
Internet use	-0.018	0.011	-1.57	.116
Phone use	0.025	0.011	2.35	.019
Mobile phone use	-0.012	0.004	-3.05	.002
Autocracy	0.007	0.011	0.67	.505
Unemployment rate (% change)	-0.002	0.040	-0.05	.961
GNI	0.001	<0.0005	1.88	.060
GDP	0.007	0.006	1.25	.212
Population	<0.0005	<0.0005	-1.04	.300
Internal war	-0.060	0.105	-0.54	.591
No elections	-0.173	0.073	-2.01	.045
Wald $\chi^2 = 32.28$ <i>p</i> < .0005				

Note. GNI = Gross National Income; GDP = Gross Domestic Product.

Regression 5, High Mobile Use Group (n = 234)

The model for the high mobile use group was significant (Wald $\chi^2 = 21.88$, *p* = .016), indicating that the predictor model using the dataset was improved over a model in which all predictors were set to zero. Significant predictors included Internet use (*z* = 2.39, *p* = .017), mobile phone use (*z* = -2.92, *p* = .004), and autocracy (*z* = 2.04, *p* = .041). Incidence rate ratios (IRR) were computed for the three significant predictors. The IRR for Internet use (1.019) indicates that if all other predictor variables are held constant, then a one point increase on the percentage of a country’s Internet use would increase the number of protests by a factor of 1.019. The IRR for mobile phone use (.988) indicates that if all other predictor variables are held constant, then a one-point increase in the

mobile phone use rate would decrease the number of protests by a factor of .988. The IRR for autocracy (1.034) indicates that, given the other predictors are held constant; a percentage point increase in a country's autocracy score would increase the number of protests by a factor of 1.034.

Table 9: Negative Binomial Regression Coefficients for Predictors on Criterion of Protests for High Mobile Use Sub-Group (n = 234)

Variable	<i>B</i>	<i>SE B</i>	<i>z</i>	<i>p</i>
Internet use	0.019	0.008	2.39	.017
Phone use	0.020	0.011	1.81	.070
Mobile phone use	-0.002	0.004	-2.92	.004
Autocracy	0.033	0.017	2.04	.041
Unemployment rate (% change)	0.072	0.124	0.62	.535
GNI	<0.0005	<0.0005	0.96	.339
GDP	-0.011	0.011	-0.99	.325
Population	<0.0005	<0.0005	0.60	.546
Internal war	0.253	0.246	1.32	.187
No elections	0.103	0.138	0.83	.408
Wald $\chi^2 = 21.88$ <i>p</i> = 0.016				

Note. GNI = Gross National Income; GDP = Gross Domestic Product.

Given the strong correlation between the Internet and Mobile Use variables, the differential results from the regressions analyses is unexpected. That is, given such a strong correlation, how can one variable be significant, while the other not, or how can they both be statistically significant, but of different polarities? Ideally, one would use the F-test to determine joint significance, but for the reasons explained above, this type of test is not applicable when the underlying data is not normally distributed and the regression not linear, but rather negative binomial. A Likelihood Ratio Test, which tests for the same characteristics as the F-test, was thus carried out instead on all models without the Internet and Mobile Phone use variables and had non-significant models across the board. Comparisons of the restricted model (without those two variables) versus unrestricted models (the original models) via the Likelihood Ratio Test did not indicate significant differences between models for any of the hypotheses. See Table 10 below for the full results.

An additional Likelihood Ratio Test was carried to assess the joint significance of the Mobile Phones and GNI variables given their strong correlation. First, all five models were tested without these predictors two predictors. All five were not statistically significant at the 95% level. Next, comparisons between the unrestricted model with all predictors vs. the restricted models without the two removed predictors were performed via a series of Likelihood Ratio Tests. None of the tests were statistically significant at the 95% level. Table 11 presents the log likelihood values for each model, the derived likelihood ratio of the log likelihoods used as the chi-square test statistic, and associated p-value of the test statistic according to each hypothesis.

Table 10: Results of Likelihood Ratio Tests Comparing Restricted vs. Unrestricted Negative Binomial Models: Internet Use and Mobiles Use

Model #	Log Likelihood Value		Likelihood Ratio	
	Restricted (R)	Unrestricted (U)	2*(R/U)	p-value of χ^2
1	-1960.689	-1949.017	2.012	.634
2	N/A	N/A	N/A	N/A
3	-1135.492	-1128.6613	2.012	.634
4	-1241.325	-1128.855	2.199	.667
5	-740.478	-705.911	2.014	.635

The non-significant p-values for each likelihood ratio test imply that the restricted model does not fit significantly better than the unrestricted model for any of the five hypotheses.

Table 11: Results of Likelihood Ratio Tests Comparing Restricted vs. Unrestricted Negative Binomial Models: Mobiles Use and GNI

Hypothesis #	Log Likelihood Value		Likelihood Ratio	p-value of χ^2
	Restricted (R)	Unrestricted (U)	2*(R/U)	
1	-1958.17	-1949.017	2.01	.634
2	-794.79	-791.63	2.01	.634
3	-1133.86	-1128.6613	2.01	.634
4	-1233.71	-1128.855	2.19	.665
5	-710.64	-705.911	1.01	.396

The non-significant p-values for each likelihood ratio test imply that the restricted model does not fit significantly better than the unrestricted model for any of the five hypotheses.

In sum, while the correlations were high on the Spearman’s correlation, the Likelihood Ratio Tests did not show both predictors as significant when one was significant. This is true of both Internet & Mobile use, and Mobile use & GNI. These results were unexpected and but confirmed by an independent expert in statistics.⁵ The econometric study’s large sample size may very well explain these findings. When associations

⁵ I would like to extend my sincere thanks to Elaine Bellucci for her valuable insights and her verification of my econometric analysis. The paragraphs that follow draw on her expert opinion.

between the predictor and outcome are particularly small, this increases the probability of finding statistical significance, especially when using a large sample size ($N > \sim 150$). As noted in the tables above, the results of the regression analysis reveal that many of the confidence intervals almost have a 1 in them. This is equally true for the significant predictors. If a confidence interval covers a range that includes a one, then one cannot claim statistical significance. Indeed, the non-significance values that result from the Likelihood Ratio tests above appear to confirm this theory.

As is well known, the larger the sample, the more one will find significant results even on the smallest of differences or relationships. This is a general shortcoming when using methods of analysis based on samples and inference. As noted above, the effect sizes for the predictors on the outcomes were very small. Indeed, the results of the regressions indicate that the IRR's were very close to 1, and the z-scores were less than 3 standard deviations from the mean. So while the results indicate significance on some of the predictors, the odd ratios are particularly close to 1. Bellucci notes that a reason for this is most likely due to large sample size. Another possible explanation is that the sample itself is problematic. Recall that the data for the dependent variable originates from the automated parsing of Reuters newswires, i.e., a convenience sample. This too, according to Bellucci, could explain the results of IRR significance in light of the findings from the Likelihood Ratio Tests.

3.5: Discussion of Findings

The purpose of this chapter was to use econometric analysis to test whether access to ICTs is a statistically significant predictor of protest events in non-permissive environments using data from 1990 to 2007. A total of 38 countries were selected for the negative binomial regression analysis. Regressions were run on five different country clusters. The first cluster included all 38 countries. The remaining four clusters were divided by high and low levels of ICT access and protest levels.

Four out of the five negative binomial regression models were significant. More specifically, Model 1 (All Clusters), Model 3 (High Protest Cluster), Model 4 (Low Mobile Phone Use Cluster) and Model 5 (High Mobile Phone Use Cluster) were all statistically significant. Model 2 (Low Protest Cluster) did not prove to be significant. The possible reasons for this finding are discussed later. In Model 1, the only statistically significant predictors of protest events were (1) Autocracy levels and (2) Mobile phone users. The relationship between autocracy and protest events was positive. In other words, a one-point increase in autocracy is associated with a relatively small but statistically significant increase in the number of anti-government protests. While marginal, the relationship between the number of mobile phone users and protests events was negative, however. This means that a one-point increase in the number of mobile phone users is consistent with a small decrease in the number of anti-government protests. It is worth emphasizing that the Internet variable was not significant in Model 1.

The fact that an increase in autocracy is matched with a corresponding increase in anti-government protests is not surprising—hence the use of this variable as a control variable. However, the negative relationship between mobile phones and the number of protest events is unexpected. This result may be due to the fact that the overall

correlation analysis showed a strong significant negative relationship between mobile phone use and unemployment. In other words, an increase in mobile phone users may be associated with a decrease in unemployment, which may lead to fewer protests. However, unemployment was not found to be a statistically significant predictor of protest events in Model 1. Other measures of wealth were also non-significant. In sum, the negative relationship between mobile phones and protests is a puzzling finding since a social science explanation for this dynamic seems elusive. Perhaps the result is an artifact of the aggregated datasets. A more likely explanation may be that combining all 38 countries into one pooled dataset may be masking some underlying dynamics. Many of these countries, while repressive, are very different, socially, economically, historically and culturally. Compare Singapore with Burkina Faso, for example. Perhaps some underlying effects are being canceled and others amplified—maybe skewed—when data for all selected countries is analyzed as one regression model. This unexpected result may also be due to omitted variable bias such as the number of civil society groups in a given country as these are likely to vary considerably within the set of 38 countries selected for analysis.

Model 2 (Low Protest Cluster) was not statistically significant, so further analysis was carried out. Countries with low protest counts also have a lot less variation—most protest values are set at 0. This means it is difficult to associate small and rare deviations in the dependent variable with changes in the independent variables being tested.

Results from Model 3 (High Protest Cluster) suggest that an increase in the number of mobile phone users is associated with a very marginal but statistically significant decrease in the number of anti-government protests. This finding is virtually identical to the results of Model 1 except that no other variables were found to be significant. This too is an unexpected finding. A plausible social science explanation for this result is difficult to formulate. One would expect that in countries with relatively

high levels of protests, an increase in the number of mobile phone users would facilitate more frequent and high profile protest events—the central hypothesis of this dissertation research. Perhaps an increase in mobile users means a relative increase in wealth, which is associated with gains in democracy. But neither GNI per capita nor autocratic levels proved to be statistically significant in this model. Another explanation, although unlikely, is that anti-government protests are having their desired impact in this high protest cluster of countries, which perhaps reduces the demand for additional protests.

A more likely explanation is that the countries in this cluster are repressive and savvy enough to manage protest events. Take China, for example. There are reportedly hundreds of protests every year in rural provinces, the majority of which go unreported in the national press. Other countries in this High Protest Cluster include India, Russia and Iran, for example. Each has demonstrated the ability to weather waves of protests effectively by various means including violent force and the blocking of communication access at key moments. Indeed, together with China, the countries with the highest mean-rank protest levels in this cluster are particularly technology savvy and sophisticated when it comes to managing and regulating the impact of the information revolution within their own borders.

Model 4 (Low Mobile Phone Cluster) was statistically significant. Interestingly, the only significant predictors were Elections, Landline phones and Mobile phone users. A country-year during which no elections occurred was found to be associated with a decrease in protest events. The polarity of this relationship makes sense. An increase in the number of landline phones was found to be associated with an increase in anti-government protests. This is not surprising given that this cluster of countries have “below average” mobile phone use. The only other mass communication technology available to share information besides the landline phone is the radio. Few have the

ability to broadcast user-generated content via radio, however. Indeed, independent radio stations are often illegal or highly regulated by repressive regimes like Zimbabwe, for example. Curiously, a one-point increase in the number of mobile phone users is associated with a marginal but significant decrease in the number of protests—corroborating the findings from Models 1 and 3. Again, a social science explanation for this finding is not immediately apparent beyond the fact that an increase in mobile phone ownership reflects a possible increase in wealth and employment. Then again, this result may be due to an artifact of the dataset used and/or omitted variable bias. The number of active civil society groups, for example, has already been flagged as potential missing variable. Indeed, without an active civil society, access to new ICTs is unlikely to accelerate anti-government protests. This hypothesis is further substantiated in the comparative case study analysis featured in Chapter 4. While challenging and perhaps prohibitively time consuming, one way to quantify and include this variable in future econometric research would be to count the number of NGOs that have a website, a Facebook page and a Twitter handle per country-year between 1990 and present day.

That said, other factors might explain the findings. Countries that fall in this Low Mobile Phone Use Cluster include Myanmar/Burma, Uzbekistan, Cuba and Zimbabwe, for example. Like the cluster of High Protest countries, these repressive regimes have reigned with an iron fist, creating enough fear to deter many would-be protesters. In other words, these regimes have raised the required threshold for any reversal in the information cascade (Lohmann 1994). This may go some way to explaining the otherwise unexpected finding.

Results from Model 5 (High Mobile Phone Cluster) further corroborate the findings from Models 1, 3 and 4. Mobile phone use was found to be a marginal statistically significant predictor of protest events but again this relationship was negative, which is counter-intuitive. In contrast, Internet use was found to be a small but

positive significant predictor of protest events. In other words, a one-point increase in the number of Internet users is associated with an increase in anti-government protests, all other factors held equal. The autocracy variable was also a significant predictor, with an increase in autocracy associated with an increase in anti-government protests. Needless to say, the findings from Model 5 require some discussion and explanation.

Clearly, the number of mobile phone users is a significant albeit marginal predictor of protest events across all significant models. However, the relationship is negative in each single case, which runs counter to this dissertation's central hypothesis. The fact that the Internet variable is largely insignificant corresponds to expectations but the finding that it is significant and positive in Model 5 exclusively is somewhat surprising. The number of Internet users relative to mobile phone users is typically far smaller in the countries selected for the regression analysis. So using the Internet to coordinate anti-government protests in countries when only a fraction of the population is online does not make appear to make sense.

However, what may very well be happening is that the Internet only becomes a potent force for anti-government protests when a certain threshold of mobile phone users is met. It may thus very well be that the combination of both the Internet and mobile devices explains this finding. Indeed, the sales of smart phones have skyrocketed and are expected to account for 80% of the mobile phone market within the next few years. So the terms "Internet users" and "Mobile phone users" is increasingly contradictory. Many owners of smart phones access the web solely from their mobile device today. That being said, the data used for this econometric study goes through 2007, when smart phones were barely entering the market. The first Blackberry was first introduced for business use in 2003. Only from 2006 did the Blackberry expand commercially beyond the corporate sector but the phones remained notably more expensive compared to the more common, lower-end phones. The first iPhone only

came out in 2007 while phones with the Android operating system were first launched in late 2008. It is therefore highly unlikely that the data used in this econometric study captures the effect smart phones, i.e., the mobile web. So an above-average number of mobile phone users may be correlated with another variable that makes the number of Internet users positively associated with anti-government protests.

Perhaps countries that fall within this high-mobile cluster resemble those in the West, where according to Zuckerman (2007), the weapon of choice for activists is the Internet rather than the mobile phone. The number of Internet users and mobile phone users in Western industrialized countries are more closely matched than in the majority of countries in the developing world where the number of mobile phone users are at least 10 times higher than Internet users. In contrast, the countries in the high mobile phone cluster with the highest mean-rank include Singapore, United Arab Emirates, Bahrain and Malaysia, for example. Not surprisingly, those countries with the highest mean-rank with respect to *Internet use* include Singapore, United Arab Emirates and Malaysia. Compare this to the countries that fall in the low-mobile cluster such as Myanmar, Cuba and Guinea.

Clearly, accessing the Web via laptop or desktop still affords many more advantages than smart phones, especially with respect to generating more in-depth and multimedia content. Moreover, mobile phones connect people in dyads while the Internet allows for those dyads to cluster in groups, and in turn allows groups to connect with other groups in a highly scalable manner. Perhaps this combination of Internet and mobile phone diffusion is more of a precursor to strengthening and wiring an online civil society than the other combinations found in Models 2, 3 and 4 (Shirky 2011c). There's no denying that Facebook in particular played an important role in synchronizing shared awareness—both in Egypt with the “We are All Khaled Said” Facebook group and in Tunisia. Even renowned Tunisian activist Sami Gharbia, noted

for his skepticism of digital activism, went so far as calling the Tunisian revolution a Facebook revolution.

This finding brings up an important point brought up earlier: does distinguishing between mobile phones and Internet access still make sense when 80% of all mobile phones that are currently manufactured are exclusively smart phones with data access? As noted in Chapter 1, half a billion people worldwide now access the Internet via mobile phone, a figure set to double by 2015. ICTs are becoming increasingly integrated, SMS is connected with Twitter, the latter with Facebook and LinkedIn, blogs, Flickr, YouTube, etc. Terms like the “mobile web” and “information ecosystems” are becoming more popular, and for a good reason—they make more sense. This presents an interesting scenario and possibility in light of the findings from Model 5. If an increase in the number of Internet Users is associated with an increase in the frequency of anti-government protests, then can we expect that a dramatic increase in the number of “mobile Internet” users will be associated with an increase in anti-government protests? Does this factor serve as an important explanatory variable for the recent Arab Spring movement?

In any event, the results of this study require some qualifications. First, as discussed in the data section, the protest data may suffer from media bias. Second, the protest data does not provide any information on the actual magnitude of the protests, which may provide more explanatory power than simple frequency (Grzegorz and Kubik 1999). Third, economic data on countries under repressive rule need to be treated with suspicion since some of this data is self-reported or missing. For example, authoritarian regimes are unlikely to report the true magnitude of unemployment in their country. ICT data is also self-reported. Fourth, the data is aggregated to the country-year level, which means potentially important sub-national and sub-annual variations are lost. Fifth, the regression results may be capturing other dynamics that are

not immediately apparent given the limits of quantitative analysis. Sixth, while the data used in this study goes through 2007—an improvement over existing studies in the literature—smart phones and Web 2.0 technologies become significantly more widespread after 2008. Seventh, the large sample size vs. marginal IRR sizes need to be kept in mind when interpreting the effect of statistically significant predictors. Eighth, there is a strong correlation between Internet Use and Mobiles Use as well as Mobiles and GNI. Ninth, the lack of any civil society variables may cause omitted variable bias. And tenth, in the end, the econometric study looks at correlations and *not* causation. To be sure, “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” (Howard 2010, 49).

This being said, the statistical results of the econometric study need to be acknowledged up front. At the very minimum, the findings clearly show that the number of mobile phone users is *not* positively correlated with anti-government protests in authoritarian states. This finding would not have been possible if the regression analysis had not distinguished between Internet Users and Mobile Phone Users. The overall result suggests that ICT alone is insufficient to explain the likelihood of protests. As Howard (2010) has empirically demonstrated, the presence of a thriving and sophisticated online community is a direct causal ingredient for democratic change. In other words, variation in this civil society variable may explain the difference between, (1) the number of mobile phone users being associated with a decrease in anti-government protests; and (2) the number of mobile phone users being associated with an increase in anti-government protests. Technology does get used on its own, human agency and organizational characteristics may prove to have greater explanatory power.

Taken together, the findings from the econometric analysis suggest that, “further research is needed on theorizing the mobile phone’s impact on personal satisfaction and

economic growth, on the one hand, and the impact of Internet and mobile phones on these same factors plus an improvement in civil society” (Shirky 2011c). As Howard argues, “a large-N quantitative approach, with its assumption of well-defined categories and populations and quest for the net effects of independent variables in linear models, is the least appropriate template for this research” (55). Furthermore, protest events themselves may not correlate cleanly with successful citizen demands for more responsive governments. The development of the Digital Activism Framework is a partial response to the conclusion that the selected dependent variable may not adequately capture the real issue of interest (Shirky 2010c).

Qualitative comparative analysis is therefore needed to test and potentially validate the results derived from this quantitative study. Indeed, as noted earlier, the “democracy” and “technology” diffusion variables used in the econometric analysis are aggregates and proxies of other indicators. Unpacking and then tracing the underlying causal connections between ICT use and protests requires qualitative methodologies such as process-tracing and semi-structured interviews. In addition, the “unexpected” findings from the econometric analysis and the supposition that the civil society variable may make the difference between positive vs. negative correlation warrants qualitative case study analysis. In other words, assessing the impact of ICTs on civil society demands in a country with a well wired online civil society vs. a country with limited-to-no active online society may producing some important insights.

The conceptual framework developed in Chapter 2 serves as an ideal framework to inform both the process tracing and interviews. The next chapter will therefore introduce two qualitative case studies to critically assess the impact of ICTs on state-society relations in countries under repressive rule.

Chapter 4: Qualitative Analysis

The purpose of this chapter is to build on the findings from the literature review in Chapter 2 and the econometric analysis from Chapter 3 by applying case-based qualitative analysis to the research question: do “liberation technologies” change the balance of power between repressive regimes and civil society? The comprehensive review of the qualitative literature revealed that previous case study research has largely been superficial and often focused on just one country or a single theoretical link between technology and activism—such as the impact of technology on participation levels. In contrast, the conceptual framework developed in Chapter 2 clearly shows multiple possible causal links between access to information and communication technologies (ICTs) and protests—the latter being a challenge to the balance of power as happened during the recent revolutions in Egypt and Tunisia. Chapter 3 yielded some unexpected results that point to a negative relationship between the number of mobile phone users and ensuing protests. Chapter 4 goes beyond the findings from Chapters 2 and 3, and applies qualitative methods to assess how access to ICTs might change the balance of power between repressive regimes and civil society.

Two country case studies were selected for comparative analysis. Carrying out more than two case studies goes beyond the scope of this dissertation, which uses mix-methods research and thus already includes a complete econometric study. This means that the comparative analysis below is necessarily limited in scope. It is focused specifically on the core research question and specific time frame. In other words, detailed historical analysis will not be included in the qualitative analysis nor will a comprehensive analysis beyond the specified time frame be carried out. In addition, the question as to whether the use of the Ushahidi platform in Egypt had any influence on

Mubarak's subsequent overthrow is squarely outside the formal framework of this dissertation and specific research question.

The first section of this chapter explains the case selection process. Section two introduces the Ushahidi technology. The third section outlines the qualitative analytical framework used for the analysis. Section four articulates the qualitative methodologies used for the case study analysis, which comprise process tracing, descriptive analysis and semi-structured interviews. Sections five and six constitute the actual country case studies themselves.

Note that Chapter 4 does not compare the two case studies explicitly as this is carried out in Chapter 5, which serves as the dissertation's conclusion and analyzes the overall findings from the literature review, quantitative analysis and qualitative analysis to answer the research question. Chapter 5 also includes concrete policy recommendations as well as next steps for further research.

4.1: Case Study Selection

The econometric analysis from Chapter 3 was performed on five different clusters of country-data: high and low mobile phone use, high and low protest levels, and all clusters combined. The result of the quantitative analysis suggests that the number of mobile phone users is a statistically significant predictor of protest events—although that relationship was found to be negative, implying that an increase in the number of users is associated with a decrease in the number of protests. This was true for all clusters (models) except for countries in the “low protest” cluster. Recall that this latter model was not statistically significant and therefore dropped from further analysis. Interestingly, for countries grouped in the “high mobile phones” cluster, the number of Internet users was a significant predictor of protest events—and this relationship was

positive, meaning that an increase in Internet users was consistent with an increase in anti-government protests.

This means that the “low protest” and “high mobile phones” clusters are of most interest vis-à-vis further qualitative case study analysis. In the case of the former, one would expect countries in that cluster to demonstrate no causal links between ICTs and protest events—regardless of polarity. In the latter case, one would expect a robust negative relationship between mobile phone users and protests on the one hand and a positive relationship between Internet users and protests on the other.

Building on the case selection criteria developed at the end of Chapter 2 and the findings from Chapter 3, the final criteria for the selection of the qualitative case studies are thus as follows:

- (1) Both countries with consistent levels of autocracy over period surveyed;
- (2) Both countries with recent parliamentary and/or presidential elections;
- (3) Both countries with recent novel uses of technology in context of digital activism;
- (4) Both countries with large Muslim populations;
- (5) One country has a sophisticated online civil society while the other does not.
- (6) One country with relatively low average levels of protests over the past 10 years.
- (7) One country with relatively high levels of ICT diffusion over the past 10 years, especially in the past 3 years and particularly vis-à-vis mobile phones.
- (8) The two countries selected should be similar in terms of politics, culture, religion and history for controlled comparison purposes.

The first criterion is consistent with the focus of this dissertation being repressive regimes. The purpose of this research is not to assess whether the use of new ICTs is causally related to regime change but simply whether ICTs can change the balance of power in favor of civil society groups. Selecting countries with relatively consistent levels of autocracy provides for the necessary baseline against which to assess the impact of new ICTs—particularly over the past 10 years.

The second criterion was selected based on findings drawn from the literature review in Chapter 2. Elections in non-permissive environments often provide important insights on how the information revolution is impacting state-society relations. They are also flash points for transitions to democracy and hence change in the balance of power between repressive regimes and civil society movements. Ideally, the countries selected will have had two recent elections each so that differences between the two events can be assessed over time in terms of technology and learning on the part of both the authoritarian regime and civil society organizations.

Criterion three is not absolutely necessary but ideal in order to focus the qualitative research on a specific set of ICTs. The purpose of the fourth criterion is to apply this research to policy-relevant countries—particularly given the recent Arab Spring. Moreover, this criterion was the basis for Howard's (2010) seminal book on the impact of technology in the Arab world. Focusing on countries with relatively large Muslim populations for this dissertation research will thus complement the most rigorous research available on the topic. Criterion five is also drawn from Howard's (2010) quantitative findings vis-à-vis the causal impact of an engaged online civil society on democratic change. Criteria six and seven are the results of the large-N quantitative analysis while criterion 8 is consistent with best practices in research design for qualitative analysis.

A total of 38 countries were included in the econometric analysis: Algeria, Armenia, Azerbaijan, Bahrain, Belarus, Burkina Faso, Burma, China, Cote d'Ivoire, Cuba, DRC, Egypt, Gabon, Guinea, India, Iran, Iraq, Jordan, Kazakhstan, Kenya, Malaysia, Morocco, Pakistan, Philippines, Russia, Saudi Arabia, Singapore, Sudan, Syria, Tajikistan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Uzbekistan, Venezuela and Zimbabwe. Of these 38 countries, the following 22 are characterized as having low mobile phone use: Algeria, Armenia, Azerbaijan, Belarus, Burkina Faso, China, Cote d'Ivoire, Congo, Cuba, Egypt, Guinea, India, Iran, Iraq, Kazakhstan, Kenya, Myanmar, Sudan, Syria, Tajikistan, Uzbekistan and Zimbabwe. Of these, 8 have had elections recently: Cote d'Ivoire, Egypt, India, Iran, Iraq, Kenya, Myanmar and the Sudan. Filtering this further by large Muslim population results in the following list: Egypt, India, Iran, Iraq, Kenya and the Sudan.

From this list of 6 countries, India, Iraq and Kenya have not had consistent levels of repression over the past 18 years. This leaves Egypt, Iran and the Sudan. Continuing with the criteria, Iran has both high levels of ICT access and protests, which does not make it an ideal case given the findings from the econometric analysis. Furthermore, since a pair of similar countries is required for this comparative case study, as per criterion seven, the most "natural" pairing would be Egypt and the Sudan. This pairing also makes sense given the civil society variable from criterion five. In addition, Sudan had presidential elections in April 2010 while Egypt had parliamentary elections in November 2010. Lastly, Sudan held its referendum on the future of South Sudan in January 2011 and Egypt is expecting to hold elections later in 2011. So this country selection also has policy relevance given the recent Arab Spring movement.

Both Egypt and the Sudan are also characterized as "Low Protest" levels (mean of 8.89 and 5.1 respectively). These are averages taken over an 18-year period. What about technology diffusion? In addition, countries with large Muslim populations have

some of the highest technology adoption rates in the developing world. For example, the number of Internet users in Muslim countries has on average doubled every 8 months since 2000. If we take the most recent three years of the dataset analyzed in Chapter 2, we see mobile phone use in Egypt doubling between 2005 and 2007. The number of protests fluctuates during this period (first decreasing then increasing again). In the Sudan, mobile phone use quadruples while protests decline between 2005 and 2007. Moreover, both countries have civil society groups that have demonstrated innovative applications of new technology, particularly the Ushahidi technology, which integrates real time mapping with SMS and other social media tools. In sum, Egypt and Sudan are politically comparable in terms of authoritarian rule, culture and history. The two countries therefore present the most ideal pairing for the qualitative analysis.

4.2: Introducing the Ushahidi Platform

The purpose of this section is to introduce the Ushahidi platform both in terms of technology and applications. A more theoretical take on the platform and its potential impact was described in Chapter 1. This section first explains how the technology was developed and what makes the platform's features unique in today's information ecosystem. The section then provides a series of examples that demonstrate how the Ushahidi platform has been used around the world. The concluding section summarizes why Egypt and Sudan were selected as case studies as far as the Ushahidi platform goes.

Kenya held both Presidential and parliamentary elections on December 27, 2007. Three days later, incumbent President Mwai Kibaki was sworn in despite strong vocal protests from opposition leader Raila Odinga who claimed the elections had been rigged. Riots erupted, incited by various local power bases. The death toll from the violence escalated to 800 within a few weeks. Kibaki downplayed the scope of the

violence and placed restrictions on the national media's coverage of the post-election violence. At the same time, international election monitoring organizations refused to share the data they had collected. The full extent of the violence was thus largely unknown.

Against this backdrop, Kenya's most prominent blogger, Ory Okolloh, began blogging extensively to report on the violence. Having a wide readership, she received continuous streams of information from her readers who were documenting numerous human rights violations taking place across the country. Okolloh was soon overwhelmed with the volume of information she was receiving and could not keep blogging fast enough. She later fled to South Africa after having received a number of targeted death threats. Okolloh continued blogging from Johannesburg where she suggested in a blog post that a Google map "mashup" be set up to allow others to document human rights violations directly since she couldn't keep up with the volume of information she was receiving. Fellow Africa and technology bloggers Erik Hersman, David Kobia and Juliana Rotich read the post and decided to act on her suggestion. Thus was born Ushahidi.

The word Ushahidi is Swahili for "witness". The Ushahidi platform is a free and open source mapping software that allows anyone to create a live and rich multi-media map of an event or unfolding situation. Unlike standard Google and Bing Maps, the Ushahidi platform allowed witnesses in Kenya to text in their own reports of human rights violations using SMS. A simple SMS "short code" was set up with the telecommunications company Safaricom. The bloggers shared the map on their blogs to get the word out and thus began to crowdsource the reporting of crisis information from the ground—human rights violations that would otherwise have gone largely undocumented by other sources like the Kenyan government, mainstream media and

election monitoring organizations. In sum, the first Ushahidi map was that of Kenya's post election violence in January 2008.

Ushahidi Inc., the non-profit technology company of the same name, was created several months after the elections to improve the mapping platform and make it free and open-source and thus widely usable. Several subsequent versions of the platform have since been used to create more than ten thousand live maps in over 140 countries. Those engaged in these mapping projects have comprised humanitarian and human rights organizations, media companies, civil society groups, political and environmental activists and distributed volunteer networks.

As noted above the purpose of this chapter is to assess how innovative technology was used as a "liberation technology" in Egypt and the Sudan during their recent Parliamentary and Presidential Elections respectively. Given that the Ushahidi platform was used in both countries and in the context of citizen-based election observation, the comparative analysis will focus specifically on the use and impact of Ushahidi on the balance of power between State and society in both countries. The platform also represents an important convergence of new technologies (Kelly 2010). SMS, Twitter, Facebook, YouTube, Flickr, smart phones apps, voicemail and email can all be combined with Ushahidi. Howard (2010) cautions that, "it would be a mistake to tie any theory of social change to a particular piece of software" (11). During the Iranian post-election protests of 2009, the "insurgency was very much shaped by several digital communication tools, which allowed social movements within the country to organize protests and exchange information and made it possible for those groups to maintain contact with the rest of the world" (Howard 2010, 11). The information technology ecosystem is more important than the individual nodes.

So instead of studying the impact of certain Tweets or YouTube videos in isolation, this chapter focuses on the multi-media content mapped on the Ushahidi

platform, which combines information from Twitter, YouTube, Facebook and Flickr amongst other sources. Focusing on the Ushahidi platform also facilitates the comparative study of concrete use-cases such as election monitoring. Finally, as noted in Chapter 1, democracy scholars like Larry Diamond (2010) have referred to the Ushahidi platform as an example of a liberation and accountability technology. Howard (2010) adds that, “during elections, or in times of military and political crisis, these technologies help citizens make effective electoral decisions, quickly pass information to family and friends, and monitor events” (3). Others, of course, are skeptical (Morozov 2011). What is missing, however, is research to support the claims made by both realists and skeptics in this debate.

The Ushahidi platform was used for independent election observation initiatives in both Egypt and the Sudan. In addition, the platform was used twice in the Sudan, first in April 2010 to independently observe the presidential elections, and again in January 2011 for the Sudanese referendum. In Egypt, the platform was used in November and December 2011 to observe the parliamentary elections. This project was run by a local Egyptian group, which referred to the initiative as *U-shahid* (“you-witness”). Several other Ushahidi platforms have since been deployed in Egypt—one of which was used specifically during the revolution in January and February 2011. In the Sudan, the project to monitor the presidential elections in April 2010 was called Sudan Vote Monitor (SVM). SVM was deployed again in 2011 to monitor the referendum of Southern Sudan. Since then, the Ushahidi platform was used at least once, this time during the demonstrations in Khartoum in January and February 2011.

Using the Ushahidi platform as the technology of choice for this research presents several advantages. First, the research can analyze a specific, deliberate use of a “liberation technology” for the same purpose—citizen based election observation—within a few months of each other in neighboring countries. Second, studying the

impact of the Ushahidi platform in 2010 makes it possible to analyze how both civil society groups and repressive regimes adapted to the technology in 2011. Third, focusing on one innovative technology (that integrates others) will significantly help focus the qualitative analysis and in particular the process-tracing and semi-structured interviews. Fourth, the US State Department closely monitored the use of the Ushahidi platform in Egypt *and* the Sudan, so the countries are of obvious policy relevance, and perhaps even more so following the overthrow of the authoritarian regimes in Tunisia, Egypt and Sudan's partitioning after the recent referendum. Fifth, and finally, a close evaluation of Ushahidi's application in these repressive environments may yield important insights for other groups that have already expressed an interest in using the technology in countries like Burma, Syria, Yemen and Zimbabwe.

Lastly, it should be noted that the Ushahidi platform was not initially designed to spur or facilitate anti-government protests in non-democratic countries like Egypt and the Sudan. As such, the security implications are serious and of major concern. At the same time, mobile phones, Twitter and Facebook were not designed for this purpose either, and they to face important security issues on the technology side.

4.3: Qualitative Analytical Framework

Analytical frameworks are important. They provide a transparent and consistent lens to assess and understand complex dynamics like the impact of an Ushahidi platform on the balance of power between State and society. Rigorous analytical frameworks allow us to move beyond the use of anecdotes and help us to identify both underlying dynamics and over-arching trends. The purpose of this section is to introduce a new analytical framework to assess the impact of ICTs in authoritarian and semi-authoritarian contexts. The framework is subsequently used to inform the survey questions used in the research

conducted for this chapter. As already explained in Chapter 1 and in particular Chapter 2, the framework draws on research by Garrett and builds on the one developed by McAdam, McCarthy and Zald (1996), which, as already articulated earlier, “explains the emergence, development and outcomes of social movements by addressing three interrelated factors: mobilizing structures, opportunity structures and framing processes” (Garrett 2006, 205).

“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, 208). These three factors are not mutually independent and should not be treated as such. “As scholars of social movements have long argued, [for example,] framing—the creation of group understandings regarding the meaning and significance of particular aspects of politics—is often crucial to collective action” (USIP 2011, 12).

“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, 205).

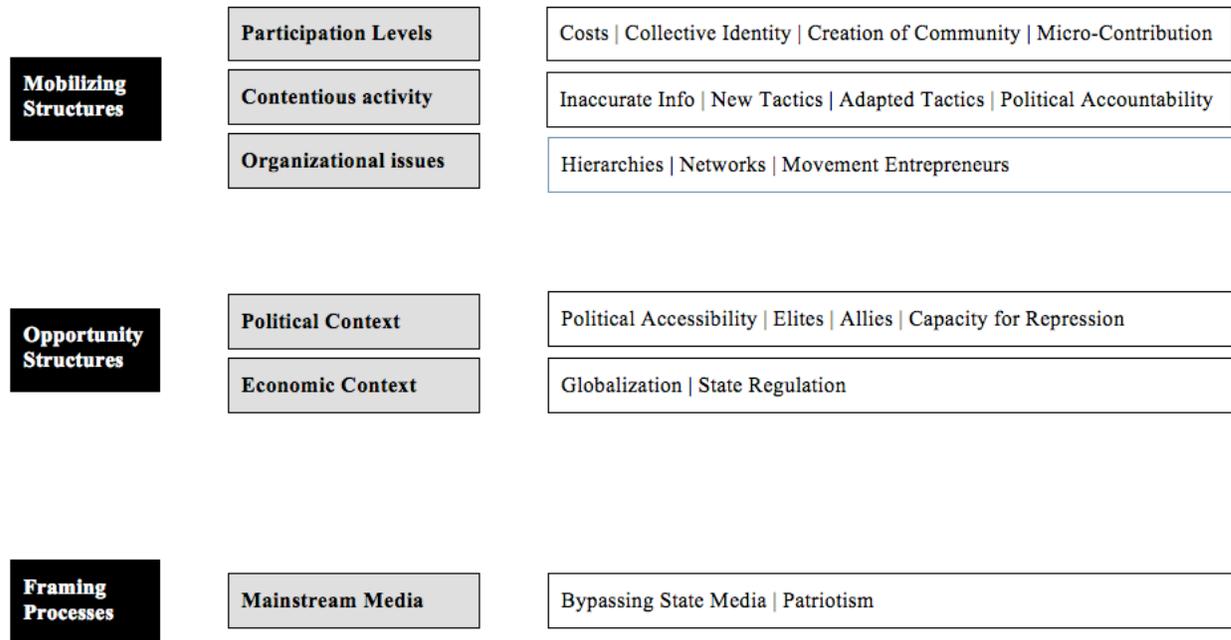


Figure 2: Evaluation framework to assess impact of ICTs on states with repressive regimes.

At the first level, ICTs are thought to influence “Mobilizing Structures,” “Opportunity Structures” and “Framing Processes.” As explained in Chapter 2, these three factors can be further disaggregated to facilitate qualitative and quantitative analysis. For example, “Mobilizing Structures” can be divided into sub-categories susceptible to the impact of ICTs on the balance of power between State and society, e.g., “participation levels” (recruitment), “contentious activity” and “organizational issues.” These categories may still be too general for more targeted analysis, however. Take, for example, participation levels: what is participation a function of? What underlying recruitment 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 to a certain degree interdependent. In any case, taking the analysis to the tactical level of analysis may facilitate case study research and provide very different insights than the very macro-level econometric analysis carried out in Chapter 3.

An “upgraded” version of the McAdam, McCarthy and Zald (1996) framework is summarized in Figure 2 above. This version is based on the comprehensive literature review on the impact of ICTs on dictatorship, activism and democracy—Chapter 2. The revised analytical framework, which is referred to as the Digital Activism Framework in this chapter, provides a transparent roadmap that can be used to trace and assess the impact of ICTs on the balance of power in a given context. The Framework also describes how to aggregate otherwise disaggregated observations (Shirky 2011c).

This framework is used to guide the analysis of the Egypt and Sudan case studies that follow. For example, the survey questions used for the semi-structured interviews with the activists who spearheaded the *U-Shahid* and SudanVoteMonitor projects are directly based on this framework. Note that the survey questions, listed below, were rarely asked verbatim given their overly academic tone. Rather they were used as guidelines to better understand the possible impact of the Ushahidi platform vis-à-vis mobilizing structures, opportunity structures, framing processes in Egypt and Sudan.

Mobilizing Structures

1. Did more individuals participate in your election observation project because of the Ushahidi platform? Why or why not?

2. Did the dynamic between your group and the government becoming more contentious because of your use of the Ushahidi platform? Why or why not?
3. Were you in general better prepared and organized because you used the Ushahidi platform? Why or why not?

Opportunity Structures

4. Did the use of the Ushahidi platform lead to more or less access to the political system in your country? Why/why not?
5. Did the regime's control of information communication increase your opportunity costs in using the Ushahidi platform? Why or why not?

Framing Processes

6. Did the use of Ushahidi allow you to circumvent the regime's control of mainstream media?
7. Did the regime use technology effectively to foment patriotism?

Digital Activism

8. How have resistance groups used ICTs to organize and mobilize in the past, and what if anything was different with the use of Ushahidi?
9. Have ICTs been critical to the success of civil society activities in the past and what if anything was different with the use of Ushahidi?
10. How have state officials used ICTs to control resistance groups in the past and what if anything was different with the use of Ushahidi?

11. Have ICTs been critical to the success of controlling resistance activities in the past and what if anything was different with the use of Ushahidi?
12. Would you characterize the competition between coercive states and social movements as a game of cat-and-mouse? Why or why not? If so, who do you think is winning and why?

Note that a parallel framework was recently developed by the United States Institute of Peace (USIP) in their publication “Blogs and Bullets: New Media in Contentious Politics.” The framework proposes five levels of analysis to better understand the impact of ICTs and dictatorship and democracy: 1) individual transformation; 2) intergroup relations; 3) collective action; 4) regime policies; and 5) external action. These levels already figure in the Digital Activism Framework described above. While this competing 5-level framework is an important step toward improving research design for studies that seek to assess the impact of ICTs on state and society, the framework remains too general and largely untested. It is therefore more prudent to build on a framework already rooted in social movement theory and analysis, and to upgrade that framework so it can be applied to assess the impact of ICTs on state-society relations. Furthermore, the Digital Activism Framework described above is highly applicable regardless of one’s definition of ICTs. This is because the framework seeks to understand the emergence, development and outcome of social movements regardless of whether ICTs are a significant factor. Finally, the framework disaggregates the causal linkages and makes them explicit—unlike USIP’s—which facilitates the subsequent qualitative analysis.

4.4: Qualitative Methodology

Congruence, process-tracing, secondary research, descriptive analysis and semi-structured interviews were used to carry out the comparative case study analysis of the Ushahidi platform in Egypt and the Sudan during both countries' recent elections. In addition, descriptive analysis of some 1,500 reports submitted to the Ushahidi platforms in Egypt and the Sudan was carried out. This combined methodology approach "aims to improve the quality of conceptualization and measurement, analysis of rival explanations, and overall confidence in the central findings of a study" (Lieberman 2005). The advantage of this multi-faceted approach is that it establishes the level of concreteness and differentiation required to measure the variance in the dependent variable (George and Bennett 2003).

The next sub-section outlines how the congruence and process tracing methods were applied to the dissertation's Digital Activism Framework. The second sub-section explains the descriptive analysis approach used on the Ushahidi reports. Sub-section three outlines the methodology used for the structured interviews.

4.4.1. Congruence and process tracing methods

The defining feature of the congruence method is that the investigator "begins with a theory and then attempts to assess its ability to explain or predict the outcome in a particular case. The theory posits a relation between variance in the independent variable and variance the dependent variable; it can be deductive or take the form of an empirical generalization" (George and Bennett 2003, 105). The three theories identified below are formulated based on the congruence method. To test these theories, the theoretical framework developed in Chapter 2 was applied using a combination of three

process-tracing methods: (1) forms of causal processes, (2) analytic explanation, (3) and use of hypotheses and generalizations.

The causal processes technique can be distinguished between the simplest form, linear causality, and the more complex interactive causal form. The former is a straightforward direct chain of events analysis that characterizes simple phenomena. The latter is useful when causal variables are not independent of each other. “Case study methods provide opportunities for inductively identifying complex interaction effects” (George and Bennett 2003, 210).

The analytical explanation technique “converts a historical narrative into an analytical causal explanation couched in explicit theoretical forms” as outlined in the “micro causal chains” and theories below. “Political scientists frustrated with indeterminate macronarratives have increasingly turned to testing more precise causal mechanisms—small steps within a larger analytical narrative that may be more amenable to testing. It may be impossible to determine whether Internet access leads to democracy, but it may be possible to test whether access to the Internet increases individual propensity to take risky political action or lowers the transaction costs for organizing a political protest. This [approach] could also be useful for policy, since research focused on causal mechanisms can better predict the likely effects of manipulating a single variable (such as increasing the freedom of information available to Iranians, or making a concerted effort to change the distribution of opinions within the Iraqi blogosphere). It does carry the risk of missing out on system effects” (Aday *et al.* 2010, 7).

The hypotheses and generalizations technique is the process whereby narratives are accompanied with “explicit causal hypotheses highly specific to the case without, however, employing theoretical variables for this purpose or attempting to extrapolate the case’s explanation into a generalization” (George and Bennett 2003, 211).

These three process-tracing methods applied to the literature review in Chapter 2 yield the following hypothetical causal chains listed below. These causal chains, or “micro” theories, are posited with the “|” marker to signify that the causal relationship is the subject of strong contention in the literature. The direction of the arrows below reflects the theoretical narratives extracted from the literature review in Chapter 2. When the arrows are tallied (using equal weighting), the results point to the following general theory: there may be a positive relationship between the impact of ICTs and anti-government protest events, but this relationship is minimal and easily reversed.

1). Congruence Based Theory 1: The diffusion of ICTs increases participation levels, contentious activity and organizational activity.

Process Tracing Hypotheses of Mobilizing Structures to Test Theory 1:

ICT = costs↓ + identity↑ + community↑ + micro-contribution↑ = Participation Levels↑

ICT = accuracy| + new tactics↑ + adapted tactics↑ + accountability↑ = Contentious Activity↑

ICT = hierarchies↓ + networks↑ + movement entrepreneurs↑ = Organizational Efficiency↑

2). Congruence Based Theory 2: The diffusion of ICTs does not increase political opportunity in repressive states and repression does not significantly increase the economic costs strong regulation and monopoly over the information sector.

Process Tracing Hypotheses of Opportunity Structures to Test Theory 2:

ICT = accessibility↓ + elites↑ + allies↑ + capacity for repression↑ = Political opportunity↓

ICT = globalization↑ + state regulation↑ + state knowhow↑ = Economic costs↓

3). Congruence Based Theory 3: The diffusion of ICTs increases the ability to bypass (and influence) state/mainstream media and increases the framing impact of the messages disseminated but also helps to foment patriotism through national regulation.

Process Tracing Hypotheses of Framing Processes to Test Theory 3:

ICT = bypassing state/mainstream media↑ + framing of message↑ = Mainstream media↑

ICT = government influence↑ + patriotism↑ + = ↓ Mainstream media

The comparative country case study analysis below applies the process tracing hypotheses outlined above on the use of the Ushahidi technology in Egypt and the Sudan around four specific election-related events. According to Laitin (2000), this use of “theoretically oriented narratives and process tracing” has “made a fundamental contribution [...] in finding regularities through juxtaposition of historical cases [...]. If statistical work addresses questions of propensities [to protest], narratives address the questions of process” (Laitin 2000 cited in George and Bennett 2003, 73). An additional advantage of process tracing is that the method “addresses the problem of equifinality

by documenting alternative causal paths to the same outcomes and alternative outcomes for the same causal factor” (George and Bennett 2003, 73). In sum, the congruence and process-tracing method seeks to identify the intervening causal process between an independent variable and the outcome of the depending variable.

4.4.2. Descriptive Analysis of Ushahidi Reports

A total of 1,252 individual reports were submitted to the *U-Shahid* platform during the two rounds of the Egyptian parliamentary elections in November and December 2010. The first round took place on November 5th, while the second on December 5th. Reports that document relevant events on the day prior to the elections and on actual Election Day were included in the descriptive analysis. In other words, reports dated November 4-5th and December 4-5th. In the Sudan, a total of 218 reports were submitted to Sudan Vote Monitor (SVM) during the country’s presidential elections in April 2010. The original election period was scheduled for April 11-13th but was extended through to the 15th due to logistical challenges. SVM reports from April 11th to the 15th were included in the descriptive analysis. To put these figures into perspective, Egypt has a population of 82 million, with about 50 million between the age of 15 and 64. In contrast, Sudan’s population is 45 million, with some 25 million between the age of 15 and 64. In comparison with other Ushahidi deployments for election monitoring, the *U-Shahid* project received the most number of reports.

In both cases, trained members of established non-political civil society organizations in Egypt and the Sudan submitted the reports and also verified reports submitted by the public via crowdsourcing. The reports were subsequently translated from Arabic to English for the purpose of this dissertation research. The professional translator hired for this work was not from either Egypt or the Sudan. This was done to

avoid any political bias in the translation. The descriptive analysis of the Ushahidi reports focused on identifying trends in the reporting and specifically on reports providing greater transparency regarding government actions during Election Day and the day before.

4.4.3. Semi Structured Interviews

The Delphi method was used to carry out the semi-structured interviews with Egyptian and Sudanese activists who used the Ushahidi platform. “In the Delphi method the investigator mines the views of case participants or others who experienced the case for hypotheses. [...] The investigator uses their memories and judgments to infer hypotheses that could not be made from direct observation alone” (Van Evera 1997, 52). Between 10-15 interviewees were initially selected from each of the following two groups:

1. **Members of Egyptian civil society group (DISC)** who used the Ushahidi platform in their elections and supporting individuals:
 - i. Director of DISC and support staff
 - ii. Freedom House strategy consultant for DISC
 - iii. Freedom House program coordinator
 - iv. Egyptian blogger 1
 - v. Egyptian blogger 2
 - vi. Egyptian blogger 3
 - vii. US State Department

2. **Members of Sudanese civil society group (SIRP)** who used the Ushahidi platform in their elections and supporting individuals:

- i. Director of SIRP and support staff
- ii. Representative of local NGO 1
- iii. Representative of local NGO 2
- iv. Independent Sudanese journalist
- v. Core volunteer 1
- vi. Core volunteer 2
- vii. US State Department

A total of 12 semi-structured interviews were conducted between April and May 2011 over Skype. Each interview lasted between one to two hours. Due to security concerns in the Sudan, several interviewees were not reachable. The author was particularly concerned about placing potential interviewees at risk after the violent crackdown in February 2011 and did not have IRB approval for this type of situation. In terms of the case study on Egypt, several Egyptian contacts were not easily reached during the Spring of 2011 given the events that unfolded in the country. An attempt was made to travel to Cairo in order to secure the interviews but again the individuals were difficult to pin down. In addition, carrying out on-site interviews in the Sudan was not going to be possible (due to the author's previous work in Khartoum) and thus doing interviews in Cairo could potentially skew the focus of the dissertation research.

Furthermore, while the number of interviewees may be relatively small, it is important to note that the author was directly, operationally involved in both Ushahidi projects before, during and after the respective elections in Egypt and the Sudan. To this

end, the author had explicit and first hand knowledge of the events and therefore did not need to reach out to a larger number of interviewees for background information. Moreover, recall that the impact of Ushahidi projects on subsequent political events that took place months after the elections goes beyond the scope of this dissertation. This explains why additional interviews were not carried out to address this separate research question. Finally, because the dissertation draws on mixed-methods research, two key dissertation committee members directed the author to keep the case studies concise and focused. Recall that the quantitative analysis carried out for the first half of this dissertation is a novel and important contribution to the literature, which has been lacking more empirical, data-driven analysis.

The interviews were carried out individually and not as part of focus groups. The purpose of this was to cultivate a sense of trust between the investigator and respondent. In addition, no survey forms were circulated. Instead, 12 broad questions were brought up during the conversation and served as the basis for the open discussion. This is the preferred method employed by Academic Dean and Professor Peter Uvin in his fieldwork. A consent form was offered prior to each interview and all the “raw data” for every interview was permanently deleted after the research. In addition, the respondent was given the option of requesting anonymity, which was fully respected. A non-disclosure form was thus exchanged with the consent form to reassure each party. Finally, the research received IRB exemption from Tufts University.

4.5: Egypt Case Study

To say that the political situation in Egypt has changed in 2011 would be a drastic understatement. Summarizing the far-reaching role that technology played during this time period goes beyond the scope of this chapter and indeed dissertation. This section

seeks instead to better understand the role and possible impact that the Ushahidi platform had on the balance of power between State and society during the 2010 elections in Egypt and the Sudan.

The first part of this section introduces the context and country background. Next, the use of the Ushahidi platform is described. The section then analyzes the content of the 1,500 or so reports mapped on the Ushahidi platform during the elections. Findings from the semi-structured interviews are then discussed to complement the descriptive analysis.

4.5.1. The Egyptian Political Context

Until recently, Egyptians had only been able to approve or reject a presidential candidate appointed by the parliament, which was dominated by Hosni Mubarak's National Democratic Party (NDP).⁶ This may explain why the turnout in the 1999 referendum was around 10% with only 40% of the total population registered to vote. Mubarak was re-elected four times during his 24-year rule thanks to this system. Not surprisingly, the media landscape in Egypt was completely controlled by the establishment during this time.

A constitutional amendment approved in a 2005 referendum paved the way for multi-party presidential elections. Under the new election law, parties that garner 5% of the votes in the parliamentary election could propose candidates for the election, which would be reviewed by the Presidential Election Commission. Amidst these machinations and speculations, something else was beginning to shift in the background: the youth in

⁶ An earlier version of some of the following five paragraphs was co-authored with Anahi Ayala Iaccuci for one section of a conference paper presented at Stanford University in October 2010.

Egypt were becoming more and more interested in having a voice and wanted an active part in the political discourse going on in their country.

The Ministry of Interior in Egypt was well aware of these changes in the political activism landscape and in particular the increasing use of social networks. This explains why the Ministry took steps to level the social media battlefield by adopting a strategy more similar to that of digital activists. On July 1, 2010, for example, the Ministry reportedly established a special department to monitor Facebook activities and content in Egypt. The main task of this department was to monitor Facebook content like groups, pages and chat and to publish reports countering online criticism of President Hosni Mubarak or his son Gamal. In addition, the NDP recruited groups of young people to actively create Facebook pages and groups to support the President, his son and the party.

4.5.2. Enter the Ushahidi Platform

Such was the political and social media context in which the Development and Institutionalization Support Center, or “DISC”, a Cairo-based Egyptian group, used the Ushahidi platform to launch their project called *U-Shahid*. The head of DISC, Kamal Nabil, had first come across Ushahidi during a training in Washington DC organized by Freedom House in early 2010. A member of the Ushahidi team had also been invited to this workshop by Sherif Mansour from Freedom House to demo the platform.

The goal of the *U-Shahid* project was to monitor the parliamentary elections in November and December 2010. This independent initiative became particularly important when the Mubarak regime announced that it would not permit any official international election monitoring groups into the country. But despite the pessimism and despair about the political situation in Egypt, “the undercurrent of digital activism

was tangible” according to an activist who joined DISC for the *U-Shahid* project. Blogs and Facebook groups filled the vacuum created by the lack of a real political debate in Egypt, and were increasingly emerging as an alternative political scene where a discourse on democracy and human rights was still possible. This is the context in which the *U-Shahid* project emerged.

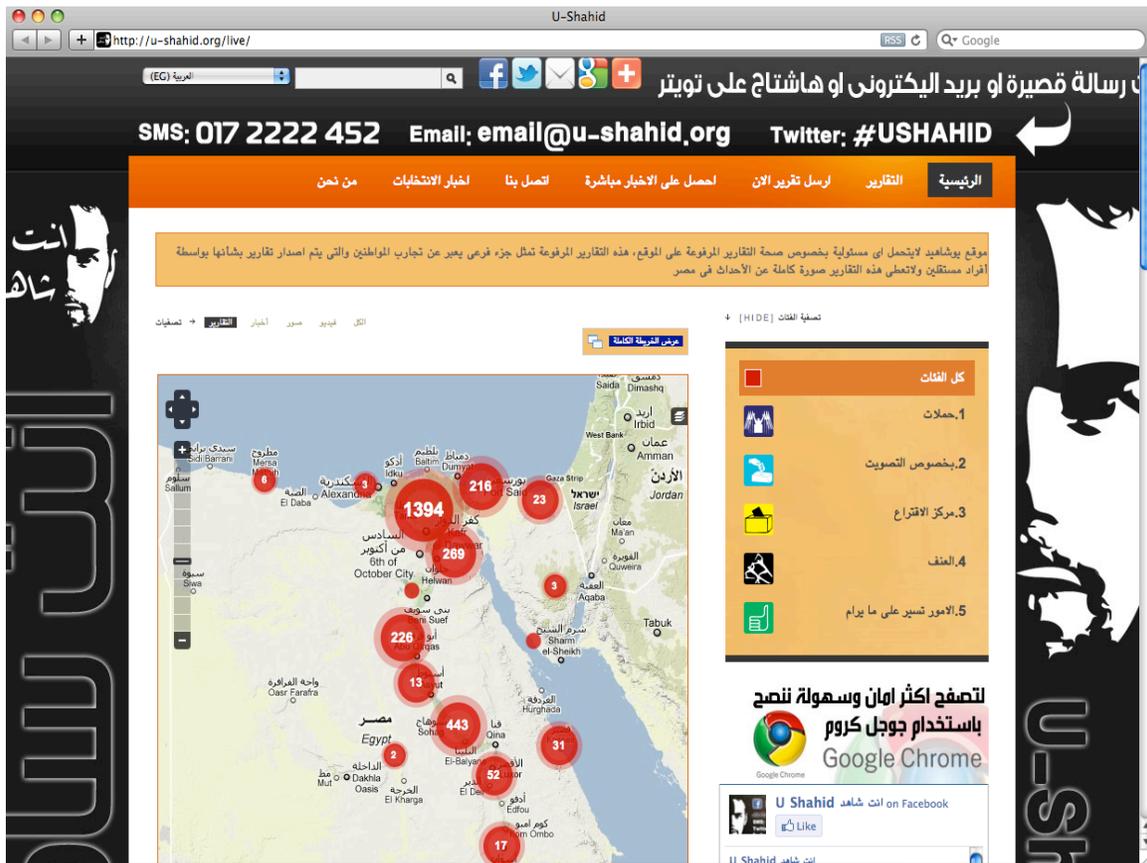


Figure 7: Screenshot of the U-Shahid platform after the elections

The project was rather simple on paper: use the Ushahidi platform to monitor the elections by allowing people to send SMS, Tweets, Facebook comments, voice mail, e-mail and reports via web-form to the live map. DISC decided to draw on both

crowdsourced reporting and “blogger-sourced” information. This meant getting the word out to the wider public while navigating the restrictions imposed by Egyptian national security, and also training a large network of 130 trusted bloggers across the country. Despite government restrictions, training for these bloggers took place in 5 major cities: Cairo, Alexandria, Assyut, Mansoura and Port Said.

On the technology side, DISC translated their Ushahidi platform entirely into Arabic since the *U-Shahid* project was not meant for an international audience but rather an Egyptian one: “an Egyptian project for Egyptians” noted one blogger. Egyptian software developers integrated Twitter, Flickr and YouTube with Ushahidi. Since Facebook was and continues to be an important platform for Egyptian youths, the group also created a Facebook feature that enable comments on a Facebook wall to be easily mapped on the Ushahidi platform.

DISC formulated clear goals for their *U-Shahid* project. The first was to help Egyptian citizens and international observers learn more about the electoral process. Second, the project aimed to highlight and seek redress when electoral laws were violated. Third, DISC sought to raise awareness about citizen rights and the importance of participation in the electoral process. Fourth, the initiative was meant to provide Egyptian citizens with accurate information on the elections and document election-related violations. Finally, DISC wanted to use the *U-Shahid* project to empower local partners to advocate for closer adherence to electoral laws and fair practices during both the campaign and election period.

How did the team do? During the elections, DISC mapped 2,700 reports, which included 211 supporting pictures and 323 videos. The team of Egyptian bloggers was also able to verify more than 90% of the content that ended up on the map by using basic journalist techniques such as triangulation and follow-up. Most of the mapped reports, however, came from the pre-established network of trusted bloggers, which did not

require immediate verification. In total, the web-based map received close to 60,000 hits, the vast majority of which came from within Egypt. Interestingly, the next highest number originated from Saudi Arabia with just under 5,000 hits. The group was also pro-active in disseminating this information, printing press releases and combining both new and traditional media for maximum impact. Their efforts were featured on Egyptian television, on BBC Arabic and dozens of articles in ten different languages. Indeed, both local and global media used the data generated by *U-Shahid* as part of their election coverage.

Naturally, the project also got the attention of the Egyptian government. Surprisingly, however, this attention began even before the project formally launched. The Egyptian state contacted DISC's director Kamal Nabil when the program design was still being developed. The government official told Nabil that his name was recurring "too often" in phone conversations between activists. The Egyptian Ministry of Interior subsequently shadowed the project in different ways: by tapping the cell phones of bloggers who comprised the core team; by requesting copies of the agendas for all meetings related to *U-Shahid*; and by requiring that a list of all individuals trained on the use of the platform be submitted to them. E-mail addresses, Facebook pages and Twitter accounts of the core team were reportedly all under surveillance since the start of the project, and the Ministry of Interior openly asked Nabil what his reaction would be if they were to shut down the *U-Shahid* project before the elections.

DISC was not immune to this government strategy: several new Facebook groups were launched to engage in personal attacks against the core team by accusing them of being affiliated with the United States, under the pretext that they had participated in a Freedom House-organized conference in DC earlier that year. Some of those Facebook groups called on young Egyptians to "watch out" for projects that could endanger the national integrity and the political independence of the country. Activists

reacted to these attacks by conducting a virtual battle. Once a government-supported group was identified, dozens of activists would write on the group's wall and basically occupying the entire wall with counter opinions. One of these Facebook groups was completely overrun after the group's name was changed from "Youth for Funds" (sarcastic), to "State Security for Intimidation."

DISC was well aware that technology alone would not change the political situation in Egypt. They also knew that Egypt's National Security could shut down the project and block access to the website whenever they wanted. Furthermore, everyone involved in the project knew full well that their involvement in *U-Shahid* could get them arrested. As recent events have clearly shown, countries like Egypt and the Sudan are particularly agile in surveilling digital activists during election periods. But this did not discourage the Egyptian activists. The ability to do something different, to have an alternative was enough to *be* the difference. At the end of an *U-Shahid* training workshop in Cairo, one participant spoke with the lead trainer and simply said: "You know? We may all end up in jail, but before this I thought there was no hope to change anything. Now I can even dare to think it is worth a try."

The impact of the *U-Shahid* project on the political space in Egypt is difficult to assess. According to the lead trainer of the project, some 1,500+ election complaints were officially submitted to the judicial courts. However, it is unclear whether any of these came from or were influenced by the content mapped on the Ushahidi platform. Even overlap between *U-Shahid*'s 2,700 reports and the court's 1,500 would highlight the value of the project since the latter's data could be used to triangulate or bolster separate evidence submitted to the courts. Alas, accessing the complaints received by the court has not been possible. To this end, a basic descriptive analysis of the reports submitted to the Ushahidi platform during the parliamentary elections and civil resistance was carried out instead to assess the project's potential impact.

4.5.3. Descriptive Analysis of U-Shahid Reports

In total, 2,700 reports were manually translated from Arabic to English for this research although about 1,500 cover the actual election days. The analysis focused primarily on reports that shed the most transparency during the elections. To this end, the analysis sought to pick up any trends or recurring patterns in the Ushahidi reports. These trends are then assessed using the Digital Activism Framework describe above.

The topics most frequently addressed in reports submitted to the Ushahidi platform included bribes for buying off votes, police closing off roads leading to polling centers, the destruction and falsification of election ballots, evidence of violence in specific locations, the closing of polling centers before the official time and blocking local election observers from entering polling centers. What is perhaps most striking about the reports, however, are how specific they are and not only in terms of location, e.g., polling center.

For example, reports that document the buying of votes often include the amount paid for the vote [influencing Mobilizing Structures]. This figure varied from 20 Egyptian Pounds (about \$3) to 300 Egyptian Pounds (around \$50). As to be expected, perhaps, the price increased through the election period, with one report citing that the bribe price at one location had gone from 40 Pounds to 100 over night. Another report submitted on December 5, 2010 was even more specific: "Buying out votes in Al Manshiaya Province as following: 7:30[am] price of voter was 100 pound [...]. At 12[pm] the price of voter was 250 pound, at 3 pm the price was 200 pound, at 5 pm the price was 300 pound for half an hour, and at 6 pm the price was 30 pound." Another report revealed "bribe-fixing" by noting that votes ranged from 100-150 Pounds as a result of a "coalition between delegates to reduce the price in Ghirbal, Alexandria." Other reports documented non-financial bribes, including mobile phones, food, gas and even "sex stimulators", "Viagra" and "Tramadol tablets".

Additional incidents mapped on the Ushahidi platform included reports of deliberate power cuts to prevent people from voting [reducing Opportunity Structures]. As a result, one voter complained in “Al Saaida Zaniab election center: we could not find my name in voters lists, despite I voted in the same committee. Nobody helped to find my name on list because the electricity cut out.” In general, voters also complained about the lack of phosphoric ink for voting and the fact that they were not asked for their IDs to vote. Reports also documented harassment and violence by thugs, often against Muslim Brotherhood candidates, the use of Quran verses in election speeches and the use of mini buses at polling centers to bus in people from the National Party. For example, one reported noted that “Oil Minister Samih Fahmi who is National nominee for Al Nassr City for Peoples Council uses his power to mobilize employees to vote for him. The employees used the companies buses carrying the nominee' pictures to go to the election centers.” Several hundred reports included pictures and videos, some clearly documenting obvious election fraud. In contrast, however, there were also several reports that documented calm, “everything is ok” around certain voting centers.

The evidence documented by the *U-Shahid* team has the potential to create greater political accountability [Mobilizing Structure] by shining more light on the process of election fraud. It is doubtful, however, that the *U-Shahid* project deterred fraud. Indeed, the project was simply not operating at a scale of visibility necessary to influence behavior change. Documenting 2,700 instances of election irregularities is impressive given the many challenges of operating in a repressive environment and the fact that this was the first use of the Ushahidi platform in Egypt. But even 27,000 reports are unlikely to have any significant impact on deterring election fraud. Perhaps 270,000 reports documenting all facets of the election—pre, during and post—with ten of thousands of original videos and photographic evidence might deter a would-be fraudster. Also, while the 2,700 reports mapped on *U-Shahid* came from more than 100

individuals, this too is insufficient traction to have a large scale and long-term impact. If 100,000 people or more had participated in sending in reports, then perhaps this would be the scale at which the *U-Shahid* project could have had more meaningful impact.

4.5.4. Semi-Structured Interviews

To complement the findings from the descriptive analysis above, semi-structured interviews were carried out with key members of the *U-Shahid* project team. The Digital Activism Framework developed in Section Four informed the interview questions and were used to assess the potential impact of the Ushahidi platform during the elections. As noted above (see Figure 2), this framework comprises three pillars for impact assessment: “Mobilizing Structures,” “Opportunity Structures” and “Framing Processes.” The remaining part of this section summarizes the main findings drawn from the interviews that were carried out between April and May of 2011.

According to members of the *U-Shahid* project, the use of Ushahidi increased civic participation in election observation [Mobilizing Structure], primarily because the web-based nature of the platform allowed for ideas to be more easily expressed online. The Ushahidi platform provided an easy and public way for every day Egyptians to be included by sharing what they were witnessing, e.g., fraud, violence, etc. One of the key members of the project recounted that, “election monitoring had long become useless [...]. It was exciting in the beginning as a way of challenging the system, being part of the public sphere, but the government was eventually able to contain this.” In contrast, “with Ushahidi, we had that breakthrough [...], using Ushahidi made full government control impossible for the government [...]. They did monitor our actions, but they didn’t have full control.” This realization is likely to have increased civic participation.

In addition, one activist noted that the technology allowed more people to “make small, low risk contributions, like sending SMS or an email.”

The lead trainer for the project explained that in the past, “NGOs had been more visibly involved in election monitoring, which made it more dangerous and observers had to be accredited by formal organizations. But with Ushahidi, anyone could report, even if they had never been observers before. They didn’t have to register.” This increase in civic participation around the elections also came at a time when people were more ready than ever before, according to one activist. In addition, the trainings on how to use the technology often focused less on the technology itself and more on political conversations. “We generated a lot of conversations in the training, about the politics, possible government crackdown, and so on. People understood the risks, but what was the alternative? To sit down and do nothing, but people were fed up and sick of [the regime], so more people got involved. In fact, we had quite a representation during the training, ranging from mothers to young students.”

One interviewee added that, “using this mapping technology provided a way to collect and recruit a lot of activists, and not just any activists, but more effective ones. This actually created a headache for the regime because a growing number of digital activists became interested in using the Ushahidi platform.” Another activist noted that the technology acted as a “magnet” for activists. When asked why the regime had not shut down the platform given this perceived threat, one blogger explained that “many of the activists who began using Ushahidi had many followers on Facebook and Twitter, they also had the attention of the international media, which could create unwanted attention on the regime’s actions.” This same blogger added that many of the activists who collaborated on the *U-Shahid* project were “connected with people in the US Congress, directors of international human rights NGOs, and so on.” This observation directly supports Howard’s (2010) claim that “ICTs have the additional role of keeping

dissidents in touch with the international community—foreign journalists, sympathetic members of Diaspora communities, and international civil society groups. Such linkages are much easier to maintain using networked, digital, communication technologies, and such linkages are especially important in times of political or military crisis and during democratic transitions” (81).

There was also a sense, according to some participating bloggers, that doing anything more than resorting to online tools would lead to physical harm. Interestingly, interviewees also noted that the old regime was afraid of technology, which meant that the relationship between the state and DISC did not necessarily become more contentious over time [Mobilizing Structure]. As one key person at DISC noted, “They [the government] didn’t quite understand the technology and were afraid of the Ushahidi platform.” Another activist added that “the government was nervous, they didn’t feel in control. And the government is usually behind anyways, they’re not in the driver’s seat [when it comes to technology].” Another reason why the relationship did not become more contentious is because DISC remained fully transparent about the project. “We stressed the technical aspect of the project, and remained fully open and transparent about our work. We gave Egyptian National Security a dedicated username and password [to access the Ushahidi platform], one that we could control and monitor [their actions]. This gave them a false sense of control, we could restore anything they deleted.”

One important question from the evaluation framework outlined in Section Four is the potential impact of technology on organization and preparedness within civil society groups [Mobilizing Structure]. Most interviews found this question unclear, however. In general, though, they did opine that using the Ushahidi platform “gave them a reason” to carefully organize and launch the *U-Shahid* project. They also noted that using this technology meant that they had to think about and design appropriate

work flows for managing and verifying information. “This led us to think in a new way, in a different way to collect the data and how to write effective reports based on this data, and then how to most effectively communicate this via Twitter and other tools,” reported one activist.

In terms of organizational issues the team was able to leverage existing networks of activists and remain flexible. As noted in one interview, the Egyptian state’s hierarchical organization made it less effective in responding quickly to a changing situation while activists could do so in almost real time since the lines of command were far more diffuse than the government’s. One activist remarked that “they [the government] don’t understand how we work; we can learn very fast but the government has many rules and processes, they have to write up reports, submit them for approval, and allocate funding to acquire technology. But for us, we don’t need permission. If we want to use Tor, we simply use Tor.”

Another activist explained that “the government had two mechanisms at it’s disposal to get in our way: intimidation and bribes. But to influence these two mechanisms, you have to access the leadership, and with technology, this connection is a lot harder to make; it becomes more about distributed leadership [rather than hierarchical]. The government couldn’t just target one person [i.e., the director of DISC] to shut down the project—they had to target 100. This gave a sense of empowerment to the people.” The lead trainer of the *U-Shahid* project also added that an entire section of the training was focused on education, namely educating participants on Egyptian electoral laws, regulations, human rights, etc. So while the technology brought people together for training, there was a lot more to the training than data entry and information processing.

When asked whether the Ushahidi platform lead to more or less access to the political system in Egypt [Opportunity Structure], all interviewees answered more

access. One activist explained that members of the *U-Shahid* project “were some of the most interviewed people on TV, [which] gave us access to the government and the public [their attention]; we also had a lot more access to more [political] candidates who wanted to have their representatives trained on the Ushahidi platform [...], and were also invited to train journalists [...]. We also got access to other international organizations who promoted our initiative.” Another activist argued that the use of the Ushahidi platform “created more transparency around the elections, allowing easier access than in any previous election.” More specifically, “in previous elections and before the existence of Ushahidi, many NGOs made reports of election irregularities, but these were rarely shared publicly with policy maker or even with other NGOs. And even after the elections had taken place, it was very difficult to access these reports. But the Ushahidi [platform] is open and online, allowing anyone to access any of the information mapped in near real-time.”

When prompted on whether any of the 2,700 reports submitted to the Ushahidi platform had made their way to the judicial courts, activists replied that it was difficult to know for sure but one activist noted that “next time we use the Ushahidi platform, this year for the presidential elections, we will be sure to track the reports submitted to the judicial courts and compare them with those we collect. We also plan to better advertise our project with lawyers and political candidates so that they can use our reports including videos and photos in court and for trials.”

While activists may have felt safer organizing online than in person, they did face some “opportunity costs” in using the Ushahidi platform [Opportunity Structure]. “We were afraid that the government would be filtering reports coming to us and that they would track the reports back to the people who sent them,” one activist noted. Another one added that this fear might have dissuaded more hesitant people from submitting evidence. The lead trainer said “yes, definitely, we faced some serious

constraints. For example, very few people sent in reports via SMS, at most 1% of the reports we received. One reason for this was that everyone knew that the government could track and control SMS.”

In terms of circumventing mainstream media [Framing Processes], activists noted that the use of the Ushahidi platform did indeed allow them to get around the state’s control of mainstream media. “People trust citizen journalism and don’t trust official newspapers or state television,” said one activist. Another noted that their project’s credibility came from the realization by many that they were simply focused on “getting the facts out without agenda. We were both transparent and moderate, with not political or party affiliation, and we emphasized that our goal was to try and make the election process transparent.” In sum, said another activist, “we let people decide for themselves whether the content mapped on Ushahidi was good or not.”

In addition, the “timely compilation of reports made a huge difference [on framing]. In the past, covering elections would mean the media giving quick superficial updates, or established organizations giving a comprehensive bigger picture, but only much later. With Ushahidi, you have a little of both, the big picture and immediately. This allowed for a more immediate impact on the electoral campaign. For the first time in parliamentary elections, the opposition withdrew—they were pressured by overwhelming evidence of fraud and were scared to be delegitimized by continuing to participate in the elections. So they pulled out between the first and second round since a comprehensive picture [of elector irregularities] was available on just the second day. Of course, this big picture was possible not just because of Ushahidi but also because of other observers and the media coverage.” As the lead trainer for the project noted, “we had never seen so many videos on YouTube about the elections. It was simply the right time [to do a project like *U-Shahid*]. Past elections never got as much media attention in the social media space and mainstream media. The Ushahidi platform definitely helped

contribute to this significant increase [in user-generated content around the elections].” Clearly, both local and international media drew on the reports generated by the project in their coverage of the elections, including accusations of election fraud.

On a related note, the *U-Shahid* project was able to “cover a lot more information than the traditional media; while they had their own coverage, we provided more timely information, which is very important for the media. We gave them evidence: pictures, videos and statistics. The media doesn’t have access to all this kind of information [by themselves], so the reports on the Ushahidi platform were a treasure for them. Even if the government was trying to pressure the media, the information was too valuable for them not to show it.” So in a way, the information displayed on the Ushahidi platform not only circumvented some of the state media, but it co-opted some national media outlets.

Finally, the launch of *U-Shahid* spun-off some “copycats” as four additional Ushahidi platforms sprung up shortly before the elections. One was launched by the Muslim Brotherhood to document harassment of their candidates, for example. This “proliferation” of Ushahidi platforms may also have had an impact on framing a different discourse during the election period. This is not a new phenomenon per se. The Egyptian government cracked down on media produced by the Muslim Brotherhood and other opposition parties in 2004. But these reappeared on the web and facilitated the coordination of candidates who were running for office. In any case, the copycat spin-offs of *U-Shahid* served to recruit more observers and generate more reports. And so, “By deeply integrating digital tools such as mobile phones and the Internet into their systems of political communication, parties [such as the Muslim Brotherhood] are able to reach and activate much larger numbers of people. In this way, the Internet is actively used to challenge the basic relations of power, because political parties use it to amass publics that were not previously reachable” (Howard 2010, 100).

As for whether the regime was effective in using technology to foment patriotism [Framing Process], all interviewees stated that the regime was not particularly adept at this. “If they had been, they would have stopped the revolution,” one blogger noted. That said, one activist remarked that the government did try, “they had an army of bloggers who would go to activist websites, to lobby them and to report them so they would have their Facebook pages suspended. They also tried to do that with some websites; but we had secure system, there were attempts by the government to overload our website with many fake reports [...] but we were on it and we were able to delete them. This happened a minute or two every three hours or so, attacks, overload, but eventually they gave up.”

In terms of broader digital activism trends based on questions drawn from the Digital Activism Framework, activists do believe that the Ushahidi technology is notably different from previous ICTs that activists have used to organize and mobilize in the past. One activist recalled that an election monitoring NGO had used a map to monitor previous elections but the resulting website had a page rank of 6 million even though they had paid staff thousands of dollars to create the web-based map. “The map was not easy to use or to browse,” the activist said. “The people behind the map were professionals at election monitoring, but they were not professionals in technology.” In contrast, the Ushahidi map for the *U-Shahid* project “had a 40,000 ranking worldwide. Plus it was open source and reached tens of thousands of people.”

On the question of the cat-and-mouse dynamic, one activist made the following comment. “We did a lot of scenario building, considered many ‘what if’ situations. The fact that we were so well prepared is why they [the regime] could not touch us. We tried to connect all the data on Facebook and Twitter so that if they closed our Ushahidi map, we would move to a new domain name and let all our followers know. We also had a large database of SMS numbers, which would allow us to text our followers with

information on the new website. Finally, we had a fully trained team in Lebanon ready to take over the project if we were completely shut down.” Another blogger noted that “because we were well prepared, we knew they could not arrest all of us on the day of the election, and just in case, we trained a group in Lebanon who could take over all operations if we were stopped.” The team also set up a phone tree in case of arrest and made multiple copies of the platform.

One key activist had the following to say about the cat-and-mouse dynamic: “Technology by nature is a very neutral tool. But the most important thing is information. This is the most valuable commodity. Information is the key that drives political discourse, media debates, so information wants to be found [...] so that’s why information is not neutral, and why it spreads. Those who want to suppress it will have a harder time. So people in favor of spreading information are going to win.” The lead trainer of the project opined that regardless of technology, numbers still matter, and there will always be more citizens than politicians. So I believe in the power of numbers and organization.”

In closing, one of the interviewees added that since the revolution they have been working with activists in Tunisia, Syria, Iraq, Jordan and Yemen to provide them with training, both technical and activism-based training. For example, DISC recently carried out training for activists in Tunis on how to best use the Ushahidi platform for election monitoring.

4.6: Sudan Case Study

The political climate in the Sudan remains particularly repressive, even after the so-called Arab Spring. Unlike neighboring Egypt, Sudanese activists were unable to remove President Bashir let alone force political concessions. On the contrary, numerous

activists in Khartoum were arrested and tortured, sending others into hiding, with some fleeing temporarily to neighboring countries like Kenya and Ethiopia. The resistance movement was not carefully planned and the activists were not nearly as technology-savvy as their colleagues in Egypt. As a result, carrying out the semi-structured interviews for this research has proved particularly difficult given the security concerns.

The first part of this section introduces the context and country background. Next, the use of the Ushahidi platform is described. The section then analyzes the content of the 200+ reports mapped on the Ushahidi platform during the elections. Findings from the semi-structured interviews based the Digital Activism Framework described above are then discussed to complement the descriptive analysis.

4.6.1. The Political Context in the Sudan

President Bashir came to power in 1989 thanks to a military coup. His National Congress Party (NCP) promoted an Islamist revolution that centralized both security and business interests. Twenty-one years later, Sudan held its first multi-party general elections. The country's major opposition parties boycotted the elections in April 2010, citing extensive irregularities in voter registration and insecurity—particularly in Darfur. According to the International Crisis Group (2010), Bashir's NCP began rigging the elections well before 2010.

The NCP manipulated “the census results and voter registration, drafted the election laws in its favor, gerrymandered electoral districts, co-opted traditional leaders and bought tribal loyalties.” The census, which was influenced by NCP party organizers, reportedly issued newcomers from Chad and Niger with identity papers so they could vote as Sudanese citizens, for examples. “However, most of the estimated 2.6 million internally displaced (IDPs) living in camps, as well as groups hostile to the NCP

living in 'insecure' neighborhoods of cities and the population of rebel-controlled areas were not counted" (ICG 2010, 1). The NCP focused particularly on Darfur because this area has almost 20% of the Sudanese population and the government had both the "freedom and means to carry out its strategy, since that is the only region still under emergency rule" (ICG 2010, 1). The results of the elections were announced on April 26th and President Omar al-Bashir was confirmed as the winner by having received 68.24% of the votes.

4.6.2. Enter the Ushahidi Platform

Sudan Vote Monitor was the first Ushahidi deployment in a country under authoritarian rule. The pilot project was led by the Sudan Institute for Research and Policy (SIRP) and Asmaa Society for Development, in collaboration with other Sudanese civil society organizations, with technical support from eMoksha, an Indian technology group. The purpose of deployment was to utilize the Ushahidi platform to support the independent monitoring and reporting of Sudan's first multi-party elections in 24 years. The initiative complimented the paper-based independent monitoring efforts of formal election monitoring groups and offered Sudanese NGOs and the public at large an independent, online platform for election observation for the first time in Sudan's history.

The Ushahidi platform was considered particularly useful in Sudan, Africa's largest country, where long distances and inadequate infrastructure posed a significant challenge to civil society election monitors. The spread of mobile communications throughout the country in recent years offered a unique and feasible opportunity to utilize SMS to overcome this challenge. Participating civil society groups deployed over 2,000 independent local observers throughout the 15 northern states. According to SIRP, "these observers continuously reported back what they witnessed at various polling

stations across these states, using standard paper reporting forms. When texting, they used code, e.g., 1 = election fraud, 2 = voter intimidation, etc. This was done to provide more cover to the citizen monitors.” It is unclear how many text messages were received, however.



Figure 8: Screenshot of the Sudan Vote Monitor platform after the elections

The site went live on April 10, 2010 with web and SMS reporting in both English and Arabic to coincide with the start of the elections held April 11-15, 2010. Response was

relatively strong both inside and outside the country given that this was the first project of its kind in the Sudan. According to SIRP, “a total of 564 reports were received from the web (or translated from paper-based forms) from 419 locations, covering 26 election-monitoring categories. The web-based platform attracted wide interest from citizens, a variety of international organizations active in Sudan, as well as the local National Telecommunication Commission.” However, Sudanese civil society groups that participated were only able to map 217 of the reports due to limited capacity. Also, the Sudan Vote Monitor website was blocked by the Sudanese government for two days before it was unblocked following US government pressure.

Interestingly, the Sudanese government was not the only actor interfering with the Sudan Vote Monitor project. One of the leading American election monitoring organizations attempted to subvert the local Sudanese citizen-monitoring project by actively discouraging other Sudanese civil society groups from contributing their reports to Sudan Vote Monitor. In other words, not only did SIRP and their local networks have to confront the usual repression from the state apparatus, but they also had to deal with external interference as well. While the reason for this interference isn’t clear, some suspect that the American organization in question was concerned that SIRP’s citizen-based election monitoring efforts were going to “dilute” their professional election monitoring campaign. According to SIRP, “the most important point here is that Sudan Vote Monitor was never intended to replace or compete with other domestic programs, but rather complement and offer them and the public at large a new online platform for the first time in Sudan's history” (Ushahidi 2010). Still, this interference may in part explain why the number of reports submitted was so low in comparison to *U-Shahid*.

It is worth mentioning that two other Sudanese civil society organizations conducted paper-based election observation during this time. Their work was similar to Vote Monitor’s primary partner the Asmaa Society and their TAMAM network that

received thousands of paper-based reports from their observers. As noted above, due to logistical and financial limitations, not all observers were equipped and able to submit their paper observations to the Ushahidi platform.

4.6.3. Descriptive Analysis of SVM Reports

In total, 217 reports were manually translated from Arabic to English for this case study analysis, which focused primarily on reports that shed the most transparency during the elections. To this end, the analysis sought to pick up any trends or recurring patterns in the Ushahidi reports. The topics most frequently addressed in the reports that were mapped included people voting without IDs, lack of voter registration lists, polling centers opening very late or closing very early (or both), observers denied access to polling centers, ballot boxes missing and different versions of ballots—some without the names of opposition candidates—were reported.

Unlike the reports from the *U-Shahid* project in Egypt reports were shorter, more repetitive and not as detailed. There were also considerably fewer. The examples of election irregularities mapped on SVM were not as extreme as those on the U-Shahid map as well. Perhaps this is because the NCP had already guaranteed an election victory by manipulating the census and securing the votes from the three Darfur states. This means that tagging reports as examples of “Mobilizing Structures,” “Opportunity Structures” and “Framing Processes” is more challenging. In any case, below are several examples of the types of reports mapping on SVM.

One report from Sudan Vote Monitor noted the following: “Mr. Abu Bakr Mohamed Hassan Al Imam candidate of DUP District 30 reported that his party agents in Rayan center in Jabra at 8:40 am witnessed a box being pulled by people on both sides of the fence of the center. When the party agent asked they told him there are 6 more

boxes that have been lifted over the fence, and they also said there are 2 plastic ballot boxes that have been smuggled outside the center but they couldn't catch the car which carried them and they don't have its details. This story was confirmed by 5 other candidates. All the candidates decided to withdraw from the election and so the number of candidates withdrawing since yesterday comes to 12." While this is an example of citizen-based election observation providing greater political transparency, it is important to note that transparency does not equal political accountability—an example of a "Mobilizing Structure."

Another report notes that "Chamber of Alshajara, center # 3, Yasser School, at the end of the day the ballot box was closed with 350 ballots inside, observers were informed the morning after that the ballot box contains 362 ballots." In another case of election fraud, "Constituent 30, Algireif and Umdom: the center was moved to Dar Alsalam girls school without notifying observers and police men. Only NCP knew of the new center's location." Further evidence of the NCP interference includes this report, for example: "Members of NCP were present inside the center and they were directing voters. There was a representative who would issue residency certificates for those who don't have them. Even these certificates were copies." One report noted that, "two types of inks were verified. A blue one that did not easily disappear and a green one that disappeared easily." Where this latter ink was thought to come from was not stated, however.

The National Election Commission's (NEC) complicity in the election fraud is also apparent from the reports. "The top official at the post objected to the use of residency certificates as identification. He was obstructed by commission officials and was forced to accept them. A private van was spotted carrying voting cards and was driven by an unidentified person who claimed to be a commission official." In a separate incident, a witness "claims that he saw up to 50 children being given voting slips by

official at a tent belonging to NCP and allowed to access the voting centre and cast votes." In another case, a "ballot box was broken and the head of the station explained that it fell from the person who was moving it from station one to station two." In a different polling center, "boxes were found in a room not secure from the side of the windows as it was open. Keys for the room remain with the police officer and not the head of center." The NEC's alliance with the NCP clearly restricts possible "Opportunity Structures" on the part of the opposition and civil society groups.

4.6.4. Semi-Structured Interviews

The continuing security situation in the Sudan restricts the possibility of carrying out the expected number of interviews for this section. This means that unlike the case study of Egypt, less evidence is available to analyze. In any case, some important insights did surface from the interviews that were carried out when activists were temporarily out of the Sudan.

For the survey questions related to "Mobilizing Structures," all interviewees opined that the use of the Ushahidi platform increased citizen participation in the election observation efforts. One of the leading activists noted, "I received many, many text messages from different areas of Sudan. But I first thought these were not real text messages, I thought it was just from someone trying to hassle us, but when I had time, I called back many of the numbers, and I spoke with people from different parts of the Sudan (East, West, Khartoum, etc) and many of them were using the Ushahidi platform and giving us information and how the election process going in their area."

The activist who launched the project agrees that the platform increased participation. "The civil society groups fought very hard with the government to go out and monitor the elections, and they collected lots of data." Citizens were also reporting

on election day and “for the first time were able to have their voices heard and say what they were observing.” Another activist was less optimistic. She noted that while the use of local community based networks worked well, “no effort was made to expand it to include other organizations not in the core group.” This necessarily limited greater participation in the initiative. In her mind, “the crowd is always there, but it takes more than just a pretty live map to engage the crowd.”

As for “technology costs,” the fact that the Ushahidi platform is free (and easy to use) does make a notable difference. One activist explained that, “we can now do the kinds of things that once needed an entire organization and lots of money to do with just a few people and almost no money. This is a powerful paradigm. A great contribution.” In terms of “organizational issues”, another driver of Mobilizing Structures, the activists interviewed did not comment on the hierarchy versus network dynamic. But one of them did note that, “we were not able to be controlled in the ways the government is used to controlling information. The network was too dispersed.”

In terms of whether the use of the platform made the relationship between state and society more contentious, all the activists noted that the state became more aggressive towards them. “Naturally, the Sudanese government was not interested in anything that would shed light on what was happening at the election centers, the less attention the better. So anything, whether it be SVM or any other group that would create transparency immediately became ... not an enemy per se, but someone to watch and discourage. We clearly fit into that category.”

Another activist recounted how the Sudanese government had blocked the SVM website for a 2-day period during the elections. “The government was unhappy about this [SVM] because prior to the elections they had used heavy pre-censorship against newspapers and when people found this SVM forum and start to discover abuses during election I feel government was angry and blocked our website for two days.”

When the US State Department was informed about this censorship, the US Special Envoy to the Sudan, General Scott Gration reportedly called his counterpart in Khartoum for an explanation. “This may very well be why the website was unblocked the next day,” one insider formerly with the State Department commented. This is an important example of the role that powerful allies can play [Opportunity Structure] although the relationship with the US government can often backfire for obvious reasons (Gharbia 2010).

In terms of access to the political space, one of the interviewees explained that it was unclear whether the use of the platform created more access. “There were no clear objectives [beyond election observation] to use the Ushahidi platform to access the political system in the first place.” It is thus “difficult to assess the success of Sudan Vote Monitor as a tool to gain a political voice.” That said, the same activist believes that “the use of the platform made [civil society] observers instant political players to be contented with. This is evident from the government’s interest in the activities of online activists, who it felt able to ignore when they were voiceless.” In any case, “Ushahidi was not the only means to give activists a voice, other well-known platforms played a critical role too.”

Another activist felt that the use of the Ushahidi platform did not increase access to the political space because “the opposition withdrew and quit the elections.” Still, the platform “did give us more contact and more connections with civil society because most groups in the Sudan were involved in election monitoring. But not on a political level.” The person who launched the project disagrees and believes that they gained greater access because “we were now recognized, people had heard of the Ushahidi tool and it’s success elsewhere, so it was as a recognized brand, it wasn’t suspect, all we had to do was refer to the successes in India. So there was quick acceptance and recognition.” Still, it is unclear whether this brand recognition created greater political

access to Sudan's institutions. One activist noted that "we stayed very clear of political parties, our mission at SIRP is to be apolitical and non-partisan, so we were focused on civil society observers only."

The regime's control of information and communication did pose a serious challenge to using the Ushahidi platform in the Sudan, according to one activist. "In fact, it was almost a show stopper since they shut access to our website from within the country via ISP." Another interviewee agreed that this was "overall a very serious challenge when telecommunication companies are under state control. The following year, when we tried to use the Ushahidi platform again for the referendum of Southern Sudan, we were not given any SMS numbers [short codes] to monitor the elections."

In terms of "Framing Processes," an activist noted that, "the government was unhappy about this [SVM] because prior to the elections they had used heavy pre-censorship against newspapers and when people found this SVM forum and started to discover abuses during election I feel the government was angry and blocked our website for two days." Another activist explained that "[Bashir] did not want any reporting on the events to make the national or international media. His control of journalists was very effective, so the Ushahidi platform posed a threat since it operated outside the traditional means suppressed by the government." Like the *U-Shahid* project, SVM did receive local and global media coverage including Voice of America and Global Voices—but relatively little in comparison.

A different interviewee felt that the use of the platform had some impact on framing processes because "three independent local media used information from SVM; and some news websites did as well. Human rights groups also took information from SVM and included some reports in their press release. So there was a chance that the international media would cover these press releases." Another one of the activists was optimistic. They opined that the use of the platform did positively impact framing

processes. “Now there was another avenue that was independent and that was crowdsourced, so there is the power here, an outlet for the crowd to have it’s say as well. That has never happened before in the history of the Sudan for the crowd or civil society to say what they wanted. The government has always controlled radio, print and TV, so only the official version would get out.” One other activist agreed with this sentiment. “Yes, it had an impact. The story was not reaching mainstream media before. The activists got the message out to mainstream media to a certain extent, and a number of local organizations used information from SVM in their reports.”

In terms of the government using new information and communication technology to foment patriotism, activists noted that ICTs are not diffuse enough in the Sudan to be leveraged for this purpose. One interviewee added that “they’re not that sophisticated, more run of the mill, they seek to control information as opposed to use information in any kind of way. The most they tried to do was fabricate a few [SVM] reports from suspect sources, which were clearly biased.” They estimated that some 50 or so reports had been fabricated in total. It is worth noting that the government has become more sophisticated since the elections. One activist noted that during the antigovernment protests in February 2011, “the government put out a call via mainstream media to patriots to counter-act the messages of activists using online platforms.” Another activist remarked that, “government hackers hack independent media websites on a regular basis.” In other words, the Sudanese government is certainly not incompetent.

In terms of overall impact of the Ushahidi platform and technology overall, the person who spearheaded the project had this to say: “Having grown up in the Sudan and having lived under previous repressive regimes when there was no civil society to speak of, I clearly see the power of technology today. Technology provides [Sudanese] civil society groups with more power, more resources. Technology is the only real way

for [Sudanese] citizens to peacefully affect change. So what has happened across Arab world is inspiring, technology improves the lives of the people on the ground. This pushes repressive regimes to change against their will, because they're not going to change on their own. But under difficult conditions people are fighting back and claiming their rights. Technology is an abler, and people didn't have access to such technologies [when growing up]. Our partner the Asmaa Society in Khartoum just has a small office and a few women working there, but they're using technology, communicating globally, sharing ideas, proposals, and working across boundaries."

According to activists, one of the main successes of SVM was the fact that the platform was able to get the information out to the international community "instead of just being collected on a piece of paper on a desk somewhere where nobody in the world will know about it." This does beg an important question, however. Does international public access to information communicated via new means like the Ushahidi platform actually have a political impact? Granted, General Gration did intervene when the Sudanese government blocked the SVM website, but did this intervention have any political impact on the government or the elections? Rather unlikely. That said, the fact that Sudanese activists were able to use a free and open source platform to map evidence of election irregularities and thus get the attention of the US Special Envoy (via other allies in the US) is not something that had happened before. Gration's intervention was made at a political level. So the use of the Ushahidi platform did in this specific instance change the balance of power between the Sudanese government and activists.

Perhaps this will deter the Sudanese government from blocking future Ushahidi platforms. There have actually been at least two other deployments of Ushahidi in the Sudan since the April 2010 elections, neither of which was blocked. Whether there is a correlation with Gration's intervention is at best speculative. Perhaps the best way to summarize SVM's impact is by relaying what one activist concluded at the end of the

interview: “The platform gave people awareness that they are not helpless when working under repressive conditions, and it empowered the civil society organizations to understand that they are not totally powerless, and that there’s a lot they can do, we’re very proud of that, and so this helped launch the Jan30th Ushahidi map. It inspired others to let the world know what is going on.”

The Jan30th map was one of the two Ushahidi deployments launched in early 2011. It was requested by Sudanese protestors in Khartoum who had been inspired by SVM and wanted to show the world that pro-democracy activists were taking risks by demonstrating and calling for change in the Sudan, like their counterparts in Egypt and Tunisia. Two of the Sudanese activists interviewed for this research noted that they were working together to deploy an Ushahidi platform that would document human rights abuses not just around elections and major crises. Whether these platforms will have any impact on the balance of power between state and society remains to be seen.

Chapter 5: Conclusion

The purpose of this concluding chapter is to cross-analyze the findings from the quantitative and qualitative analyses carried out in Chapters 3 and 4 respectively. This cross-analysis is tied back to the literature reviewed in Chapter 2 to place this dissertation squarely within the academic discourse that the research belongs in. To this end, this fifth and final chapter first summarizes and analyzes the findings from the quantitative study. Section two summarizes and compares the findings from the comparative qualitative case studies. The third section combines these analyses into one conclusion while the fourth section lays out some policy recommendations and next steps for further research.

5.1: Summary and Analysis of Quantitative Findings

The purpose of the quantitative study was to steer away from “just” applying qualitative methodologies to answer the dissertation question. More importantly, the literature review from Chapter 2 clearly showed the lack of empirical, quantitative research in the study of digital activism. The econometric analysis carried out in Chapter 3 thus represents one attempt to fill this vacuum. The study sought to test whether access to ICTs—the Internet and mobile phones in particular—is a statistically significant predictor of anti-government protests when controlling for intervening variables identified in the literature review. A total of 38 countries were selected and then grouped into four clusters: countries with protest levels that were (1) relatively high or (2) relatively low; and countries where technology diffusion was (3) relatively high or (4) relatively low. Five regression models were run, one for each of the four

clusters and one comprising all 38 countries. The country data spanned from 1990 (pre information revolution) through to 2007 (early Web 2.0 revolution).

The econometric analysis from Chapter 3 was performed on five different clusters of country-data: high and low mobile phone use, high and low protest levels, and all clusters combined. The result of the analysis suggests that the number of mobile phone users is a statistically significant predictor of protest events—although that relationship was found to be negative, implying that an increase in the number of users is associated with a decrease in the number of protests. This was true for all clusters (models) except for countries in the “low protest” cluster. Recall that this latter model was not statistically significant and therefore dropped from further analysis. Interestingly, for countries grouped in the “high mobile phones” cluster, the number of Internet users was a significant predictor of protest events—and this relationship was positive, meaning that an increase in Internet users was consistent with an increase in anti-government protests. The countries that formed part of this cluster also had some of the highest levels of Internet users and as Zuckerman (2007) has noted, digital activists tend to choose the Internet over mobile phones in industrialized countries.

Clearly, accessing the Web-based content via laptop or desktop still affords many more advantages than smart phones, especially with respect to generating more in-depth and multimedia content. Moreover, mobile phones connect people in dyads while the Internet allows for those dyads to cluster in groups, and in turn allows groups to connect with other groups in a highly scalable manner. Perhaps this combination of Internet and mobile phone diffusion is an important precursor to strengthening and wiring an online civil society (Shirky 2007). Indeed, Howard (2010) emphasizes the importance of an “online civil society” as a key ingredient for democratic change.

How do these findings compare with the few recent data-driven studies on the impact of technology? First, it is important to note that the dependent variable used in

this study—anti-government protest event—is only used in one other study (Miard 2009). But Miard’s analysis (1) uses a different data set over a shorter period of time, (2) does not disaggregate between repressive versus democratic regimes and (3) only tests whether the number of mobile phones has an impact on anti-government demonstrations. In any case, Miard does not find any statistically significant correlation between phones and protests. Best and Wade (2009) assess the global effect of Internet access on democracy-related measures between 1992 and 2002 for some 180 countries.

However, the authors do not distinguish between repressive versus democratic rule and do not include mobile phones as an independent variable. They find that “the Internet was not able to explain significant variation in democracy cores [sic]” (Best and Wade 2009, 270). Grosheck 2010 used a more elaborate quantitative methodology and found that “Internet diffusion was not a specific causal mechanism of national-level democratic growth during the timeframe analyzed,” which was 1994-2003 (142). 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” (142). Note that in all three studies above, the authors’ data stops in 2003, which is particularly problematic since social media began to take off in 2005 at the earliest.

Howard’s (2010) study is the only one that finds a direct causal relationship between ICTs and political change using data that stretches beyond 2003. The result of his fuzzy set statistical analysis shows 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” (194). This accurately describes the countries that comprise the cluster for Model 5. In addition, Howard’s findings are robust across regime type. While he does not test the impact of Internet access and mobile phones separately, the distinction between these two types of networks is starting to collapse

with the rise of cross-platform tools like YouTube and Speak2Tweet (Shirky 2011c). This leads to a fascinating series of questions albeit ones that goes beyond the scope of this research. For example, is access to web-based content ultimately why an increase in the number of Internet Users is associated with an increase in anti-government protests? If so, access to web-based content is rapidly being democratized thanks to the almost exponential increase in the number of smart phones around the world. Does this mean that the Mobile Phones variable will ultimately provide far more explanatory power than it currently does? More importantly, does it therefore follow that a sophisticated mobile-web civil society is likely to be far more of a potent force than one that is solely online in terms of sheer numbers and physical mobility?

The econometric analysis carried out in Chapter 3 is sufficiently different from the others that exist in the literature to make it difficult to triangulate in terms of findings beyond Howard's (2010) analysis. At the same time, the fact that the econometric study does take a different approach is what makes it a worthwhile contribution to this literature. In sum, the findings from Chapter 3 do not directly contradict those from existing published research since comparative analysis is not exactly feasible. That being said, none of the other empirical studies found a negative relationship between mobile phones and protests (or democracy). In addition, while the analyses carried out by Wade and Best (2009) and Groshek (2010) find no robust relationships between Internet diffusion and democracy, the findings from Chapter 3—and in particular Model 5—suggest that in countries with relatively high access to mobile technologies, the number of Internet users is a statistically significant predictor of anti-government protests. This may suggest that in some cases, Internet access may be more important than access to mobile phones or rather that the combination of both provides for the ideal recipe for democratic change.

As noted in Chapter 3, these findings come with important qualifications

particularly given the reliability—or lack thereof—of the self-reported data such as unemployment figures. The lack of a civil society variable in the regression analysis may also skew the results. This explains why using multiple methodologies is important. “Indeed, qualitative researchers are very good at explaining nuanced, causal pathways; through in-depth case studies, comparativists must privilege some causal pathways shared by multiple countries; quantitative researchers have yet to develop the toolkit for analyzing causal pathways” (Howard 2010, 49).

5.2: Summary and Analysis of Qualitative Findings

The purpose of the qualitative study was to assess the role of the Ushahidi platform as a liberation technology by focusing on Egypt and the Sudan as case studies. More specifically, the chapter sought to assess the potential political impact that the use of the Ushahidi platform might have had during the recent parliamentary elections in the fall of 2010. A combination of research methods was applied to assess this impact: process tracing, descriptive analysis and semi-structured interviews. This section brings together the key findings from the application of these different methodologies to consider the possible impact that DISC and SIRP might have had with their Ushahidi projects. The connection between these projects and the subsequent social uprising in Egypt and the referendum of South Sudan is considered. However, it should be noted up front that the interviews represent a “biased sample” since they only include digital activists.

The team behind *U-Shahid* set out with concrete goals. The first was to help Egyptian citizens and international observers learn more about the electoral process. Second, the project aimed to highlight and seek redress when electoral laws were violated. Third, DISC sought to raise awareness about citizen rights and the importance of participation in the electoral process. Fourth, the initiative was meant to provide

Egyptian citizens with accurate information on the elections and document election-related violations. Finally, DISC wanted to use the *U-Shahid* project to empower local partners to advocate for closer adherence to electoral laws and fair practices during both the campaign and election period.

Did they have the impact they intended? Largely yes, according to those interviewed. They were able to publish and widely disseminate information on the electoral laws of Egypt, the Egyptian constitution with amendments, applicable human rights conventions and up-to-date news on the electoral process and campaign. They also received some 40,000 hits on their dedicated map; leveraged the web through Facebook, Twitter, Blogs and received a notable amount of national and international media coverage; and they mapped 2,700 reports, with more than 90% of them verified. But the project also fell short of some of its goals. In terms of the 1,500 cases of reported electoral violations submitted to the Egyptian courts, “we don’t know if those violation complaints are related to the use of this platform [U-Shahid], or if the presence of the platform has, or will be, in any of those cases,” the lead trainer for the project noted. In addition, the group was not able to involve different sectors of society in this project and weren’t able to overcome all the technical and political barriers. Finally, as the lead trainer stated, “we weren’t able to set measurable outcomes for the impact of the project in terms of change [...] but we have time to get better.”

Applying the Digital Activism Framework to the findings from the semi-structured interviews and descriptive analysis does suggest that the *U-Shahid* project had some degree of impact on the political space and discourse in Egypt. In terms of Ushahidi’s impact on “Mobilizing Structures” (see Figure 2), the research suggests a mostly positive relationship, i.e., that ICTs did have an impact on participation levels, and organizational issues. For example, the use of the platform enabled DISC to increase civic participation and improve the quality of those recruited and thus also micro-

contributions to the platform. In more general terms, Howard argues that “new media technologies like the Internet and mobile phones affect how individuals decide to participate or not participate in democratic actions. For individuals with Internet access and regular connection to family and friends over mobile phones, the social risks of nonparticipation approaches that of participation. News groups, text messages from friends in plight, digital videos with cultural content unavailable on broadcast media—all keep a supply of information open and direct” (2010, 175). This is one reason why the use of the Ushahidi platform to collect *multi-media* information can provide powerful testimony and incentives to participate.

The use of free and open source technology means that DISC faced lower costs while the use of Facebook, Twitter and other social networking platforms also helped to shape a sense of collective identity (although this community largely existed before the elections). A leading Egyptian activist remarked that thanks to the free and open source technology, as well as their distributed, user-generated approach, the *U-Shahid* project was “less costly moneywise [...] than traditional election monitoring, which is a lot more expensive.” Although the project did not significantly increase the contentious relationship with the state, activists explained that this was due to the government being worried about possible blowback if they did crack down on the *U-Shahid* team. But the group was able to generate and verify the vast majority of reports they mapped on the Ushahidi platform. In addition, the findings from the interviews clearly show how adept DISC was at adapting new tactics in order to manage the relationship with the state. The descriptive analysis of the 2,700 reports clearly shows the level of transparency that the project was able to add during the country’s Parliamentary elections.

On the question of *U-Shahid*’s impact on “Opportunity Structures”, the findings suggest a less pronounced but nevertheless positive relationship. The group’s connections with international allies were important while the state could not rely on

public international support to rig the elections. The impact of Ushahidi technology on the behavior of elites is less clear. As the descriptive analysis of the 2,700 reports reveals, elites did not appear to manipulate or be concerned by *U-Shahid's* independent monitoring of the elections. In terms of state capacity for repression, it is also unclear what impact the Ushahidi platform might have had. As for impact on political accessibility, the *U-Shahid* project had strong positive influence according to findings from the interviews. The impact of the project on Egypt's economic context is most likely negligible.

In terms of "Framing Processes" the use of the Ushahidi platform had a positive impact according to the interviews. Indeed, the *U-Shahid* project enabled DISC to circumvent state media and generate international media coverage. Meanwhile, the Egyptian regime was unable to successfully generate patriotism using social media since it did not know how to best leverage the new media ecosystem. One activist explained that, "using technology provides a comparative advantage in many ways. It makes you stand out. [Using technology like Ushahidi] gets you lots of media coverage, free publicity. Everyone was interested in what we were doing, even political candidates and other NGOs who wanted to share their reports with us." The state was largely unable to counter the alternative frames presented by *U-Shahid*. What's particularly important about the role of framing processes given the context of today's user-generated, social media technologies, is that these framing processes do not only provide access to information, they also provide access to *conversation*. And as Shirky notes, "Access to information is far less important, politically, than access to conversation" (2010).

Taken together, the findings from the descriptive analysis and semi-structured interviews do suggest that the *U-Shahid* project had some impact on the political space and discourse in Egypt—and hence the balance of power between State and society. That said, it is doubtful, however, that the *U-Shahid* project deterred fraud. Indeed, the

project was simply not operating at a scale of visibility necessary to influence behavior change. Documenting 2,700 instances of election irregularities is impressive given the many challenges of operating in a repressive environment and the fact that this was the first use of the Ushahidi platform in Egypt. But even 27,000 reports are unlikely to have any significant impact on deterring election fraud or actually creating political accountability. Perhaps 270,000 reports documenting all facets of the election—pre, during and post—with ten of thousands of original videos and photographic evidence might deter a would-be fraudster. Also, while the 2,700 reports mapped on *U-Shahid* came from more than 100 individuals, this too is insufficient traction to have a large scale and long-term impact. If 100,000 people or more had participated in sending in reports, then perhaps this would be the scale at which the *U-Shahid* project could have had more meaningful impact.

That said, the fact that Egyptian National Security was closely monitoring DISC's operations reveals that they were concerned and treated the project as a potential *political* threat. As Howard remarks, "elections—especially rigged ones—are also occasions where the Internet is used by citizens for political discussion *and* by the state for monitoring citizens" (2010). The security apparatus refrained from shutting down the project—possibly for fear of blowback. Following the fall of Mubarak, protestors stormed the offices of Egyptian National Security and among the findings was a security report on the *U-Shahid* project with the names and contact info (including Skype usernames) of many activists, both Egyptian and international, who were involved in using the Ushahidi platform. In many ways, *U-Shahid* helped to reverse or at least fight back against this government-constructed panopticon.

Like *U-Shahid*, the Sudan Vote Monitor project also caught the attention of the government. Unlike the Egyptian regime, however, the Bashir government took notice of the project and blocked the map. Both cases therefore saw government intervention

albeit in different forms. Unlike the Egyptian project, the SVM initiative was unable to map more than a few hundred reports even though the organizations spearheading the election monitoring efforts had managed to secure two SMS short codes. This was due to timing. After months of trying to secure SMS numbers, SIRP and partners were able to use the numbers but literally the night before the elections. This meant that the majority of their election observers had not been trained and that no dry runs had been possible.

In any case, the team behind the SVM project did not have as many concrete goals as DISC did in Egypt. They simply aimed to carry out some kind of independent, bottom-up election observation effort by leveraging mobile phones and the Ushahidi platform. In a way, this makes the project easier to evaluate than *U-Shahid* since DISC and company were indeed successful in launching an independent Sudanese initiative to monitor the elections—so much so that the government took notice and shut down the website. Perhaps Bashir felt threatened by the unwanted transparency around the elections even though just a few hundred reports had been mapped. It's unclear why the Sudanese government took measures to block access to the website within the country (it was still accessible internationally). Bashir had already rigged the elections well before they took place. By blocking SVM, the regime unwittingly provoked the intervention of the US government. In any case, the political change we witnessed in Egypt and Tunisia did not take place in the Sudan. Is this perhaps due to Sudan's economy being dominated by fuel exports? Also, Egyptian civil society groups are all largely online which is far from the case in the Sudan. As Howard's (2010) mixed-methods research shows, a wired, online civil is a key ingredient in the recipe for democratization. Egypt has more than 160,000 bloggers and back in 2009, Facebook was the third most popular website in the country—a figure that has certainly increased since the recent revolution.

Applying the Digital Activism Framework to the findings from the semi-structured interviews and descriptive analysis does suggest that the SVM had some degree of impact in the Sudan. In terms of “Mobilizing Structures”, it is clear that the low cost use and implementation of the Ushahidi platform was pivotal. The use of the platform also created new ties between the different participating organizations, particularly between SIRP and the Asmaa Society, but also with independent Sudanese journalists. As Howard notes, “ICTs introduce new information to the calculus that citizens aspiring for democracy use in deciding whether to contest a shady election or join a political group not sanctioned by the state” (2010, 37). Drezner (2011) refers to this as increasing the probability of a “reversed information cascade.” The crowdsourcing aspect of the project certainly facilitated micro-contributions from a larger number of participants. All in all, then, the use of SVM did increase participation levels in the election monitoring efforts.

In terms of contentious activity, the findings from the interviews do suggest that the relationship between the Sudanese regime and civil society groups became more contentious given the blocking of the SVM map. Civil society groups also used new tactics such as code for SMS and when their site was blocked, they looked into other tactics to get the map back online. While the use of the Ushahidi platform did increase transparency, it is clear that said transparency did not lead to any form of real political accountability. As regards organizational issues, the hierarchy versus network dynamic was not particularly pronounced—particularly when compared with the dynamic in Egypt. Taken together, the impact of the Ushahidi platform on participation levels, contentious activity and organizational issues was mildly positive and less so than the findings on the *U-Shahid* project.

In terms of “Opportunity Structures”, the impact of government elites and allies on the use of SVM and the balance of power between State and society is most likely nil.

On the other hand, the role of elites and allies on the civil society end was particularly important. The fact that SIRP could draw on the Ushahidi team's expertise for technical and strategic support was critical. So was the support of the SVM initiative within the US State Department. The government's capacity for repression did have an important impact given that Bashir did block access to the SVM map for a period of two days—almost half of the election period. The impact of globalization is unclear but state regulation did make it easier for the Sudanese government to block specific ISP addresses. Overall, the net impact seems to be negligible, as the positive and negative causal chains appear to cancel each other out.

What about "Framing Processes"? The findings from the interviews and the descriptive analysis of the SVM reports do point to evidence of a positive impact on the balance of power. More specifically, the use of the Ushahidi platform allowed DISC and partners to not only circumvent state media (when the site was not blocked) but it also added another voice—an independent one—to the election monitoring efforts. Meanwhile, the Sudanese government was unable to leverage the use of new technologies to foment greater patriotism. Perhaps it didn't need to having already manipulated the census and registration efforts in Darfur well before the April elections.

Taken together, the findings from the descriptive analysis and semi-structured interviews suggest that the SVM project had minimal impact on the balance of power between State and society in the Sudan. In some ways, the impact may have been more symbolic than anything else. But symbolism is one of the three impacts that ICTs can have on Muslim civil society groups, according to Howard (2010). He argues that this symbolic function serves as the sign of modernity in civic life and civil discourse. Still, during a very brief period of time, the regime got push back from the US State Department when the former blocked the SVM website, but the longer-term impact is unclear.

As Howard notes more generally, “A successful online mobilization against an authoritarian regime may only have short-lived outcomes. Or the mobilization may cause enough chaos to allow the regime to entrench itself. But usually, such online mobilizations have an impact on specific aspects of political life: improvements in the justice system of courts; increased political competition within single-party states; more open elections at particular levels of government; more meaningful regime transparency and stakeholder participation during the policy-making process. All of these features of democratic change are very much dependent on the presence and form of information and communication technologies” (2010, 221). In the case of Sudan, however, ICTs are not widely present. This may in part explain why the SVM project did not have an impact on these aspects of political life. “By contrast, in regimes [like Egypt] where the possibility [and knowledge] of civil disobedience is there, information technologies are the fundamental infrastructure for protesting stolen elections, rallying foreign support, radicalizing student movements, and uniting opposition groups” (Howard 2010).

The SVM project did however inspire two subsequent efforts to use the Ushahidi platform in the Sudan, however. And during the country’s January 30th movement, activists were able to get the word out on their demonstrations and Bashir’s crackdown. But while activists were able to create more transparency during this period, the regime arrested and tortured many of the demonstrators. In addition, the Sudanese government became noticeably more sophisticated in leveraging new technologies and in particular online social networks like Facebook in 2011.

In sum, the use of the Ushahidi platform can influence the balance of power between State and society via several mechanisms identified in the Digital Activism Framework. The extent to which it does is challenging to measure. “Mobilizing Structures” are the mechanisms that facilitate organization and collective action. These include social structures and tactical repertoires (McCarthy 1996). The use of Ushahidi in

both Egypt and the Sudan certainly facilitate collective action since it focused reporting efforts (micro-contributions) and recruitment strategies that may otherwise have been disparate. “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). In the case of Egypt, while the regime had the capacity to shut down the *U-Shahid* project, it did not—allegedly because it was concerned about the repression backfiring. In neighboring Sudan, the state’s decision to repress the SVM project prompted external intervention by the US. Recall that framing processes are “strategic attempts to craft, disseminate, and contest the language and narratives used to describe a movement” (Garrett 2006, 218).

The Ushahidi platform had clear impact on framing processes in both Egypt and the Sudan, allowing a different voice to be heard—one that could change the state’s narrative on the elections. As witnessed both before and during the Arab Spring, political parties and civil society groups are becoming more sophisticated in leveraging SMS to recruit voters or protestors during critical moments. This is exactly what happened with the Ushahidi platforms in Egypt and the Sudan. Like other technologies, the Ushahidi platform can “provide more diverse sources of political information, expanding the range of available content to include domestic and foreign news, government and party propaganda, and raw unmediated documentation for those who want the full text or audio of speeches, party manifestos, and policy papers” (Howard 2010, 106).

A question that naturally follows—given the recent developments in Egypt and the Sudan—is whether the *U-Shahid* and SVM projects had any impact in the subsequent uprising that overthrew Mubarak and in the referendum on South Sudan. It is hard to be definitive about either case. There’s no doubt that those engaged in *U-Shahid* felt more empowered and emboldened. As one activist noted shortly before the elections, “we

may all end up in jail, but before this I thought there was no hope to change anything. Now I can even dare to think it is worth a try.” What the *U-Shahid* project did was connect several dozen new digital activists with many key political activists as well as tech-savvy professionals.

The *U-Shahid* project also got local media coverage, allowing the press to report on the elections far closer to real-time than had ever been done before. According to one activist, “this allowed for a more immediate impact on the electoral campaign. For the first time in parliamentary elections, the opposition withdrew—they were pressured by overwhelming evidence of fraud and were scared to be delegitimized by continuing to participate in the elections. So they pulled out between the first and second round since a comprehensive picture [of elector irregularities] was available on just the second day.” This served to further discredit the elections and Mubarak in particular, which—when combined with the fall of Ben Ali—could have been pivotal.

But the real question is whether the revolution would have unfolded the way it did had the Parliamentary Elections not taken place in the Fall 2010. The elections gave civil society actors an excuse to organize and plan—which DISC and some 100 activists did for the *U-Shahid* project. The answer to this question, however, goes beyond the scope of this dissertation and is at best highly speculative. The author’s personal opinion is that the *U-Shahid* project had no significant impact on the subsequent revolution. The Egyptian use of the Ushahidi platform was a first and ultimately a rather low-key initiative without much nation-wide visibility. The map certainly did not garner the kind of attention that the Facebook page “We Are All Khaled Said” prompted—not even close. Furthermore, the Ushahidi platform does not include much in the way of social networking features, which perhaps limits the possible impact that this integrated technology can have in politically charged environments.

It is worth noting that DISC revamped their Ushahidi platform to support the anti-Mubarak protests. They called this project “CR” for “Civil Resistance” and launched the day after Internet access was restored. The fact that all they had to do was clone their existing Ushahidi platform is significant. Indeed, the entire team had already been trained and had gained substantial experience in deploying *U-Shahid* for the Parliamentary Elections just a month earlier. Still, what impact (if any) this CR platform had on the coordination of the protests and resulting overthrow of Mubarak is at best speculative.

In the case of SVM in the Sudan, SIRP also cloned their original SVM platform to use it for the referendum of South Sudan. Unfortunately, lack of planning on the part of SIRP meant that they had not established any of the local partnerships necessary nor secured an SMS short code to document the referendum in January 2011. This second deployment of SVM was thus carried out remotely. Volunteers simply mapped reports obtained from mainstream and social media sources. The project was largely considered a failure due to SIRP being unprepared. In terms of SVM’s impact (from the presidential elections the year before) on the actual referendum, there are clearly no connections.

Perhaps the most evident impact of the Ushahidi platform in Egypt and the Sudan was on the feeling of empowerment that the use of the technology seemed to catalyze. To be sure, while the reports mapped on the platforms provided an important service, perhaps of greater value were the strong ties that developed as a result of collaborating on the customization and deployment of the Ushahidi platform. The interviews carried out do suggest that the Ushahidi technology “stimulated considerable interest in the use of ICTs as a radicalizing force” for the implementers of the *U-Shahid* and Sudan Vote Monitor projects (Shirky 2011c). Individuals who participated in these projects appeared to become more politically engaged and optimistic. This is an important find since “totalitarian surveillance aims at radical destruction of trust,”

resulting in “a culture of fear and suspicion” which “atomizes society and thwarts social resistance” (Lyon 2006, 83).

That being said, Egyptian and Sudanese activists differed markedly with respect their experience in leveraging new ICTs for political activism. The Egyptian team behind *U-Shahid* consistently demonstrated how savvy they were vis-à-vis political strategy, organization and technology. Clearly, Egyptians have gained far more “hands on” experience over the past 10 years, testing the regime and identifying the most effective lines of attack—often at great cost. In addition, there were far more political conversations during the *U-Shahid* trainings than with Sudan Vote Monitor. To this end, while strategic learning and organizational adaptation went through several “upgrades” in Egypt, the same cannot be said of the Sudan. The latter’s understanding of the Ushahidi platform was minimal in comparison, which is why they outsourced the customization of the platform to an Indian group. Furthermore, they had very little to no knowledge about digital security and how to communicate securely in repressive environments.

The Sudanese team also placed more “faith” in the technology, expecting that the use of the Ushahidi platform would lead to their overall success. This explains why they may not have placed as much emphasis on strategy and organization. Furthermore, were it not for one key person in the State Department, the team would never have secured SMS short codes for their reporting—even though they had a year to do so. Clearly, the “initial conditions” for the Egyptian and Sudanese activists were vastly different in the lead up to their use of the Ushahidi platform. To be fair, however, the two projects also differed in ambitions. In many ways, the main goal of the Sudan Vote Monitor project was simply to launch the project—this was in and of itself a measurement of success. The Egyptians, on the other hand, were motivated to catalyze political change from the outset.

One other major difference between both initiatives relate to the fact that the Egyptian project was more of a bottom-up initiative than the Sudanese one. Recall that SIRP is comprised of members from the Sudanese Diaspora in the United States. They thus carried out their project remotely and from the “outside” which made it more difficult to establish partnerships at the grassroots level. Indeed, SIRP only visited the Sudan 3 times in over a year to coordinate the initiative—and each of these visits lasted less than a week. In contrast, the entire *U-Shahid* team was in Egypt and mostly based in Cairo and had already worked together in past protest movements.

How do these findings square with Rosanvallon’s theories on counter-power? Recall from Chapter 1 that Rosanvallon identifies three alternative drivers of democratic change—in contrast to electoral competition and formation of government by the winners. These are oversight, prevention and judgment. “Each of them may have ambivalent effects for the quality of democracy, [Rosanvallon] argues, and they are not novel, but they have all been expanding and diversifying precisely as the more traditional modes of representation have declined in significance” (Schmitter 2008, 1). This is especially the case in countries with repressive states. As explained in Chapter 1, oversight refers to various ways where by civil society monitor and publicize the behavior of those in power. Prevention relates to civil society’s capacity to mobilize resistance to specific policies or events while judgment reflects the trend toward the “juridification” of politics where civil society groups use the system, i.e., the courts and especially jury trials to bring politicians to judgment.

The *U-Shahid* project comes closest to fulfilling Rosanvallon’s triad of democratic change. Not only were they more effective in using various means to monitor and publicize the behavior of political candidates during the Parliamentary Elections, but they were also able to mobilize resistance since their efforts are thought to have contributed to the boycotting of the elections by key opposition groups. The Egyptian

team also understood the need to bring their evidence to bear via the judicial courts and expressed every intention of focusing more seriously on this third phase in future uses of the Ushahidi platform. In contrast, the Sudanese group more or less accomplished the first phase of monitoring and publicizing. Mobilizing resistance and leveraging the existing judicial systems to their advantage did not figure amongst their stated goals.

While the impact of the Ushahidi platform on the balance of power between State and society is challenging to assess, it is perhaps fitting nevertheless to end with the following: “in Tom Stoppard’s 1978 play *Night and Day*, a photojournalist in Africa notes how important it is to be able to see into dark places. ‘People do awful things to each other. But it is worse in places where everybody is kept in the dark. Information is light. Information, in itself, about anything, is light.’”⁷

5.3: Integrating Quantitative and Qualitative Findings

How do the findings from the quantitative study compare with those from the qualitative comparative case study analysis? What is particularly interesting is that the findings from the semi-structured interviews did not distinguish between the impact of mobile phones and the Internet. This may be due to the fact that the Ushahidi platform is a “convergence technology” which means that activists draw on an ecosystem of interconnected technologies rather than differentiate the tools into isolated categories.

Recall the summary statistics for Egypt and the Sudan. Egypt had an average index of 8.89 for protest levels, 2.31 for Internet use and 6.46 for mobile phone use per country year from 1990 to 2007. In contrast, Sudan had a protest index of 5.11, 1.31 for

⁷ Source: <http://www.csmonitor.com/Commentary/editors-blog/2011/0503/Crowdsourcing-is-good-but-not-enough>

Internet use and a mobile phone index of 2.32 per country year. In other words, Egypt has almost double the number of protests, twice the number of Internet users and three times the number of mobile phone users than the Sudan. Based on the cluster system developed for the regression analysis, Egypt falls into the “High Protest” cluster, “High Internet Use” cluster and “High Mobile Phone Use” cluster while Sudan ends up in the low clusters for each variable.

The results of the quantitative analysis indicate that that the Internet variable is statistically significant in only one of the regression models; namely Model 5, which represents the group of countries in the “High Mobile Phone” cluster. For this cluster, (which includes Egypt) an increase in the number of Internet users is associated with an *increase* in anti-government protests. This finding is certainly consistent with the recent events observed in Egypt (and Tunisia)—particularly with respect to the use of Facebook. In Egypt, Facebook became the third most popular website in 2009 (after Google and Yahoo). Also, the April 6 Youth Movement was launched following a Facebook campaign in April 2008 that went nationwide and Kefeya as a blog-centric movement before that. Interestingly, many of the April 8 movement’s 70,000 members were actually not political active before joining the group. The finding is also consistent with Howard’s (2010) quantitative analysis, which demonstrated the direct causal impact that an active online civil society has on democratic change.

In sum, the online youth in Egypt became a force to be reckoned with. The use of Facebook (and YouTube) helped to politicize Egyptian youth in a way that had not happened before and which mobile phones could not have done at this kind of scale. Indeed, the Internet is more of a broadcast technology than mobile phones are. There are also cost differentials in both time and money compared to mobile phone technology. Shortly before the elections, the government passed a measure prohibiting the use of broadcast SMS in any case.

While the *U-Shahid* project was not itself focused on catalyzing protests, the very public and immediate documentation of election fraud may very well have contributed to increased grievances and possibly protests—especially given the local media’s coverage of *U-Shahid*. Also, the Ushahidi platform could obviously not have been used without some kind of Internet access.

The results of Model 5 also pointed to a negative relationship between the number of mobile phone users and protest events. The qualitative case study research does not shed much light on what might explain this finding. However, one Egyptian activist did note that, “very few people sent in reports via SMS, at most 1% of the reports we received. One reason for this was that everyone knew that the government could track and control SMS.” So the use of mobile phones may elicit more security concerns, especially in Egypt where many activists have had their phone calls and SMS’s intercepted by the regime. Perhaps the limited use of mobile phones points to the sophistication of Egyptian civil society given the real security concerns. At minimum, this quantitative finding is consistent with the qualitative research in that the relationship between Mobile Phone Users and anti-government protests is at the very least *not* a positive correlation.

Turning to the Sudan, Internet access is not widespread, even in urban areas. So the finding that the Internet variable is not statistically significant in Model 1 makes sense in countries with low levels of technology diffusion. Recall that the Sudan belongs in the cluster of countries with relatively low protest levels (Model 2). This model did not prove to be statistically significant and was therefore dropped. This means that including ICTs in the regression analysis does not improve the results when compared to a regression model that does not include any of these technology variables. In many respects, the qualitative case study of the Sudan supports this finding. The impact of the Ushahidi platform on the 2010 Presidential Elections was insignificant. Yes, the regime

did block the site for 48 hours but even when the site was back up, this did not challenge the balance of power between state and society.

What about the impact of mobile phones? The number of mobile phone users quadrupled in the Sudan between 2005 and 2007 while protests declined. However, there was a significant spike in protest activity in early 2011 and Sudanese activists who were interviewed did not single out the use of mobile phones as useless during their election observation efforts. Quite on the contrary, they spent months trying to secure two SMS short codes in order to scale up their distributed monitoring efforts. This does not mean, however, that the anti-government protests were the result of greater mobile phone access. Rather, it was the revolutions in Tunisia and Egypt that drove the student protest movement in Khartoum in 2011. So the results of the statistical analysis seem to correspond with the findings from the qualitative case study research.

In sum, the findings from the quantitative and qualitative studies do in part reinforce each other. However, what remains to be explained is the negative relationship between mobile phone users and anti-government protests. This means that no definite conclusions can be derived regarding the impact of ICTs on the balance of power between repressive regimes and civil society groups. That said, the initial conditions for protest movements today are very different from the pre-Web 2.0 era. Egypt has a thriving online civil society and public sphere, which according to Howard (2010) is an important causal factor in political change in repressive states. Sudan, on the other hand, does not have a large offline civil society to begin with—let alone an online one. This strong variation in the civil society variable is what may ultimately explain the different impact of the Ushahidi platform on the balance of power in Egypt vs. Sudan.

So real political change facilitated by technology may still take place in the Sudan, but only after a vibrant civil society and public sphere emerges. This, as Shirky rightly points out, will take years. That said, while Iran's Green Revolution failed to

topple the regime, Tehran failed to control the election crisis. In the Sudan, the regime also failed to prevent and fully repress the anti-government demonstrations in 2011. While this did not lead to political change, the protests were the most widespread demonstrations to hit the Sudan in years. To this end they had symbolic importance, they demonstrated what was possible, just as the overthrow of Ben Ali inspired Egyptians to ramp up pressure against Mubarak's regime. Finally, while Sudanese activists were somewhat new to the uses of ICTs for election observation and documenting crackdowns, they have learnt more in the past few months than they have in the past few years. And so, "the region's dictators have a new concern: their own tech-savvy, disaffected youth" (Howard 2010, 12).

In sum, this dissertation has "advanced the theoretical understanding of ICTs and especially [the impact of integrated technologies] like Ushahidi—both as a review of the literature to date, and as a way of advancing that literature (Shirky 2011c). More specifically, the use of the Digital Framework (Mobilizing, Opportunity and Framing approach) and the similarities and differences it highlights between DISC and SIRP contributes new understanding to the study of digital activism in repressive environments.

5.4: Policy Recommendations and Further Research

While the role of corporations has not been addressed in this dissertation research, it is important to note that these actors also have the ability to impose informational controls on civil society groups. Global telecommunication companies often bow to demands by repressive regimes. In addition, Western commercial companies have repeatedly sold software to ruthless dictatorships, allowing the latter to more effectively censor and intercept communication sent via email, SMS, etc. Just as embargoes are placed on

pariah states like Iran with respect to selling weapons to these countries, similar embargoes should be placed with respect to censorship and surveillance technologies.

Access to information and communication technologies (ICTs) in non-democratic countries can catalyze shared awareness among civil society actors and synchronize their actions against despotic regimes. As this dissertation research has shown with respect to Internet access, relatively high technology adoption rates among civil society groups increases the likelihood that the balance of power between State and society will shift in favor of the latter. Indeed, “it is probably a truism to say that no contemporary democratic revolution in the Middle East will happen without the Internet,” which is increasingly accessed via mobile phones (Howard 2010, 12).

This means that policymakers should focus their efforts on building more vibrant online (and mobile-web-based) civil society networks around the world, particularly in countries with relatively high levels of access to ICTs. This begins with basic media and social media literacy. Recall that the Egyptian group, DISC, became familiar with the Ushahidi platform thanks to a training organized by Freedom House in Washington DC. Such workshops, like the Tech at State workshops organized by the US Department of State—most recently in Chile, Indonesia and Lithuania—are good examples of the positive, facilitative and convening role that policymakers can play. Training on how to use the Ushahidi platform was provided at each of these workshops, which form part of Secretary Hillary Clinton’s Net Freedom Initiative. These events don’t focus on digital activism or civil resistance. Instead, they bring together local/regional civil society actors (who may not often have the chance to meet with each other) with international technology groups to network and share best practices in areas such as citizen journalism, ICT for development, mobile health and disaster response. This balanced approach focuses on creating both social capital and technical agility. This aspect of Clinton’s Net Freedom Initiative is worthwhile.

There are also several negative aspects of the initiative. As York (2011) and Gharbia (2010) have rightly noted, the State Department's Internet freedom policy simply reflects broader US interests and established policies. Perhaps the most disturbing aspects of Net Freedom are the many double standards it embodies. The US supported the Mubarak regime for decades with tens of billions of dollars in favor of "stability" but at the expense of basic offline freedom for the majority of Egyptians. The same was true of Tunisia where US diplomatic cables leaked via WikiLeaks clearly referred to Tunisia as a police state with little freedom of expression. Funding Internet Freedom projects in countries under repressive rule while providing significantly more funding to those regimes themselves is problematic. Perhaps State is hedging its bets or believes that any alternative to the current regime would be even more despotic. Still if the State Department cares about Internet Freedom and indeed basic freedom, then the best place to start would be by leveraging the foreign aid it provides to corrupt and ruthless regimes. That is far more important than providing Ushahidi training at Tech at State workshops.

Either way, it is important that the Ushahidi group (unlike Twitter, Facebook et. al) keep enough distance from the State Department and US Government in general. The close connection between Silicon Valley companies and the Obama Administration is problematic in many respects (Morozov 2011). Ushahidi must remain independent and not become labeled as an instrument of US foreign policy. The fact that Ushahidi has African roots helps in this respect. But it is incumbent on Ushahidi's staff to steer clear of high profile, public events with the State Department and US Intelligence Community, even if this means forgoing publicity and possible funding. Ushahidi must continue to decline any funding offers from government sources, American or otherwise.

One initiative that is worth supporting at the policy level is the Universities for Ushahidi (U4U) project in partnership with the US Institute for Peace (USIP). The U4U

initiative seeks to develop an open, online curriculum for university students in developing countries so they can teach themselves how to use an Ushahidi platform as effectively as possible. In addition, U4U convenes students from post-conflict countries to USIP's academy in Washington DC for a one-week training in conflict management and technology applications. Supporting and scaling these types of initiatives will help to increase the size and know-how of online civil society networks abroad. However, it is important that the U4U curriculum *not* be focused primarily on conflict-related applications of new and open source technologies like the Ushahidi platform.

A more cross-disciplinary approach, like the one taken by Tech at State, is needed. For example, given the importance of elections as opportunities for democratic transition, training in launching effective, independent citizen-based election observation projects is particularly important. This is true “even in countries where elections are rigged [since] strengthening the communication networks among non-state actors builds upon the political capacity of those actors. While there certainly are examples of how states use ICTs to control information and manipulate the public, there are far more examples of how ICTs are used by the public to get around the informational controls set up by states” (Howard 2010, 201). But analysis of the *U-Shahid* and Sudan Vote Monitor projects clearly point to the need for upfront training in order to leverage the technology for social impact. DISC was very well organized, prepared and highly strategic. In other words, leadership and organizational characteristics matter.

In terms of further research, more Ushahidi case studies are needed in order to expand the comparative qualitative analysis. In addition, existing quantitative studies on the impact of ICTs on democratic change—like Miard 2009, Best and Wade 2009, and Grosheck 2010—are in serious need of drawing on more current data and larger datasets. As Shirky notes, “the potential of social media lies mainly in their support of

civil society and the public sphere—change measured in years and decades rather than weeks or months” (Shirky 2010b). To this end, the recent initiative by the Meta-Activism-Project (MAP) to create the first Global Digital Activism Data Set (GDADS) is an important effort to improve data-driven analyses of digital activism. Philip Howard, Ethan Zuckerman and Clay Shirky are all affiliated with the GDADS project because they understand that without more empirical research, policy recommendations on the topic will continue to be superficial at best.

Along these lines, it is important that future quantitative research move beyond the use of democratic measures as the independent variable. These proxy variables tend to be too macro and nebulous for any concrete policy recommendations. In addition, using democracy scores assumes that these variables can be easily changed at the policy level, which is hardly the case—at least at a temporal resolution necessary to affect meaningful change. This explains why the dissertation’s econometric study in Chapter 3 focused on a more concrete and tangible dependent variable—the number of anti-government protests per country year. Future data-driven studies on digital activism in non-permissive environments should seek to identify comparable indicators for analysis.

APPENDIX

Table 1

Frequency Statistics for Categorical Study Variables Overall (N = 684) and by Country Sub-sample (n =18)

Variable	<i>M</i>	<i>SD</i>	<i>Mdn</i>	Range
Protests – Overall	10.46	15.00	5.00	0 – 116
Alg	9.11	9.73	5.00	1 – 38
Arm	0.72	0.83	0.50	0 – 2
Aze	0.39	0.85	0.00	0 – 3
Bah	2.89	3.61	1.00	0 – 12
Bel	17.72	11.69	14.00	3 – 46
BFA	0.78	1.06	0.50	0 – 4
Chn	47.11	22.23	48.50	14 – 94
CIV	10.39	8.67	9.00	1 – 39
COG	0.78	1.06	0.50	0 – 4
Cub	5.56	5.26	4.00	1 – 22
Egy	8.89	5.72	8.00	2 – 21
GAB	1.33	2.09	0.50	0 – 8
Gui	1.44	1.92	0.50	0 – 6
Ind	48.00	22.65	47.50	5 – 94
Ira	28.72	29.07	15.50	2 – 116
Irn	19.94	7.57	18.50	6 – 40
Jor	5.83	4.12	5.00	0 – 17
Kaz	1.56	1.82	1.00	0 – 6

Ken	8.94	9.85	7.00	1 – 45
Mal	9.06	9.68	6.50	2 – 42
Mor	5.28	2.91	5.50	1 – 11
Mya	2.50	8.72	2.50	0 – 29
Pak	20.28	7.13	20.50	10 – 34
Phi	13.61	6.96	11.50	2 – 25
Rus	30.67	14.86	31.50	11 – 57
Sau	5.67	4.58	3.50	0 – 14
Sin	5.22	3.04	7.00	0 – 9
Sud	5.11	3.85	4.50	0 – 13
Syr	4.11	2.91	3.00	0 – 12
Taj	0.72	1.67	0.00	0 – 7
Thi	11.17	6.11	9.50	2 – 21
Tky	23.39	13.87	18.00	6 – 54
Tun	2.67	1.94	2.00	0 – 7
Uae	1.94	1.92	1.50	0 – 7
Ukr	9.78	10.72	7.50	0 – 40
Uzb	0.56	0.78	0.00	0 – 3
Ven	11.17	12.62	7.00	3 – 57
Zim	6.06	4.35	4.50	0 – 17
Autocracy – Overall	-1.95	6.02	-4.00	(-10) – 10
Alg	-2.44	2.92	-3.00	(-7) – 2
Arm	4.11	3.82	5.00	(-6) – 7
Aze	-5.50	2.31	-7.00	(-7) – 1
Bah	-8.44	1.15	-9.00	(-10) – (-7)

Bel	9.89	0.47	10.00	8 – 10
BFA	-2.89	2.49	-4.00	(-7) – 0
Chn	-2.89	1.45	-2.00	(-7) – (-2)
CIV	-1.50	5.23	-3.50	(-7) – 0
COG	-2.06	4.72	-4.00	(-8) – 5
Cub	-7.00	0.00	-7.00	(-7) – (-7)
Egy	-5.5	1.15	-6.0	(-3) – (-6)
GAB	-4.11	0.47	-4.00	(-6) – (-4)
Gui	-2.22	2.07	-1.00	(-7) – (-1)
Ind	0.06	7.08	0.50	(-7) – 8
Ira	-9.00	0.00	-9.00	(-9) – (-9)
Irn	-2.50	4.52	-6.00	(-6) – 3
Jor	-2.28	0.67	-2.00	(-4) – (-2)
Kaz	-4.39	1.24	-4.00	(-6) – (-3)
Ken	-2.00	5.88	0.00	(-7) – 8
Mal	3.28	0.46	3.00	3 – 4
Mor	-6.56	0.71	-6.00	(-8) – (-6)
Mya	-7.22	0.43	-7.00	(-8) – (-7)
Pak	1.61	6.58	4.50	(-6) – 8
Phi	8.00	0.00	8.00	8 – 8
Rus	5.56	1.38	6.00	4 – 7
Sau	-10.00	0.00	-10.00	10 – 10
Sin	-2.00	0.00	-2.00	(-2) – (-2)
Sud	-6.33	1.14	-7.00	(-7) – (-4)
Syr	-8.11	1.02	-9.00	(-9) – (-7)
Taj	-3.28	2.02	-3.00	(-6) – (-1)
Thi	6.78	4.49	9.00	(-5) – 9

Tky	7.56	0.78	7.00	7 – 9
Tun	-3.67	0.77	-3.50	(-5) – (-3)
Uae	-8.00	0.00	-8.00	(-8) – (-8)
Ukr	6.39	0.61	6.00	5 – 7
Uzb	-8.50	2.12	-9.00	(-9) – 0
Ven	7.11	1.28	7.50	5 – 9
Zim	-4.89	1.18	-5.00	(-6) – (-3)
Unemployment rate (% change)- Overall	0.09	0.84	0.00	(-1) – 14.08
Alg	-0.01	0.11	0.00	(-0.25) - .18
Arm	0.13	0.47	0.00	(-0.14) – 1.94
Aze	0.02	0.16	0.00	(-0.38) – 0.40
Bah	0.07	0.24	0.08	(-0.47) – 0.64
Bel	0.74	2.67	0.00	(-0.39) – 11.25
BFA	-0.14	0.26	-0.02	(-1.00) – 0.10
Chn	0.03	0.06	0.00	(-0.08) – 0.16
CIV	0.23	0.86	0.01	(-0.03) – 3.65
COG	0.02	0.05	0.00	(-0.04) – 0.16
Cub	-0.07	0.14	-0.04	(-0.30) – 0.25
Egy	0.01	0.10	0.01	(-0.16) –

				0.21
GAB	0.16	0.08	0.00	(-0.11) – 0.25
Gui	-0.01	0.06	0.00	(-0.23) – 0.10
Ind	0.09	0.24	0.04	(-0.32) – 0.66
Ira	-0.01	0.12	-0.01	(-0.23) – 0.22
Irn	-0.01	0.24	0.00	(-0.56) – 0.62
Jor	-0.003	0.13	0.00	(-0.20) – 0.28
Kaz	1.28	3.83	0.00	(-0.19) – 14.08
Ken	0.02	0.07	0.00	(-0.09) – 0.20
Mal	-0.03	0.14	-0.02	(-0.43) – 0.28
Mor	-0.12	0.13	-0.03	(-0.26) – 0.29
Mya	0.02	0.11	0.00	(-0.09) – 0.45
Pak	0.02	0.10	0.00	(-0.22) – 0.27
Phi	-0.002	0.11	0.00	(-0.32) – 0.22
Rus	0.02	0.14	-0.01	(-0.15) – 0.35
Sau	0.07	0.26	0.05	(-0.58) – 0.85
Sin	0.05	0.23	-0.02	(-0.23) – 0.53

Sud	0.00	0.03	0.00	(-0.07) – 0.07
Syr	0.07	0.17	0.01	(-0.03) – 0.71
Taj	0.21	0.64	0.03	(-0.15) – 2.67
Thi	0.12	0.74	-0.10	(-0.49) – 2.92
Tky	0.01	0.12	0.00	(-0.19) – 0.28
Tun	-0.003	0.03	-0.01	(-0.05) – 0.05
Uae	0.001	0.04	0.00	(-0.04) – 0.09
Ukr	0.36	1.15	0.02	(-0.63) – 4.63
Uzb	0.08	0.23	0.00	(-0.24) – 0.67
Ven	0.002	0.20	-0.04	(-0.24) – 0.39
Zim	0.07	0.13	0.00	(-0.12) – 0.40

GNI - Overall

	3173.98	5440.55	1355.00	128 – 41031
Alg	2320.78	1484.88	1737.00	1413 – 7640
Arm	862.17	688.38	606.50	325 – 2957
Aze	927.44	721.24	695.00	394 – 3249
Bah	12361.44	4593.26	10247.00	8499 – 24984
Bel	1932.39	965.51	1566.00	1032 – 4650

BFA	308.11	67.29	298.50	219 – 470
Chn	1243.39	1023.23	906.50	359 – 4581
CIV	744.72	130.82	720.00	525 – 1054
COG	867.61	345.11	809.00	504 – 1626
Cub	3035.72	776.01	2853.00	2177 – 4879
Egy	1236.44	303.32	1305.00	708 – 1788
GAB	4422.22	965.96	4391.00	3076 – 6813
Gui	438.00	57.41	449.00	352 – 531
Ind	909.83	344.19	835.50	436 - 1788
Ira	798.28	596.74	607.00	280 – 2406
Irn	2012.17	649.47	1743.50	1557 – 3998
Jor	1768.83	449.26	1721.00	1123 – 2708
Kaz	2078.50	1357.22	1539.50	1084 – 6135
Ken	461.78	104.49	445.00	292 – 777
Mal	4070.17	1118.04	3794.00	2426 – 6876
Mor	1442.50	344.87	1311.00	1082 - 2276
Mya	192.61	65.00	173.50	128 – 386
Pak	636.06	145.47	578.00	491 – 1019
Phi	1080.61	260.84	1056.00	718 – 1792
Rus	3393.00	1868.89	2793.00	1272 – 8789
Sau	9394.56	2511.40	8504.00	7281 – 15339
Sin	22346.22	5339.77	21857.50	12567 –

				35084
Sud	532.17	321.02	412.50	245 – 1409
Syr	1112.44	232.27	1058.00	855 – 1730
Taj	344.39	158.01	283.00	171 – 701
Thi	2342.89	570.18	2191.50	1553 – 3719
Tky	3313.22	1190.19	2914.50	2082 – 6494
Tun	2100.39	491.74	2001.00	1451 – 3195
Uae	22381.00	6938.18	19666.50	16502 – 41031
Ukr	1297.94	630.94	1045.50	621 – 3017
Uzb	580.11	133.05	608.00	369 – 718
Ven	3964.44	1591.45	3591.00	2309 – 8413
Zim	475.78	199.98	466.50	158 – 808
GDP – Overall	3.87	7.02	4.70	(-41.3) – 52.3
Alg	2.62	2.45	2.85	(-2.1) – 6.9
Arm	3.55	13.47	6.40	(-41.8) – 14.0
Aze	4.09	16.56	8.65	(-23.1) – 34.5
Bah	5.39	2.67	4.95	0.4 – 12.5
Bel	2.78	7.92	5.05	(-11.7) – 11.5
BFA	5.16	3.08	5.61	(-0.6) – 11.0
Chn	9.98	2.50	10.00	3.8 – 14.2

CIV	1.33	3.11	0.43	(-3.7) – 7.7
COG	2.34	3.54	3.10	(-5.5) – 7.7
Cub	1.42	7.28	2.80	(-14.9) – 12.0
Egy	4.53	1.50	4.60	1.1 – 7.1
GAB	2.13	3.77	3.25	(-8.9) – 6.1
Gui	4.03	1.64	4.09	1.9 – 9.0
Ind	4.93	4.96	5.60	(-13.1) – 9.0
Ira	5.43	21.74	0.00	(-41.3) – 52.3
Irn	5.64	3.76	5.45	(-1.1) – 14.4
Jor	5.36	3.85	4.81	1.0 – 18.7
Kaz	2.09	8.50	2.20	(-12.6) – 13.5
Ken	3.02	2.28	3.15	(-0.8) – 6.9
Mal	6.51	4.22	7.05	(-7.4) – 10.0
Mor	3.29	4.96	3.60	(-6.6) – 12.2
Mya	8.14	4.36	7.20	(-0.7) – 13.8
Pak	4.61	2.08	4.8	1.0 – 7.8
Phi	3.82	2.36	4.55	(-0.6) – 7.2
Rus	0.40	7.64	3.07	(-14.5) – 10.0
Sau	3.42	3.00	3.30	(-0.7) – 9.1
Sin	6.84	3.81	7.75	(-2.4) – 11.7
Sud	5.74	3.51	6.3	(-5.5) –

				11.3
Syr	4.95	3.57	5.15	(-3.6) – 13.5
Taj	-1.27	12.58	4.5	(-29.0) – 10.6
Thi	5.16	4.86	5.6	(-10.5) – 11.2
Tky	4.52	4.75	6.47	(-5.7) – 9.4
Tun	4.97	1.82	5.05	1.7 – 8.0
Uae	6.54	4.69	6.60	(-0.9) – 17.5
Ukr	-1.62	9.78	-1.00	(-23.0) – 12.0
Uzb	2.49	5.06	4.10	(-11.2) – 9.5
Ven	3.47	7.02	3.82	(-8.9) – 18.3
Zim	-1.08	6.27	-3.15	(-10.4) – 10.4

Population – Overall

	942778.44	3208592.00	36577.00	493 – 19268303
Alg	29763.50	2602.13	29858.5	25283 – 33853
Arm	3206.60	197.43	313.50	3010 – 3545
Aze	7965.00	381.36	8060.0	7212 – 8467
Bah	627.28	80.78	629.0	493 – 753
Bel	10024.94	182.15	10052.0	9702 – 10239

BFA	11554418	1858865.6	11359035	8871417 - 14777431
Chn	1248245.7	56473.16	1254296	1149069 - 1328630
CIV	16262182	2038489.5	16479065	12780257 - 19268303
COG	3083950.3	428146.31	3078704.5	2421975 - 3766751
Cub	11036.22	212.89	11087.5	10605 - 11268
Egy	64954.78	6377.45	64717.5	55137 - 75498
GAB	1137359.9	130324.12	1146172.0	917896 - 1330182
Gui	7855.11	1014.62	7967.0	6033 - 9380
Ind	1017184.4	97174.57	1019025.0	860195 - 1169016
Ira	23876.22	3397.13	23709.0	18515 - 28993
Irn	64587.22	4316.98	65067.5	56674 - 71208
Jor	4586.06	722.01	4639.0	3170 - 5719
Kaz	14674.22	3302.30	15227.5	1635 - 16451
Ken	30225.56	4355.45	30066.5	23447 - 37531
Mal	22409.06	2699.95	22483.0	18103 - 26572
Mor	28172.56	1982.48	28292.0	24808 - 31224
Mya	44837.00	2729.85	45117.5	40147 - 48798

Pak	138869.06	16177.75	139523.5	112991 – 163902
Phi	74170.61	8384.07	73862.5	61226 – 87960
Rus	146230.06	2262.52	146604.0	141636 – 148689
Sau	20207.33	2689.92	19989.0	16256 – 24735
Sin	3798.33	473.62	3870.0	3016 – 4436
Sud	32147.78	3968.09	32216.0	25933 – 38560
Syr	16085.00	2228.28	15905.5	12721 – 19929
Taj	6041.11	432.82	6057.50	5303 – 6740
Thi	59477.67	3061.91	59783.0	542.91 – 63884
Tky	65462.94	5679.10	65725.0	56154 – 73888
Tun	9351.22	646.29	9397.0	8219 – 10327
Uae	3046.11	830.22	2986.0	1867 – 4380
Ukr	49349.06	1902.39	49552.0	46205 – 51552
Uzb	23955.56	1957.98	24225.5	20510 – 26868
Ven	23625.33	2426.51	23640.0	19750 – 27467
Zim	12224.44	880.08	12446.5	10487 – 13349

	4.26	9.63	0.15	0 - 62
Internet use - Overall				
Alg	2.18	3.27	0.11	0 – 10
Arm	1.50	2.12	0.12	0 – 6
Aze	2.41	3.92	0.07	0 – 12
Bah	9.68	11.33	3.85	0 – 33
Bel	11.69	19.96	0.29	0 – 62
BFA	0.14	0.20	0.04	0 – 1
Chn	3.21	4.62	0.44	0 – 16
CIV	0.33	0.49	0.05	0 – 2
COG	0.25	0.51	0.00	0 – 2
Cub	1.18	2.70	0.27	0 – 12
Egy	2.31	3.50	0.24	0 – 11
GAB	1.78	2.88	0.21	0 – 11
Gui	0.17	0.25	0.01	0 – 1
Ind	1.45	1.85	0.35	0 – 6
Ira	0.05	0.07	0.00	0 – 1
Irn	5.89	9.99	0.26	0 – 32
Jor	4.55	5.92	1.87	0 – 19
Kaz	1.88	3.40	0.30	0 – 12
Ken	1.55	2.61	0.09	0 – 8
Mal	18.78	20.90	9.87	0 – 56
Mor	4.35	7.62	0.17	0 – 23
Mya	0.01	0.03	0.00	0 – 1
Pak	2.14	3.51	0.06	0 – 11
Phi	2.19	2.44	1.30	0 – 6

Rus	4.85	7.04	0.92	0 – 21
Sau	4.83	7.38	0.29	0 – 25
Sin	26.70	24.43	21.59	0 – 61
Sud	1.23	2.96	0.01	0 – 10
Syr	2.37	4.47	0.09	0 – 17
Taj	0.07	0.11	0.02	0 – 1
Thi	4.83	6.15	1.49	0 – 21
Tky	4.12	5.92	0.57	0 18
Tun	3.75	5.09	0.85	0 – 17
Uae	15.34	16.25	11.08	0 – 53
Ukr	4.40	7.46	0.35	0 – 22
Uzb	1.03	1.53	0.03	0 – 4
Ven	4.55	6.04	2.14	0 – 21
Zim	2.64	3.82	0.14	0 - 10

**Phone use –
Overall**

	9.66	10.18	5.94	0.12 – 48.44
Alg	0.18	0.07	0.15	0.12 – 0.33
Arm	5.56	1.80	5.18	3.25 – 9.06
Aze	10.05	2.21	8.82	8.19 – 14.81
Bah	24.31	2.28	24.90	19.07 – 26.76
Bel	25.22	7.12	25.38	15.33 – 37.9
BFA	0.42	0.18	0.40	0.18 – 0.69
Chn	11.28	10.06	7.79	0.59 – 27.79
CIV	1.30	0.63	1.30	0.62 – 3.15

COG	0.65	0.20	0.74	0.20 – 0.82
Cub	5.18	2.28	4.13	3.10 – 9.30
Egy	8.24	4.36	6.99	3.01 – 14.87
GAB	2.85	0.36	2.91	1.99 – 3.32
Gui	0.26	0.08	0.28	0.14 – 0.34
Ind	3.09	2.08	2.84	0.59 – 7.70
Ira	3.59	0.58	3.58	2.86 – 4.75
Irn	15.25	9.58	12.62	4.04 – 33.47
Jor	9.70	2.11	10.20	7.16 – 12.74
Kaz	13.35	3.63	12.30	8.08 – 20.99
Ken	0.93	0.09	0.94	0.71 – 1.04
Mal	16.43	3.59	17.11	8.93 – 20.30
Mor	4.17	1.33	4.21	1.68 – 7.67
Mya	0.53	0.25	0.53	0.17 – 0.94
Pak	2.08	0.80	2.06	0.75 – 3.40
Phi	3.01	1.32	3.65	1.00 – 4.40
Rus	21.18	5.48	20.45	13.95 – 31.00
Sau	12.03	3.11	11.82	7.53 – 16.16
Sin	42.27	4.32	42.48	34.59 – 48.44
Sud	1.04	0.92	0.69	0.25 – 2.98
Syr	9.74	4.51	9.70	3.96 – 17.32
Taj	4.16	0.45	4.30	3.48 – 4.79

Thi	7.70	3.09	8.47	2.42 – 11.00
Tky	22.74	4.87	24.99	11.97 – 27.29
Tun	8.47	3.29	8.53	3.71 – 12.47
Uae	28.44	2.92	28.12	22.36 – 32.29
Ukr	20.00	4.62	19.80	13.54 – 27.83
Uzb	6.76	0.19	6.73	6.42 – 7.16
Ven	11.52	2.52	11.21	7.63 – 18.38
Zim	1.97	0.58	2.12	1.22 – 2.76

**Mobile phone use
– Overall**

	12.72	25.12	0.73	0 – 173
Alg	11.56	24.45	0.15	0 – 81
Arm	2.59	4.05	0.26	0 – 11
Aze	9.82	14.91	2.70	0 – 51
Bah	40.17	47.04	17.35	1 – 148
Bel	11.45	21.18	0.18	0 - 61
BFA	1.66	3.08	0.04	0 – 11
Chn	10.76	13.83	2.67	0 – 41
CIV	5.88	9.70	1.21	0 – 37
COG	5.61	9.33	0.15	0 – 35
Cub	0.32	0.55	0.05	0 – 2
Egy	6.46	10.91	0.46	0 – 40
GAB	17.25	26.33	0.83	0 – 88
Gui	0.76	0.93	0.32	0 – 2

Ind	6.66	10.84	0.80	0 – 35
Ira	4.92	13.16	0.00	0 – 48
Irn	5.63	10.91	0.71	0 – 42
Jor	17.59	26.32	2.08	0 – 81
Kaz	11.62	22.71	0.26	0 – 82
Ken	4.66	8.61	0.06	0 – 30
Mal	26.78	29.63	11.91	0 – 88
Mor	14.55	20.42	0.87	0 – 64
Mya	0.07	0.11	0.02	0 – 1
Pak	4.77	12.06	0.18	0 – 48
Phi	14.69	18.86	3.11	0 – 51
Rus	22.58	39.59	0.72	0 – 119
Sau	20.56	32.62	3.55	0 – 115
Sin	48.36	43.42	34.60	2 – 127
Sud	2.32	5.15	0.04	0 – 19
Syr	5.36	9.84	0.01	0 – 34
Taj	0.85	1.57	0.01	0 – 4
Thi	17.87	24.92	3.77	0 – 80
Tky	22.67	27.30	8.70	0 – 83
Tun	15.19	26.33	0.50	0 – 76
Uae	44.42	49.71	22.43	2 – 173
Ukr	19.35	37.72	0.34	0 – 120
Uzb	0.23	0.24	0.14	0 – 1
Ven	20.68	25.06	12.31	0 – 86
Zim	2.09	2.70	0.86	0 – 9

Note. GNI = Gross National Income; GDP = Gross Domestic Product; *M* = Mean; *SD* = Standard Deviation; *Mdn* = Median.

Table 2

Highest and Lowest Mean Rankings for Countries According to Study Variables (N = 684)

Variable	<i>M</i>	<i>SD</i>	<i>Mdn</i>
<i>Protests</i>			
Twelve Highest Mean Ranked			
1. Ind	48.00	22.65	47.50
2. Chn	47.11	22.23	48.50
3. Rus	30.67	14.86	31.50
4. Ira	28.72	29.07	15.50
5. Tky	23.39	13.87	18.00
6. Pak	20.28		
7. Irn	19.94		
8. Bel	17.72		
9. Phi	13.61		
10. Ven/Thi	11.17		
11. CID	10.39		
12. Ukr	9.78		

Ten Lowest Mean Ranked

27. Tun	2.67		
28. Mya	2.5		
29. UAE	1.94		
30. Kaz	1.56		
31. Gui	1.44		
32. GAB	1.33		
33. BFA	0.78		
34. COG	0.78	1.06	0.50
35. Arm	0.72	0.83	0.50
36. Taj	0.72	1.67	0.00
37. Uzb	0.56	0.78	0.00
38. Aze	0.39	0.85	0.00

Autocracy

Five Highest Mean Ranked

1. Bel	9.89	0.47	10.00
2. Phi	8.00	0.00	8.00
3. Tky	7.56	0.78	7.00
4. Ven	7.11	1.28	7.50
5. Thi	6.78	4.49	9.00

Five Lowest Mean Ranked

34. Syr	-8.11	1.02	-9.00
35. Bah	-8.44	1.15	-9.00
36. Uzb	-8.50	2.12	-9.00
37. Ira	-9.00	0.00	-9.00
38. Sau	-10.00	0.00	-10.00

Unemployment Rate (% change)

Five Highest Mean Ranked

1. Kaz	1.28	3.83	0.00
2. Bel	0.74	2.67	0.00
3. Ukr	0.36	1.15	0.02
4. CIV	0.23	0.86	0.01
5. Taj	0.21	0.64	0.03

Five Lowest Mean Ranked

34. Irn	-0.01	0.24	0.00
35. Mal	-0.03	0.14	-0.02
36. Cub	-0.07	0.14	-0.04
37. Mor	-0.12	0.13	-0.03
38. BFA	-0.14	0.26	-0.02

GNI

Five Highest Mean Ranked

1. Uae	22381.00	6938.18	19666.50
2. Sin	22346.22	5339.77	21857.50
3. Bah	12361.44	4593.26	10247.00
4. Sau	9394.56	2511.40	8504.00
5. GAB	4422.00	965.96	4391.00

Five Lowest Mean Ranked

34. Ken	461.78	104.49	445.00
35. Gui	438.00	57.41	449.00
36. Taj	344.39	158.01	283.00
37. BFA	308.11	67.29	298.50
38. Mya	192.61	65.00	173.50

GDP

Five Highest Mean Ranked

1. Chn	9.98	2.50	10.00
2. Mya	8.14	4.36	7.20
3. Sin	6.84	3.81	7.75
4. Uae	6.54	4.69	6.60
5. Mal	6.51	4.22	7.05

Five Lowest Mean Ranked

34. CIV	1.33	3.11	0.43
35. Rus	0.40	7.64	3.07
36. Zim	-1.08	6.27	-3.15
37. Taj	-1.27	12.58	4.5
38. Ukr	-1.62	9.78	-1.00

Population

Five Highest Mean Ranked

1. CIV	16262182	2038489.5	16479065
2. BFA	11554418	1858865.6	11359035
3. COG	3083950.3	428146.31	3078704.5
4. Chn	1248245.7	56473.16	1254296
5. GAB	1137359.9	130324.12	1146172.0

Five Lowest Mean Ranked

34. Jor	4586.06	722.01	4639.0
35. Sin	3798.33	473.62	3870.0
36. Arm	3206.60	197.43	313.50
37. Uae	3046.11	830.22	2986.0
38. Bah	627.28	80.78	629.0

Internet use

Five Highest Mean Ranked

1. Sin	26.70	24.43	21.59
2. Mal	18.78	20.90	9.87
3. Uae	15.34	16.25	11.08
4. Bel	11.69	19.96	0.29
5. Bah	9.68	11.33	3.85

Five Lowest Mean Ranked

34. Gui	0.17	0.25	0.01
35. BFA	0.14	0.20	0.04
36. Taj	0.07	0.11	0.02
37. Ira	0.05	0.07	0.00
38. Mya	0.01	0.03	0.00

Phone use

Five Highest Mean Ranked

1. Sin	42.27	4.32	42.48
2. Uae	28.44	2.92	28.12
3. Bel	25.22	7.12	25.38
4. Tky	22.74	4.87	24.99
5. Rus	21.18	5.48	20.45

Five Lowest Mean Ranked

34. COG	0.65	0.20	0.74
35. Mya	0.53	0.25	0.53
36. BFA	0.42	0.18	0.40
37. Gui	0.26	0.08	0.28
38. Alg	0.18	0.07	0.15

Mobile phone use

Twelve Highest Mean Ranked

1. Sin	48.36	43.42	34.60
2. Uae	44.42	49.71	22.43
3. Bah	40.17	47.04	17.35
4. Mal	26.78	29.63	11.91
5. Tky	22.67	27.30	8.70
6. Rus	22.58		
7. Ven	20.68		
8. Sau	20.56		
9. Ukr	19.35		
10. Thai	17.87		
11. Jor	17.59		
12. Gab	17.25		

Twelve Lowest Mean Ranked

27. Ira	4.92
28. Pak	4.77
29. Ken	4.66
30. Arm	2.59
31. Sud	2.32

32. Zim	2.09		
33. Ken	1.66		
34. Taj	0.85	1.57	0.01
35. Gui	0.76	0.93	0.32
36. Cub	0.32	0.55	0.05
37. Uzb	0.23	0.24	0.14
38. Mya	0.07	0.11	0.02

Note. GNI = Gross National Income; GDP = Gross Domestic Product; *M* = Mean; *SD* = Standard Deviation; *Mdn* = Median.

BIBLIOGRAPHY

Ackerman, Peter and Jack DuVall. 2000. *A Force More Powerful: A Century of Nonviolent Conflict*. Palgrave Press: New York.

Aday, Sean, Henry Farrell, Mark Lynch, John Sides, John Kelly and Ethan Zuckerman. 2010. "Blogs and Bullets: New Media in Contentious Politics." *Peaceworks*, No. 65. Washington DC: US Institute of Peace (USIP).

Arquilla, John and David F. Ronfeldt, eds. 2001. "Networks and Netwars: The Future of Terror, Crime, and Militancy." Santa Monica: Rand.

Ayres, Jeffrey. 1999. From the streets to the Internet: The cyber-diffusion of contention. *Annals of the American Academy of Political and Social Science* 566: 132-43.

Bailard, Catie. 2009. Mobile Phones Diffusion and Corruption in Africa. *Political Communication* 26, no. 3: 333-353.

Babbie, Earl. 2010. *The Practice of Social Research*. Belmont: Wadsworth Publishing.

- Banks, Arthur. 2001. *Cross-National Time Series, 1815–1999*. Binghamton, NY: Center for Comparative Political Research, State University of New York.
- Baumgartner, Jones and Bryan Jones. 2009. *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.
- Becker, Ted. 2001. Rating the impact of new technologies on democracy. *Communications of the ACM*, 44, no. 1: 39–43.
- Beissinger, Mark. 1998. Event Analysis in Transitional Societies: Protest Mobilization in the Former Soviet Union. In *Acts of Dissent: New Developments in the Study of Protest*, eds. Rucht, Dieter, Ruud Koopmans, and Friedhelm Niedhardt. Berlin: Sigma.
- Bell, Daniel. 1979. The Social Framework of the Information Society. In: *The Computer Age: A Twenty-Year View*, ed. Dertouzous, Michael L. and Joel Moses, 500-549. Cambridge, Mass.: The MIT Press.
- Benkler, Jochai. 2002. Coase's Penguin, or Linux and the Nature of the Firm. Accessed on September 22, 2011. Available online from:
<http://www.benkler.org/CoasesPenguin.html>

Benkler, Jochai. 2006. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale: Yale University Press.

Bennett, Lance, Reginal Lawrence, and Steven Livingston. 2007. *When the Press Fails: Political Power from Iraq to Katrina*. Chicago: University of Chicago Press.

Best, Michael and Keegan Wade. 2009. The Internet and Democracy: Global Catalyst or Democratic Dud? *Bulletin of Science, Technology & Society* 29, no 4: 255-271.

Bimber, Bruce. 1998. The Internet and political transformation: Populism, community, and accelerated pluralism. *Polity* 31, no. 1: 133-160.

Bimber, Bruce. 2001. Information and Political Engagement in America: the Search for Effects of Information Technology at the Individual Level. *Political Research Quarterly* 54, no. 1: 53-67.

Blatter, Ariela. 2008. Personal conversation with Amnesty International representative regarding "Eyes on Darfur" Project. San Francisco, CA. March 29, 2007.

Bonchek, Mark S. 1997. From broadcast to netcast: The Internet and the flow of political information. Ph.D. diss., Harvard University.

- Bond, Doug, Craig Jenkins, Charles Taylor, and Kurt Schock. 1997. Mapping Mass Political Conflict and Civil Society. *Journal of Conflict Resolution* 41, no. 4: 553-579.
- Bond, Doug; Churl Oh, Craig Jenkins, and Charles Taylor. 2001. Integrated Data for Events Analysis (IDEA): An Event Typology for Automated Events Data Development. *Journal of Peace Research*, 40, no. 6: 733-745.
- Bond, Joe and Doug Bond. 2008. Peaceful Transitions: Nonviolent Direct Action and Stability. Paper presented at the 49th Annual Convention of the International Studies Association (ISA) in San Francisco, March 2009.
- Boulianne, Shelley. 2009. Does Internet Use Affect Engagement? A Meta-Analysis of Research. *Political Communication* 26, no. 2: 193-211.
- Brafman, Ori and Rod Beckstrom. 2006. *The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations*. London, England: Portfolio.
- Brainard, Lori and Siplon, Patricia. 2000. Cyberspace challenges to mainstream advocacy groups: the case of health care activism. Paper prepared for the Annual Meeting

of the American Political Science Association (APSA). Washington DC. August 31-September 2, 2000.

Braun, David. 2010. "Mobile Technology Gives Zimbabweans a Voice," *National Geographic Daily News*, December 21, 2010.

Buchanan, Mark. 2003. *Nexus: Small Worlds and the Groundbreaking Theory of Networks*. New York, NY: W. W. Norton & Company.

Burkhart, Grey E., and Susan Older. 2003. *The Information Revolution in the Middle East and North Africa*. Washington, DC: Rand.

Campbell, Scott W. and Yong Jin Park. 2008. Social Implications of Mobile Telephony: The Rise of Personal Communication Society. *Sociology Compass* 2, no. 2: 371-387.

Cascio, Jamais, Jerry Paffendorf, and John Smart. 2007. *Metaverse Roadmap: A Cross-Industry Public Foresight Project*. Accessed December 9, 2008. Available from: <http://www.metaverseroadmap.org>

Castells, Manuel. 1996. *The information age: Economy, society and culture. Volume I: The rise of the network society*. Malden, MA: Blackwell Publishers.

Castells, Manuel. 2011. *Communication Power*. Oxford: Oxford University Press.

Chase, James and Michael Mulvenon. 2002. *You've Got Dissent! Chinese Dissident Use of the Internet and Beijing's Counter Strategies*. Santa Monica: Rand.

Chen, Hsinchun, Wingyan Chung, Jailun Qin, Edna Reid, Marc Sageman, and Gabriel Weimann. 2008. "Uncovering the Dark Web: A case study of Jihad on the Web." *Journal of the American Society for Information Science and Technology* 59, no. 8: 1347–1359.

Cherian, George. 2008. "The Limits of Singapore's 'Light Touch' Web Regulation." Paper prepared for the Politics 2.0 International Conference. London England. April 18, 2008.

Clarke, Roger. 1994. "Information Technology: Weapon of Authoritarianism or Tool of Democracy?" Paper prepared for the IFIP World Congress. Hamburg, Germany. August 31, 1994.

Cleaver, Harry. 1999. *Computer-linked social movements and the global threat to capitalism*. Accessed on December 12, 2008. Available from:

<http://www.eco.utexas.edu/Homepages/faculty/Cleaver/polnet.html>

Clutterbuck, Richard. 1981. *The Media and Political Violence*. London: Macmillan Press.

- Coll, Steve. 2005. In the Gulf, dissidence goes digital: Text messaging is new tool of political underground. *Washington Post*, March 29, 2005.
- Colvin, Mark. 2010. Taking the twit out Twitter and finding value. *The Punch: Australia's best conversations*, September 30, 2010.
- Couch, Carl J. 1995. Oh, what webs those phantoms spin. *Symbolic Interaction* 18, 229-245.
- Cutler, Abigail. Penetrating the Great Firewall. 2008. *The Atlantic.com*. February 9.
- Dahlerus, Claudia. 2001. Do Targets Matter? Repressive Targeting In East Central Europe, 1980-1995. Unpublished Ph.D. Diss., University of Colorado at Boulder.
- Danzger, Herbert. 1975. Validating Conflict Data. *American Sociological Review* 40, 570-584.
- Davenport, Christian. 2001. The Devil is in the Details: Media Attentiveness, Conflict Cycles and the Unexplored Micro-Foundations of Event Data. Paper prepared for

Repression and Mobilization: What Do We Know and Where Do We Go From Here. University of Maryland, College Park, MD. June 21 – 24, 2001.

Denning, Dorothy. 2000. Activism, hacktivism, and cyberterrorism: the Internet as a tool for influencing foreign policy. Paper prepared for the Internet and International Systems: Information Technology and American Foreign Policy Decisionmaking workshop, San Francisco, CA.

Diamond, Larry (2010). "Liberation Technology." *Journal of Democracy* 21, no. 3: 69-83.

Diani, Mario. 2000. Social Movement Networks Virtual and Real. *Information, Communication and Society* 3, no. 3: 386-401.

Dickinson, Elizabeth. 2011. "The First WikiLeaks Revolution?" *Foreign Policy*, January 13, 2011.

Diebert, Ronald. The Geopolitics of Internet Control. In *Routledge Handbook of Internet Politics*, edited by Chadwick, Andrew and Philip N. Howard. London: Routledge.

Deibert, Ronald, John Palfrey, Rafal Rohozinski, and Jonathan Zittrain. 2008. *Access Denied: The Practice and Policy of Global Internet Filtering*. Boston: The MIT Press.

Dobson, William. 2010. "Needles in a Haystack" *Newsweek*, August 6, 2010.

Drezner, Daniel. 2004. The Global Governance of the Internet: Bringing the State Back
In. *Political Science Quarterly* 119, (Fall): 477-498.

Drezner, Daniel. 2006. Weighing the scales: The Internet's effect on state-society
relations. Paper presented at the International Studies Association (ISA)
convention, March 2006, San Diego, CA.

Drezner, Daniel. 2010. "Weighing the scales: The Internet's effect on state-society
relations." *Brown Journal of World Affairs* 16, no. 2: 31:44

Dunham, Franklin. 1938. Democracy and radio. *Public Opinion Quarterly* 2, no. 1: 77-79.

Earl, Jennifer and Alan Schussman. 2003. The new site of activism: on-line organizations,
movement entrepreneurs, and the changing location of social movement
decision- making, in Patrick G. Coy (ed.) *Consensus Decision Making, Northern
Ireland and Indigenous Movements*, 155-187. *Research in Social Movements,
Conflicts and Change*, 24. Boston: JAI.

- Edwards, Arthur. 2004. The Dutch women's movement online: Internet and the organizational infrastructure of a social movement. In *Cyberprotest: new media, citizens, and social movements*, eds. Wim van de Donk, Brian .D. Loader, Paul G. Nixon and Dieter Rucht. New York: Routledge.
- Ekiert, Grzegorz and Jan Kubik. 1999. *Rebellious Civil Society: Popular Protest and Democratic Consolidation in Poland 1989-1993*. Ann Arbor: The University of Michigan Press.
- Elin, Larry. 2003. The radicalization of Zeke Spier: How the Internet contributes to civic engagement and new forms of social capital. In *Cyberactivism: online activism in theory and practice*, eds. Martha McCaughey and Michael D. Ayers. New York: Routledge.
- Elting, Bruce, Robert Faris, and John Palfrey. 2010. Political Change in the Digital Age: The Fragility and Promise of Online Organizing. *SAIS Review of International Affairs* 30, no. 2: 37-49.
- Eyck, Toby. 2001). Does information matter? A research note on information technologies and political protest. *The Social Science Journal* 38, 147-160.
- Fallows, James. 2008. The Connection Has Been Reset: China's Great Firewall is crude,

slapdash and surprisingly easy to breach. Here's why it's so effective anyway.
The Atlantic, March 2008.

Feezell, Jessica; Meredith Conroy, and Mario Guerrero. 2009. Facebook is ... Fostering Political Engagement: A Study of Online Social Networking Groups and Offline Participation. Paper prepared for the American Political Science Association, Toronto, 2009.

Franzosi, Roberto. 1987. The Press as a Source of Socio-Historical Data. *Historical Methods* 20, no. 4: 5-16.

Friedman, Thomas. 2000. *The Lexus and The Olive Tree, Revised Edition: Understanding Globalization*. New York, NY: Farrar, Straus and Giroux Press.

Gamson, William A. 1988. Political Discourse and Collective Action. *International Social Movement Research* 1, 219-46.

Garner, Rorberta T. 1999. Virtual social movements. Paper prepared for the Zaldfest: a conference in honor of Mayer Zald, University of Michigan - Ann Arbor, MI.

Garrett, Kelly. 2006. Protest in an Information Society: A Review of the Literature on Social Movements and the New ICTs. *Information, Communication and Society* 9, no. 2: 202-224.

Garrett, Kelly and Paul Edwards. 2007. Revolutionary Secrets: Technology's Role in the South African Anti-Apartheid Movement. *Social Science Computer Review*, 25, no. 1: 13-26.

Gharbia, Sami. 2010. "The Internet Freedom Fallacy and the Arab Digital Activism."
Accessed on June 4, 2011. Available from:
<http://samibengharbia.com/2010/09/17/the-internet-freedom-fallacy-and-the-arab-digital-activism>

George, Alexander L. and Andrew Bennett 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge: MIT Press.

Gladwell, Malcom (2010). Small Change: Why the Revolution Will Not Be Tweeted. *The New Yorker*, October 4, 2010.

Goffman, Erving. 1974. *Frame Analysis: An Essay on the Organization of Experience*. New York, NY: Harper & Row.

Goldsmith, Jack. 1998. Regulation of the Internet: Three Persistent Fallacies. *Chicago-Kent Law Review* 73, 1119-1131.

Goldsmith, Jack and Tim Wu. 2006. *Who Controls the Internet? Illusions of a Borderless World*. Oxford: Oxford University Press.

Goldstein, Joshua, and Juliana Rotich. Digitally Networked Technology in Kenya's 2007–2008 Post-Election Crisis. Berkman Center for Internet & Society at Harvard University. Access on December 9, 2009. Available from:
http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Goldstein&Rotich_Digitally_Networked_Technology_Kenyas_Crisis.pdf

Groshek, Jacob. 2009. The Democratic Effects of the Internet, 1994-2003: A Cross-National Inquiry of 152 Countries. *The International Communication Gazette* 71, no. 3: 115-136.

Groshek, Jacob. 2010. A Time-Series, Multinational Analysis of Democratic Forecasts and Internet Diffusion. *International Journal of Communication* 4, 142-174

Habermas, Jürgen. 1962. *The Structural Transformation of the Public Sphere: an Inquiry into a Category of Bourgeois Society*. Cambridge: MIT Press.

Hampton, Keith, N. 2003. Grieving for a lost network: collective action in a wired suburb. *The Information Society* 19, no. 5: 1-13.

Helvey, Robert. 2004. *On Strategic Nonviolent Conflict: Thinking about the Fundamentals*.
Boston: The Albert Einstein Institution.

Herman, Edward and Noam Chomsky. 1988. *Manufacturing Consent: The Political
Economy of the Mass Media*. New York, NY: Pantheon Press.

Hess, David and Brian Martin. 2006. Repression, backfire, and the theory of
transformative events. *Mobilization* 11, no. 1: 249-267.

Hill, David and Krishna Sen. 2005. *The Internet in Indonesia's New Democracy*. London and
New York: Routledge.

Hocke, Peter. 1998. Determining the selection bias in local and national newspaper
reports on protest events." In *Acts of Dissent: New Developments in the Study of
Protest*, eds. Rucht, Dieter, Ruud Koopmans, and Friedhelm Niedhardt. Berlin:
Sigma.

Holsti, Ole. 1969. *Content Analysis for the Social Sciences and Humanities*. Reading, MA:
Addison-Wesley.

Homer-Dixon, Thomas. 2007. *The Upside of Down: Catastrophe, Creativity and the Renewal*

of Civilization. Canada: Knopf.

Howard, Philip. 2010. *The Digital Origins of Dictatorship and Democracy: Information Technology and Political Islam*. Oxford University Press, New York.

ICG. 2010. "Rigged Elections in Darfur and the Consequences of a Probable NCP Victory in Sudan." *Africa Briefing*, N. 72, International Crisis Group, March 30, 2010.

Inglehart, Ronald and G. Catterberg. 2002. Trends in political action: The developmental trend and the post-honeymoon decline. *International Journal of Comparative Sociology* 43, 3-5: 300-316.

International Telecommunications Union. 2008. *Key indicators of the telecommunication/ICT sector*. Accessed on November 3, 2009. Available from: <http://www.itu.int/ITU-D/ict/handbook.html>

Iyengar, Shanto. 1991. *Is Anyone Responsible? How Television Frames Political Issues*. Chicago, IL: University of Chicago Press.

Jenkins, J. Craig. 1983. Resource Mobilization Theory and the Study of Social Movements. *Annual Review of Sociology* 9, 527-553.

Jones, Paul. 2000. Democratic norms and means of communication: Public sphere, fourth estate, freedom of communication. *Critical Horizons* 1, no. 2: 307–339.

Jones, Bryan D. and Frank R. Baumgartner. 2005. *The Politics of Attention: How Government Prioritizes Problems*. Chicago, IL: University of Chicago Press.

Joyce, Mary. 2011. "Activism, Repression and ICT: What We Know Now." Accessed on May 3, 2011. Available from: <http://www.meta-activism.org/2011/01/activism-repression-and-ict-what-we-know-now>

Kalathil, Shanthi and Taylor Boas. 2003. *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*. New York: Carnegie Endowment for International Peace.

Katz, Elihu and Paul Lazarsfeld. 1955. *Personal Influence: The Part Played by People in the Flow of Mass Communications*. New Brunswick, NJ: Transaction Publishers.

Keck, Margaret and Kathryn Sikkink. 1998. *Activists Beyond Borders*. Ithaca, NY: Cornell University Press.

Kedzie, Christopher. 1997. Communication and democracy: Coincident revolutions and the emergent dictator's dilemma. Unpublished Ph.D. diss., RAND Graduate

School.

Kedzie, Christopher. 2002. Coincident revolutions and the dictator's dilemma. In *Technology, development, and democracy*, ed. Juliann E. Allison. Albany, NY: State University of New York Press.

Kelly, Kevin. 2010. *What Technology Wants*. New York, NY: Viking.

Kelly, John and Bruce Elting. 2008. "Mapping Iran's Online Public: Politics and Culture in the Persian Blogosphere." Berkman Center for Internet & Society, Harvard University. April 5.

Kidd, Dorothy. 2003. Indymedia.org: a new communications commons. In *Cyberactivism: online activism in theory and practice*, eds. Martha McCaughey and Michael D. Ayers. New York: Routledge.

King, Gary and Will Lowe. 2003. An Automated Information Extraction Tool for International Conflict Data with Performance as Good as Human Coders: A Rare Events Evaluation Design. *International Organizations* 57, Summer: 617-642.

Kriesi, Hanspeter, Ruud Koopmans, Jan Willem Dyvendak, and Macro G. Guigni. 1995. *New Social Movements in Western Europe: A Comparative Analysis*. Minneapolis: University of Minnesota Press.

Lerner, Daniel. 1958. *The passing of traditional society*. New York: The Free Press.

Leizerov, Sagi. 2000. Privacy advocacy groups versus Intel: a case study of how social movements are tactically using the Internet to fight corporations. *Social Science Computer Review* 18, no. 4: 461-83.

Lessig, Lawrence. 2006. *Code: Version 2.0*. New York: Basic Books.

Lieberman, Evan. 2005. Nested Analysis as Mixed-Method Strategy for Comparative Research," *American Political Science Review* 99, no. 3: 435-452.

Livingston, Steven. 1997. "Clarifying the CNN Effect: An Examination of Media Effects According to Type of Military Intervention." John F. Kennedy School of Government's Joan Shorenstein Center on the Press, Politics and Public Policy at Harvard University.

Livingston, Steven. 2011. "Africa's Evolving Infosystems: A Pathway to Security and Stability." A research paper from the Africa Center for Strategic Studies, Washington DC.

Lohmann, Susanne. 1994. "The Dynamics of Information Cascades: The Monday Demonstrations in Leipzig, East Germany, 1989-91." *World Politics* 47, 1: 42-101.

Lyon, David. 2006. *Theorizing Surveillance: The Panopticon and Beyond*. Willan: London.

Mahmud, Nadim; Rodriguez, Joce; and Josh Nesbit (2010). "A Text Message-Based Intervention to Bridge the Healthcare Communication Gap in the Rural Developing World." *Journal of Technology and Health Care* 18, 2: 137-144.

Manion, Mark and Abby Goodrum. 2000. Terrorism or civil disobedience: toward a hacktivist ethic. *Computers and Society* 30, 2: 14-29.

Markowsky, Carol and Edward Markowski. 1999. Conditions for the effectiveness of a preliminary test of variance. *The American Statistician* 44, 4: 322-326.

Marovic, Ivan. 2007. Personal conversation on December 13, 2007 in Irvine, California.

Marshall, Monty G. and Keith Jagers. Polity IV Project: Political Regime Characteristics and Transitions, 1800–2007. In *Polity IV Project*. Arlington, VA: George Mason University, 2008.

Martin, Brian. 2001. *Technology for Nonviolent Struggle*. London: War Resisters' International.

McAdam, Doug. 1996. Conceptual origins, current problems, future directions. In *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*, eds. Doug McAdam, John D. McCarthy and Mayer N. Zald. 23-40. New York: Cambridge University Press.

McAdam, Doug, John D. McCarthy, and Mayer N. Zald, eds. 1996. *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*. New York: Cambridge University Press.

McCarthy, John D. 1996. Constraints and opportunities in adopting, adapting, and inventing'. In *Comparative Perspectives on Social Movements: Political Opportunities, Mobilizing Structures, and Cultural Framings*, eds. Doug McAdam, John D. McCarthy and Mayer N. Zald. 141-151. New York: Cambridge University Press.

McGlinchey, Eric. 2009. "Transitions 2.0: The Internet, Political Culture and Autocracy in Central Asia." Paper prepared for the 2009 Annual Meeting of the American Political Science Association, Toronto, Canada.

McPhail, Clark, David Schweingruber, and John McCarthy. 1998. Policing Protest in the United States: 1960-1995. In *Policing Protest: The Control of Mass Demonstrations in Western Democracies: Social Movements, Protest, and Contention*, eds. Donatella Della Porta and Herbert Reiter. Minneapolis: University of Minnesota Press.

Meier, Patrick. 2010. "Maps, Activism and Technology: Check-In's with a Purpose." Accessed on May 3, 2011. Available from:
<http://irevolution.net/2011/02/05/check-ins-with-a-purpose>

Meier, Patrick. 2010. "Political Change in the Digital Age: The Prospect of Smart Mobs in Authoritarian States." Accessed on February 3, 2011. Available from:
<http://irevolution.net/2010/12/13/political-change-digital-age>

Meier, Patrick. 2011. "Verifying Social Media Content: An Introduction to Information Forensics." Accessed on August 14, 2011. Available from:
<http://irevolution.net/2011/06/21/information-forensics>

Mesquita, Bruno and George W. Downs. 2005. Development and Democracy. *Foreign Affairs* 84.

Miard, Fabien. 2009. "Call for Power? Mobile Phones as Facilitators of Political Activism." Paper prepared for the ISA 50th Annual Convention, New York, February 15-18, 2009.

Milner, Helen. 2006. The Digital Divide: The Role of Political Institutions in Technology Diffusion. *Comparative Political Studies* 39, no. 2: 176-199.

Morozov, Evgeny. 2011. *The Net Delusion: The Dark Side of Internet Freedom*. New York: Public Affairs.

Munck, Geraldo and Jay Verkuilen. 2002. Conceptualizing and Measuring Democracy: Evaluating Alternative Indices. *Comparative Political Studies* 35, no 1: 5-34.

Mueller, Carol. 1999. Escape from the GDR, 1961-1989: Hybrid Exit Repertoires in a Disintegrating Leninist Regime. *American Journal of Sociology* 105, no. 3: 697-735.

Mydans, Seth. 2003. Myanmar junta unplugs Internet. *New York Times*, October 3, 2007.

Myers, John D. 1994. Communication technology and social movements: contributions of computer networks to activism. *Social Science Computer Review* 12, 251-60.

Nam, Taehyun. 2005. *Korean Protest and Coercion Data, 1990–1991*. Accessed on May 23, 2011. Available from: <http://www.poliscience.org>

Navia, Patricia, Thomas D. Zweifel. 2006. I want my MTV: Media, freedom of information and democracy. Paper prepared for the Annual Convention of the Midwest Political Science Association. Chicago, IL.

Nikolayenko, Olena. 2009. Youth Movements in Post-Communist Societies: A Model of Nonviolent Resistance. Paper prepared for the Annual Meeting of the American Political Science Association, September 2-6, 2009.

Nohria, Nitin and Robert Eccles. 1993. *Networks and Organizations: Structure, Form and Action*. Cambridge: Harvard Business School Press.

Norris, Pippa. 2000. *A Virtuous Circle: Political Communications in Postindustrial societies*. New York: Cambridge University Press.

Norris, Pippa. 2001. *Digital divide: Civic Engagement, Information Poverty, and the Internet Worldwide*. New York: Cambridge University Press.

Norris, Pippa. 2004. The bridging and bonding role of online communities. In *Society Online: The Internet in Context*, eds. Philip Howard and Steve Jones. 31-41. California: Thousand Oaks: Sage Publications.

Norris, Pippa. 2006. "Political protest in fragile states." Paper prepared for the International Political Science Association World Congress.

O'Loughlin, John, Michael D. Ward, Corey L. Lofdahl, Jordin S. Cohen, David S. Brown, David Reilly, Kristian S. Gleditsch, and Michael Shin. (1994). The Diffusion of Democracy, 1946-1994. *Annals, Association of American Geographers* 88, no. 4, 545-574.

Obadare, Ebenezer. 2005. "The GSM Boycott: Civil Society, Big Business and the State in Nigeria." Civil Society Working Paper series, 23, Center for Civil Society, London School of Economics and Political Science. Accessed on May 3, 2009. Available from: <http://eprints.lse.ac.uk/29065>

Olzak, Susan., and Johan Olivier. 1998. "Comparative Event Analysis: Black Civil Rights Protest in South Africa and the United States." In *Acts of Dissent: New Developments in the Study of Protest*, eds. Rucht, Dieter, Ruud Koopmans, and Friedhelm Niedhardt. Berlin: Sigma.

Oats, Sarah. 2008. "Comrades Online? Internet, Democracy and Russia. Paper prepared for the Politics 2.0 Conference, April 18, 2008, London.

Polity IV. 2002. *Polity IV Annual Time-Series Users' Manual*. Accessed on August 9, 2009.

Available from: <http://www.systemicpeace.org>

Popovic, Srdja, Milivojevic Djinovic and Slobodan Djinovic. 2006. *Nonviolent Struggle: 50 Crucial Points. A Strategic Approach to Everyday Tactics*. Belgrade: Center for Nonviolent Action and Strategies.

Price, Monroe. 2002. *Media and Sovereignty: The Global Information Revolution and Its Challenge to State Power*. Cambridge: MIT Press.

Reilly, Paul. 2003. "Civil Society, the Internet and Terrorism: Two case studies from Northern Ireland." Paper prepared for the European Consortium for Political Research Joint Sessions of Workshops, Edinburgh.

Ronfeldt, David and Danielle Varda. 2008. "The Prospects for Cyberocracy (Revisited)." Accessed on January 4, 2001. Available from: <http://ssrn.com/abstract=1325809>

Rosanvallon, Pierre. 2008. *Counter-Democracy, Politics and the Age of Distrust*. Cambridge: Cambridge University Press.

Rucht, Dieter. 2004. The quadruple 'A': media strategies of protest movements since the 1960s'. In *Cyberprotest: new media, citizens, and social movements*, eds. Wim van

- de Donk, Brian .D. Loader, Paul G. Nixon and Dieter Rucht. 29-56. New York: Routledge.
- Ryan, Charlotte. 1991. *Prime Time Activism: Media Strategies for Grassroots Organizing*. Boston: South End Press.
- Rheingold, Howard. 2003. *Smart Mobs: The Next Social Revolution*. Cambridge: Basic Books.
- Sassen, Saskia. 1990. *The Mobility of Labor and Capital: A Study in International Investment and Labor Flow*. Cambridge: Cambridge University Press.
- Sawilowski, Shlomo. 2002. Fermat, Schubert, Einstein, and Behrens-Fisher: The Probable Difference Between Two Means With Different Variances. *Journal of Applied Statistical Methods* 1, 461-472.
- Schmidt, Eric and Jared Cohen. 2010. The Digital Disruption: Connectivity and the diffusion of power. *Foreign Affairs*, November /December 2010.
- Schmitter, Philippe. 2008. A book review of Rosanvallon 2008, Counter-Democracy, Politics in an Age of Distrust. Unpublished. Accessed on September 12, 2011. Available from:

[http://www.eui.eu/Documents/DepartmentsCentres/SPS/Profiles/Schmitter/
PCSRosanvallon.pdf](http://www.eui.eu/Documents/DepartmentsCentres/SPS/Profiles/Schmitter/PCSRosanvallon.pdf)

Schudson, Michael. 1999. *The Good Citizen: A History of American Civic Life*. Cambridge, MA: Harvard University Press.

Schudson, Michael. 2003. Click here for democracy: A history and critique of an information-based model of citizenship. In *Democracy and New Media*, eds. Henry Jenkins and David Thorburn. 49–60. Cambridge, MA: MIT Press.

Schuler, Ian. 2008. SMS as a Tool in Election Observation. *Innovations* 3, no 2: 143-157.

Scott, Alan and John Street. 2000. From media politics to e-protest. *Information, Communication and Society* 3, 2: 215-40.

Scott, James. 1990. *Domination and the Arts of Resistance: Hidden Transcripts*. Yale, NJ: Yale University Press.

Scott, James. 1999. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale, NJ: Yale University Press.

Shapiro, Andrew. 2000. *The Control Revolution: How the Internet is Putting Individuals in*

- Charge and Changing the World*. New York, NY: The Century Foundation.
- Sharp, Gene. 2005. *Waging Nonviolent Struggle: 20th Century Practice and 21st Century Potential*. Boston: Porter Sargent Publishers.
- Shirky, Clay. 2008. *Here Comes Everybody: The Power of Organizing without Organizations*. London: Penguin Press, HC.
- Shirky, Clay. 2010a. The Twitter Revolution: more than just a slogan. *Prospect Magazine*, January 6, 2010.
- Shirky, Clay. 2010b. The Political Power of Social Media: Technology, the Public Sphere, and Political Change. *Foreign Affairs*, January / February 2011.
- Shirky, Clay. 2010c. *Cognitive Surplus: Creativity and Generosity in a Connected Age*. New York: Penguin Press, HC.
- Shirky, Clay. 2011. Email exchange on September 4, 2011.
- Shoemaker, Pamela J. and Stephen D. Reese. 1991. *Mediating the Message: Theories of Mass Media Content*. White Plains, NY: Longman Publishing Group.

Shock, Kurt. 2005. *Unarmed Insurrections: People Power Movements in Non-democracies*.

Minneapolis: University of Minnesota Press.

Sidorenko, Alexey (2011). "Russia: Unexpected Results of Radiation Mapping." *Global*

Voices Online, March 25, 2011.

Simpser, Alberto. 2008. *Cheating Big: On the Logic of Electoral Corruption in*

Developing Countries. Draft working paper. University of Chicago, department of Political Science.

Singel, Ryan. 2008. Seeking tighter censorship, repressive states target web 2.0 apps,

Wired Magazine, March 2008.

Spinelli, Martin. 1996. Radio lessons for the Internet. *Postmodern Culture* 6, no. 2: 32-43.

Stephan, Maria and Erica Chenoweth. 2008. "The Strategic Logic of Nonviolence

Conflict." Paper presented for the Annual Convention of the International Studies Association (ISA) in San Francisco, March 2009.

Stock, James H. and Watson, Mark. W. 2003. *Introduction to econometrics*. Boston, MA:

Addison-Wesley.

Tapscott, Don and Anthony Williams. 2010. *Macrowikinomics: Rebooting Business and the World*. London: Portfolio Hardcover.

Taylor, Charles L. and David A. Jodice. 1983. *World Handbook of Political and Social Indicators*. New Haven: Yale University Press.

Tilly, Charles. 1978. *From mobilization to revolution*. Reading, MA: Addison-Wesley.

Turow, Josph. 1997. *Media Systems in Society*. New York: Longman Press.

Ushahidi. 2010. "Learning from Sudan Vote Monitor." Accessed on, May 3, 2010.

Available from:

<http://blog.ushahidi.com/index.php/2010/06/01/sudanvotemonitor>

Van de Donk, Wim, Brian D. Loader, Paul G. Nixon and Dieter Rucht. 2004.

Introduction: social movements and ICT. In *Cyberprotest: new media, citizens, and social movements*, eds. Wim van de Donk, Brian .D. Loader, Paul G. Nixon and Dieter Rucht. 1-25. New York: Routledge.

Van Dijk, Jan. 2006. *The network society*. London: Sage.

Van Evera, Stephen. 1997. *Guide to Methods for Students of Political Science*. New York: Cornell University Press.

Vegh, Sandor. 2003. Classifying forms of online activism: the case of cyberprotest against the World Bank. In *Cyberprotest: new media, citizens, and social movements*, eds. Wim van de Donk, Brian .D. Loader, Paul G. Nixon and Dieter Rucht. 71-95. New York: Routledge.

Walker, Chris. 2007. An ICT Policy Dilemma: Ramifications on Strategic Nonviolent Social Movements and the Global Islamist Insurgency. MA thesis, The Fletcher School at Tufts University.

Werby, Olga. 2011. Decision Scaffolding and Crisis Mapping. Accessed on June 21, 2011. Available from: <http://www.interfaces.com/blog/2011/03/decision-scaffolding-and-crisis-mapping>

Weimann, Gabriel. 2006. *Terror on the Internet: The New Arena, the New Challenges*. Washington, DC: United States Institute of Peace.

Wolfsfeld, Gadi. 1991. Media, protest, and political violence, *Journalism Monographs*, 127.

Wolsfeld, Gadi. 1997. *Media and Political Conflict*. Cambridge: Cambridge University Press.

Wolfsfeld, Gadi. 2003. *Political Communication in a New Era: A Transnational Perspective*. New York: Routledge.

Xu, Wu. 2007. *Chinese Cyber Nationalism: Evolution, Characteristics, and Implications*. Lanham, MD: Lexington Books.

York, Jillian. 2011. "Why I don't believe in Internet Freedom." Accessed on June 1, 2011. Available from: <http://jilliancyork.com/2011/01/02/why-i-dont-believe-in-net-freedom>

Zayani, Mohamed. 2008. The Challenges and Limits of Universalist Concepts: Problematizing Public Opinion and a Mediated Arab Public Sphere. *The Middle East Journal of Communication and Culture* 1, no. 1: 60–79.

Zittrain, Jonathan. 2008. *The Future of the Internet—And How to Stop It*. New Haven & London: Yale University Press.

Zuckerman, Ethan. 2007. Draft Paper on Mobile Phones and Activism. Accessed on December 2, 2008. Available from:

<http://www.ethanzuckerman.com/blog/2007/04/09/draft-paper-on-mobile-phones-and-activism>

Zunes, Stephen, Lester Kurtz, and Sarah Asher, eds. 1999. *Nonviolent Social Movements: A Geographical Perspective*. Oxford: Blackwell Publishing.