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Cascades of Collective Action?

Analyzing the Impact of Protest History and Social Media on Regime Change in the Context of the 2011 Uprisings in Egypt and Syria

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> *In time of social turbulence, we observe cascades of collective action: people speak their mind in public, undertake acts of civil disobedience, attend demonstrations, and participate in violent riots. Occasionally, a social movement gains momentum and overturns the status quo.*
>
> Susanne Lohmann, *Collective Action Cascades* (2000: 655)

Introduction

> There's a joke that has been making the rounds in Egypt in recent weeks, and it goes something like this: Hosni Mubarak meets Anwar Sadat and Gamal Abdel Nasser, two fellow Egyptian presidents, in the afterlife. Mubarak asks Nasser how he ended up there. "Poison," Nasser says. Mubarak then turns to Sadat. "How did you end up here?" he asks. "An assassin's bullet," Sadat says. "What about you?" To which Mubarak replies: "Facebook."[1]

What this joke illustrates is a question which journalistic and academic circles have been debating in recent years: how important is the role of social media and information and communication technology (ICT) in endangering and, in some cases, ultimately toppling long-standing dictators and their regimes? This debate has gained significance – and practical-political relevance – since the end of 2010, when a wave of public uprisings started cascading through the Arab World, ultimately transforming the region through fundamental political changes, while possibly influencing international political structures on a wider scale. Portrayed as being sparked by a single incident in a small Tunisian town,[2] the developments in Northern Africa and the Middle East that – so far (May 2011) – led to the ousting of long-standing autocrats in Tunisia and Egypt,[3] and are threatening equally long-standing autocratic rulers in other Arab countries (Bahrain, Syria, Yemen, Libya, Algeria), have in various instances been dubbed "Twitter-" and "Facebook-Revolutions", or "Revolution 2.0".[4] The suggested notion, that

[1] Hounshell, B. (2011, Feb. 14). Think Again: Egypt. From the Rise of the Muslim Brotherhood to the Arab Autocracy Domino Theory, Five Myths about Egypt's Revolution. *Foreign Affairs*. Retrieved 15 May 2011 from <http://www.foreignpolicy.com/articles/2011/02/14/think_again_egypt?page=0,0>.

[2] Ryan, Y. (2011a, Jan. 20). The Tragic Life of a Street Vendor. *Al Jazeera Online.* Retrieved 15 April 2011 from <http://english.aljazeera.net/indepth/features/2011/01/201111684242518839.html>; Ryan, Y. (2011b, Jan. 26): How Tunisia's Revolution Began. *Al Jazeera Online*. Retrieved 15 April 2011 from: <http://english.aljazeera.net/indepth/features/2011/01/2011126121815985483.html>.

[3] Zine El Abidine Ben Ali ruled Tunisia for 23 years, while Hosni Mubarak was President of Egypt for 29 years.

[4] L Malin, C. (2011, Jan. 16). Can We Say Twitter Revolution Now? Can We? *Spot On Homepage.*

these developments have been caused or at least significantly influenced by social media tools such as Facebook or Twitter, is highly debated and mostly refuted. Most scholars and journalists alike, although agree that the use of social media has in the past decade become a factor in the formation and development of social movements and political protest in general, disagree on their size, origin, aim and motivation, as well as their geographical location and reach. Yet, there exists a gap in our knowledge about if and how social media and information and communication technology may be of relevance for the success of political protest in general, and in autocratic regimes specifically.

Clay Shirky is one of the proponents of the idea that social media and ICTs enhance the prospects of political protest to be successful by essentially making social and political information sharing, communication, and coordination easier.[5] Shirky adopts the model of information cascades to argue for a positive impact of social media on political protests, specifically with regard to the struggle for democratization against autocratic regimes. Previously developed and applied by Susanne Lohmann in the 1990s to explain regime change through a series of political protests, the model of information cascades did not - and could not at that time - account for social media as a possibly contributing factor. The use of the model and the implications derived by Shirky thus demand further explanation.

With the interest to contribute to our understanding of the possible impact of social media on the success of political protests, this paper analyzes and compares the recent public uprisings in Egypt and Syria through the perspective of the model of information cascades, asking: *Why were the public uprisings in Egypt successful in effecting regime change, while those in Syria did not have a similar effect so far?*

Through the analysis of the recent events in Egypt and Syria, the model of information cascades is applied and tested with regard to the two relevant factors proposed by Lohmann and Shirky. While Lohmann originally argued that a *sequence of several protests form an*

Retrieved 15 April 2011 from <http://www.spotonpr.com/twitter-revolution-and-tunisia/>; Zuckerman, E. (2011, Jan. 14). The First Twitter Revolution? *Foreign Affairs.* Retrieved 15 April 2011 from <http://www.foreignpolicy.com/articles/2011/01/14/the_first_twitter_revolution>; Ghonim, W. (2011, Mar.). Wael Ghonim: Inside the Egyptian Revolution [video file]. Retrieved 15 April 2011 from <http://blog.ted.com/2011/03/04/inside-the-egyptian-revolution-wael-ghonim-on-ted-com/>.

[5] Shirky, C. (2008). *Here Comes Everybody: The Power of Organizing Without Organizations*. New York, NY: Penguin Press; Shirky, C. (2009, Dec. 11). The Net Advantage. *Prospect Magazine*, 165. Retrieved 16 April 2011 from <http://www.prospectmagazine.co.uk/2009/12/the-net-advantage/>; Shirky, C. (2011, Jan./Feb.). The Political Power of Social Media: Technology, the Public Sphere, and Political Change. *Foreign Affairs*. Retrieved 14 April 2011 from <http://www.foreignaffairs.com/articles/67038/clay-shirky/the-political-power-of-social-media>.

information cascade may lead to the fall of a given regime,[6] Shirky claims that *the use of social media improve information cascades*, thus enhancing the prospects of political protests to effect regime change.[7] In line with Lohmann, we would thus expect that (hypothesis 1) *the more political protest was manifested before a given moment, the more probable the success of subsequent political protest to effect regime change*. We would further expect according to Shirky that (hypothesis 2) *the more social media tools are used in a given regime, the more successful political protests can be in effecting regime change*. The dependent variable "effected regime change" will thus be approached through the analysis of the number of previous protests (independent variable 1) and the degree of social media use (independent variable 2) in the two cases chosen. The number of previous protests in each country will be established through an adopted search of press agency reports in the full-text information service *LexisNexis*. The degree of social media use will be determined using a modified and updated version of the *Digital Access Index* developed by the International Telecommunications Union (ITU).

By testing the model of information cascades through the analysis of the recent political uprisings in Egypt and Syria, this study aims not only at enhancing our knowledge of the model and its possible application(s), but also hopes to specifically shed light on how concise its adoption by Shirky is with regard to social media. At the same time, it may contribute to our understanding of the recent political developments in the Middle East. It is important to mention at this point, that this paper does not aim at a general explanation of the occurrence of political protest in Egypt or Syria. While factors such as economic performance and resource distribution,[8] rising (food) prices,[9] demographic changes in combination with

[6] Lohmann, S. (1994a). Rationality, Revolution, and Revolt: The (Hap-) Hazards of Informational Cascades. *Graduate School of Business Studies Research Paper*, No. 1213, Stanford, CA: Stanford University; Lohmann, S. (1994b). The Dynamics of Informational Cascades: The Monday Demonstrations in Leipzig, East Germany, 1989-1991. *World Politics*, 47 (1), 42-101.

[7] Shirky, *Here Comes Everybody*; Shirky, The Net Advantage.

[8] Acemoglu, D. & Robinson, J. (2005). *Economic Origins of Dictatorship and Democracy.* New York: Cambridge University Press; Paciello, M. C. (2011). Egypt: Changes and Challenges of Political Transition. *MEDPRO Technical Report*, No. 4 (May 2011). Centre for European Policy Studies, Brussels. For an interesting combination of Acemoglu and Robinson's approach with Lohmann's model of information cascades, see: Ellis, C. J. & Fender, J. (2010). Information Cascades and Revolutionary Regime Transitions. *The Economic Journal*, 121 (553), 763-792.

[9] Hendrix, C., Haggard, S., Magaloni, B. (2009). Grievance and Opportunity: Food Prices, Political Regime, and Protest. *Paper Prepared for Presentation at the International Studies Association convention.* New York, February 15-18, 2009; Lowrey, A. (2011, Jan. 31). Protesting on an Empty Stomach: How the Egyptian Economy Is Fueling Unrest in Egypt. *Slate Homepage.* Retrieved 16 August 2012 from <http://www.slate.com/articles/business/moneybox/2011/01/protesting_on_an_empty_stomach.html>.

(the lack of) educational and economic opportunities,[10] as well as sectarian divisions[11] can be considered as possibly having contributed to the occurrence and development of political protest in Egypt and Syria respectively, they will not be discussed in detail here due to the scope and focus of this study. Within the broad framework of collective action theory, this paper solely focuses on how political protests might be regarded as information cascades (as understood by Lohmann) and the impact social media might have on these (as proposed by Shirky).

To reach the stated aim, the paper is organized as follows: section (1) sets the frame of this paper, illustrating (1.1) some of the available literature on the topic, defining (1.2) the crucial terms and concepts used, and explaining (1.3) the theoretical framework and methodology adopted, as well as (1.4) the choice of the cases. Section (2) and (3) are dedicated to the analysis and discussion of the two independent variables chosen respectively. Finally, a closing chapter (Conclusion) summarizes the results of this analysis with regard to the given research question and the tested model, while stating problems encountered on the way and perspectives given as a result thereof.

[10] Campante, F. R. & Chor, D. (2012). Why Was the Arab World Poised for Revolution? Schooling, Economic Opportunities, and the Arab Spring. *Journal of Economic Perspective*, 26 (2), 167-188; El-Mahdi, R. (2009). Enough! Egypt's Quest for Democracy. *Comparative Political Studies*, 42 (8), 1011-1039; LaGraffe, D. (2012). The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring. *Journal of Strategic Security*, 5 (2), 65-80; Paciello, M. C. (2011). Egypt: Changes and Challenges of Political Transition.

[11] Lund, A. (2011). *The Ghosts of Hama: The Bitter Legacy of Syria's Failed 1979-1982 Revolution.* Swedish International Liberal Centre. Stockholm, Sweden; Lund, A. (2012). *Divided They Stand: An Overview of Syria's Political Opposition Factions*. Foundation for European Progressive Studies & Olof Palme International Center. Uppsala, Sweden; Philipps, C. (2012). After the Arab Spring: Power Shift in the Middle East?: Syria's Bloody Arab Spring. *LSE IDEAS Reports - Special Reports*, SR011. London, UK: London School of Economics and Political Science.

1. Frame

1.1 Literature Review

There exists an extensive body of literature with regard to the possible influence of media on processes of regime change and democratization in general,[12] and in the Middle East specifically.[13]

Concerning the more specific question of the role social media could play and actually do play in political protests in authoritarian regimes, there is an on-going debate among scholars. As proponents of the idea that social media can have an overall positive influence on anti-regime protest, Garrett,[14] Rheingold[15] and Shirky[16] theorize that the Internet and its associated tools reduce the costs of information sharing and communication, thereby reducing the barriers of group-formation and collective action; while Karpf[17] argues that these tools allow for new forms of political organization. Though acknowledging the reduction in costs of communication and organization, scholars opposing the former opinions hold that digital technologies have little effect on the institutions of authoritarianism, as states have largely been successful in limiting access to information transmitted by these technologies, or even in repressing online dissent directly.[18]

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[12] Best, M. & Wade, K. (2009). The Internet and Democracy: Global Catalyst or Democratic Dud? *Bulletin of Science, Technology & Society*, 29 (4), 255-271; Groschek, J. (2010). A Time-Series, Multinational Analysis of Democratic Forecasts and Internet Diffusion. *International Journal of Communication*, 4, 142-174; Kedzie, C. R. (1997). *Communication and Democracy: Coincident Revolutions and the Emergent Dictator's Dilemma*. Santa Monia, CA: RAND.

[13] Al Jenaibi, B. (2010). New Age of Press Democracy in the Middle East. Arabic News Channels: Al-Jazeera. *International Journal of Academic Research*, 2(4), 385-394; Alterman, J.B. (2000, Jan.). The Middle East's Information Revolution. *Current History,* 21-26; Burkhart, G. E. & Older, S. (2003). *The Information Revolution in the Middle East and North Africa.* Santa Monia, CA: RAND; Eickelman, D. F. & Anderson, J. W. (1999) (eds). *New Media in the Muslim World: The Emerging Public Sphere.* Bloomington: Indiana University Press; Wheeler, D. (2006). *Empowering Publics: Information Technology and Democratization in the Arab World – Lessons from Internet Cafés and Beyond*. Research Report No. 11, Oxford: Oxford Internet Institute.

[14] Garrett, R. K. (2006). Protest in an Information Society. A Review of Literature on Social Movements and New ICTs. *Information, Communication & Society*, 9 (2), 202-224.

[15] Rheingold, H. (2003). *Smart Mobs: The Power of the Mobile Many*. Cambridge, MA : Perseus Publications.

[16] Shirky, *Here Comes Everybody.*

[17] Karpf, D. (2008, Dec.). Understanding Blogspace. *Journal of Information Technology & Politics*, 5 (4), 369-385.

[18] Etling, B., Faris, R. & Palfrey, J. (2010). Political Change in the Digital Age: The Fragility and Promise

Interestingly, most references in this ongoing debate remain somewhat anecdotal,[19] as little quantitative research is done on the impact of the Internet and social media on political protests in authoritarian regimes. Examples of the few quantitative studies that use somewhat recent data include Calfano & Sahliyeh,[20] Howard[21] and Miard[22]. Calfano & Sahliyeh, as well as Miard, who specifically examines the effects of mobile phones, find no significant relationship between the Internet/mobile connectivity and political activism respectively. Offering more recent data on Internet and mobile phone use in Muslim countries from 1994 to 2008, Philip N. Howard comes to a more encouraging result. In addition, Patrick Meier has published preliminary results of his ambitious dissertation research of a large-N quantitative study on the correlation between the diffusion of ICT and anti-government protests.[23] Earl et al.[24] add to the debate by differentiating between different kinds of Internet activism and its relations to collective action; while Aday et al.[25] propose a different frame of analysis for the impact of social media in political protests. For a comprehensive literature review on this research field, compare also Joyce.[26]

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of Online Organizing. *The SAIS Review of International Affairs*, 30 (2), 37-49; Hindeman, M. (2008). *The Myth of Digital Democracy*. Princeton, NJ: Princeton University Press; Kalathil, S. & Boas T. C. (2003). *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*. Washington, DC: Carnegie Endowment For International Peace; Morozov, E. (2011a). *The Net Delusion: The Dark Side of Internet Freedom*. New York, NY: Public Affairs; Morozov, E. (2011b, Jan. 15). Picking a Fight with Clay Shirky. *Foreign Policy.* Retrieved 10 April 2011 from <http://neteffect.foreignpolicy.com/>; and many others by Morozov <http://www.evgenymorozov.com/writings.html>. For an interesting popular discussion between Shirky and Morozov, see <http://www.prospectmagazine.co.uk/2009/11/how-dictators-watch-us-on-the-web/>.

[19] Compare Faris, D. (2010). *Revolutions Without Revolutionaries? Social Media Networks and Regime Response in Egypt.* Publicly Accessible Penn Disseratations. Paper 116. University of Pennsylvania, 2ff; and Meier, P. (2009b, Nov. 19). Digital Activism and the Puffy Clouds of Anecdote Heaven. *iRevolution homepage*. Retrieved 15 April 2011 from <http://irevolution.net/2009/11/19/anecdote-heaven/>.

[20] Calfano, B. R. & Sahliyeh, E. (2008). Transmitting Reform? Assessing New Media Influence on Political Rights in the Middle East. *Critique: Critical Middle Eastern Studies*, 17 (1), 63–77.

[21] Howard, P. (2010). *The Digital Origins of Dictatorship and Democracy: Information Technology and Political Islam*. Oxford: Oxford University Press.

[22] Miard, F. (2009). Call for Power? Mobile Phones as Facilitators of Political Activism. *Conference Paper Presented at the 50th Annual Convention of the International Studies Association.* New York, February 15-18, 2009.

[23] Meier, P. (2009a). The Impact of the Information Revolution on Protest Frequency in Repressive Contexts. *Conference Paper Presented at the 50th Annual Convention of the International Studies Association*. New York, February 15-18, 2009.

[24] Earl, J., Kimport, K., Prieto, G., Rush, C. & Reynoso K. (2010). Changing the World One Webpage at A Time: Conceptualizing and Explaining Internet Activism. *Mobilizationg: An International Journal*, 15 (4), 425-446.

[25] Aday, S., Farrell, H., Lynch, M., Sides, J., Kelly, J. & Zuckerman E. (2010, Sept.). *Blogs and Bullets. New Media in Contentious Politics*. Peaceworks Report. Washington, DC: United States Institute of Peace.

[26] Joyce, M.C. (2011, Jan. 20). Activism, Repression, and ICT: What We Know Now. *Meta-activism*

1.2 Terminology

To obviate any ambiguousness, this section serves to clarify the basic terms used throughout this study. In the analysis of the impact of Internet-based applications and mobile technologies on social and political communication and coordination, there are a variety of terms used, leading to a certain ambiguity as to what is actually meant.[27] A definition of the most significant concepts used in this study seems, therefore, necessary.

Social Media and ICT. Throughout this study, I will hereafter use the term "social media" when referring to the applications of information and communication technology (ICT). Though the term ICT is itself often applied – sometimes with the prefix "new" – when analyzing the influence of mobile phone and Internet technology on contentious politics, it is rather used to refer to the technological aspects of modern ways of communication and information sharing.[28] The term "social media" in contrast has the advantage of including the software applications of these technologies, as well as the social practices observed with their dissemination and use. This paper thus follows the rather broader definition of social media proposed by Ahlqvist et al., who specifically refer to social media as both a set of tools and a *modus operandi*, emphasizing the technological aspects as well as the social practices observed with them: "Social media refers to the interaction of people and also to creating, sharing, exchanging and commenting contents in virtual communities and networks".[29] This definition is also sufficiently close to how Shirky loosely understands social media: "text messaging, e-mail, photo sharing, social networking, and the like".[30] Since mobile phone technologies have been important for the communication and organization of political

Homepage. Retrieved 10 March from <http://www.meta-activism.org/2011/01/activism-repression-and-ict-what-we-know-now/>.

[27] E.g.: "social software" [Shirky, C. (2003, Mar. 9). Social Software and the Politics of Groups. *Clay Shirky's Writings About the Internet Homepage*.]; "mobile communications", "computing technologies", "devices" [Rheingold, H. (2003). *Smart Mobs: The Power of the Mobile Many*. Cambridge, MA : Perseus Publications.]; "new media" [Wardrip-Fruin, N. & Montfort, N. (eds) (2003). *The New Media Reader*. Cambridge, MA: The MIT Press.]; "Web 2.0" [O'Reilly, T. (2005). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *O'Reilly Homepage*.]; "social network sites" [Boyd, D. M. & Ellison, N. B. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13 (1), Article 11.]; "computer-mediated communication" [Zimbra, D., Abbasi, A., Chen, H. (2010). A Cyber-Archaeology Approach to Social Movement Research: Framework and Case Study. *Journal of Computer-Mediated Communication,*16, 48–70.]; "digital activism" (www.meta-activism.org).

[28] European Union (2001, Dec. 14). *Communication from the Commission to the Council and the European Parliament. Information and Communication Technologies in Development: The Role of ICTs in EC Development Policy*. European Commission, COM(2001) 770; International Telecommunication Union (2009). *Measuring the Information Society: The ICT Development Index*. Geneva.

[29] Ahlqvist, T., Bäck, A., Halonen M. & Heinonen S. (2008). *Social Media Roadmaps: Exploring the Futures Triggered by Social Media*. VTT Tiedotteita Research Notes 2454. Helsinki: Edita Prima Oy, 13.

[30] Shirky, *The Political Power of Social Media*, para 7.

protests,[31] they are specifically included in the term "social media" as understood in this paper.[32]

Regime Change. To define "regime change", we first have to look at the notion of "regime". Calvert provides a basic definition: "a regime is the name usually given to a government or sequence of governments in which power remains essentially in the hands of the same social group".[33] Defining "regime change", Stephanie Lawson refers to Stephen D. Krasner and his definition of "regime" as "principles, norms, rules and decision-making procedures around which actors converge in a given issue area".[34] Lawson specifically points out that Krasner's distinction between principles and norms on the one hand, and rules and procedures on the other can help with our understanding of "regime change": "Change within a regime involves alterations of rules and decision-making procedures, but not of norms or principles; change of regime involves alteration of norms and principle."[35] "Regime change" in this study is thus understood as this *change in kind*, i.e. of norms and principles, or, in other words, when the power does not remain "in the hands of the same social group". The ousting of former President Hosni Mubarak in Egypt, the continued protests by Egyptians against members of the former regime, the dissolution of the former ruling party and the public trials of former regime leaders and associates can thus be understood as "regime change", while the reforms proposed to demonstrators by Syrian President Bashar al-Assad are not understood as such here.[36]

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[31] A famous example is the massive wave of demonstrations against former Philippine President Joseph Estrada in January 2001, originally organized through text messaging. See: Rheingold, *Smart Mobs*; Shirky, C. (2011, Jan/Feb.). The Political Power of Social Media: Technology, the Public Sphere, and Political Change. *Foreign Affairs*.

[32] Unlike Kaplan & Haenlein, for example, who define social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content", thus excluding mobile technologies not necessarily linked to the Internet. See: Kaplan, A. & Haenlein, M. (2010). Users of the World, Unite! The Challenges and Opportunities of Social Media. *Business Horizons*, 53 (1), 59-68.

[33] Calvert, P. (ed.) (1987). *The Process of Political Succession.* London: Macmillan, 18.

[34] Krasner cited in Lawson, S. (1993). Conceptual Issues in the Comparative Study of Regime Change and Democratization. *Comparative Politics*, 25 (2), 183-205, 185. Lawson acknowledges that "the notion of 'regime' in international relations theory is obviously situated in a different context of relationships", but holds that "the formulation of definitions there provides some further insights relevant to the domestic arena" which is the basic frame for political uprisings against authoritarian regimes (ibid.).

[35] Krasner, ibid.

[36] Compare for Egypt: Al-Masry Al-Youm (2011, Mar. 23). Student Protests Continue across Egypt. *Al-Masry Al-Youm English Edition.* Retrieved 10 May 2011 from <http://www.almasryalyoum.com/en/node/371028>; Michael, M. (2011, Apr. 8). Egypt Army Kills 1 Dispersing Overnight Protest. *Associated Press.* Retrieved 10 May 2011 from <http://abcnews.go.com/International/wireStory?id=13329347>; Al Jazeera (2011a, Feb. 22). The Arab Awakening. *Al Jazeera Online.* Retrieved 23 February 2011 from <http://english.aljazeera.net/indepth/spotlight/2011/02/2011222121213770475.html>; Al Jazeera (2011b,

1.3 Theory & Methodology

The theoretical framework for this paper is based on the theory of information cascades, developed by Susanne Lohmann as a model to explain regime change,[37] and later adopted by Clay Shirky in analyzing social media use and its impact on authoritarian regimes.[38]

1.3.1 Susanne Lohmann: A Sequence of Protests as Information Cascades

Building on the work of Bikhchandani, Hirshleifer and Welch who analyze the informational dynamics of "fads, fashions, custom, and cultural change",[39] Lohmann applies their model of "informational cascade" to the analysis of political change through mass political actions.[40] In her model, Lohmann examines regimes which can largely control the dissemination of public information, i.e. authoritarian regimes.[41] Since in these environments, individual experiences about the regime occur privately, information about the benign or malign nature of the regime is dispersed among the population. "In this situation", Lohmann explains, "there exists an informational role for political action", as "it is possible that the *status quo* regime is supported by a sufficiently large number of imperfectly informed people, although it would collapse if some of the dispersed information were to become publicly known."[42]

Apr. 7). Mubarak's Former Chief of Staff Arrested. *Al Jazeera Online.* Retrieved 10 May2011 from <http://english.aljazeera.net/news/middleeast/2011/04/20114720540306784.html>; Al Jazeera (2011c, Apr. 16). Egypt Dissolves Former Ruling Party. *Al Jazeera Online.* Retrieved 10 May2011 from <http://english.aljazeera.net/news/middleeast/2011/04/2011416125051889315.html>. For Syria, see: Seale, P. (2011, May). Syrien, der Große Irrtum. *Le Monde diplomatique (German Edition)*, May 2011, 7.

[37] Lohmann, S. (1993). A Signaling Model of Informative and Manipulative Political Action. *The American Political Science Review*, 87 (2), 319-333; Lohmann, Rationality, Revolution, and Revolt; Lohmann, The Dynamics of Informational Cascades.

[38] Shirky, *Here Comes Everybody*; Shirky, *The Net Advantage*.

[39] Bikhchandani, S., Hirshleifer, D. & Welch, I. (1992). A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades. *Journal of Political Economy*, 100 (5), 992-1026.

[40] Lohmann, Rationality, Revolution, and Revolt, 8ff; Lohmann, S. (2000). Collective Action Cascades: An Informational Rationale for the Power in Numbers. *Journal of Economic Surveys*, 14 (5), 654-684. Lohmann also refers to previous work on behavioral cascades distinguishing mechanistic and informational cascade models. For mechanistic cascade models, see: Granovetter, M (1978). Threshold Models of Collective Behavior. *American Journal of Sociology*, 83, 1420-1443; and Kuran, T. (1991). Now Out of Never: The Element of Surprise in the East European Revolution of 1989. *World Politics*, 44 (1), 7-48.

[41] Although Lohmann explicitly states that her model "can be easily extended to allow for a mix of public and private information, thereby making the theory applicable to democracies with a free press and other sources of public information" - Lohmann, Rationality, Revolution, and Revolt, FN 23.

[42] Lohmann, Rationality, Revolution, and Revolt, 10f.

Following this assumption, Lohmann's model interprets a sequence of protest activities as the revelation of this dispersed information about the regime over a period of time, in which the public "takes informational cues from changes in the size of the protest".[43] As the cascade of political actions is publicly observed, each individual chooses whether to support the incumbent regime or not. If the protest activities reveal the regime to be malign, i.e. if a sufficiently large number of people decide to express dissatisfaction or disloyalty and join the protests on the basis of personal experiences with the regime, the regime loses public support and collapses.[44] In this way, Lohmann's model accommodates for a non-linear development of protest activities, since "[t]he survival of the incumbent regime depends on the dynamic path of mass turnout over time."[45]

Lohmann then applies her model to the Leipzig Monday demonstrations and the subsequent collapse of the German Democratic Republic (GDR) from 1989 to 1990, interpreting the

> "demonstrations as an informational cascade that publicly revealed some of the decentralized information about the malign nature of the East German regime and that thereby created pressures for political liberalization and reform and eventually led to the collapse of the regime."[46]

The model of information cascades as understood by Lohmann can thus be regarded as a helpful frame for the analysis of political protest in authoritarian regimes and its prospects to succeed in effecting regime change, while emphasizing the process aspect of a protest movement.

1.3.2 Clay Shirky: Social Media Improve Information Cascades

In his attempt to theorize the impact of social media on contentious politics, Clay Shirky applies Lohmann's model to new media theory.[47]

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[43] Ibid., 25.

[44] Ibid., 10.

[45] Ibid., 4. Compare also Lohmann, A Signaling Model, 328ff. It is worthwhile to mention in this context that Lohmann herself does not provide a time frame for this "dynamic path" or an explanation of what "for a while" could mean within this model besides her unique case account of the Monday demonstrations in Leipzig, examining a period of approx 2.5 years.

[46] Lohmann, The Dynamics of Informational Cascades, 91.

[47] Shirky, *Here Comes Everybody*; Shirky, The Net Advantage; Shirky, The Political Power of Social Media.

In *Here Comes Everybody,* Shirky argues that new information and communication technology, while increasing the access to and diffusion of information, critically reduces the costs of aggregating information, thus changing our way of communicating and coordinating action.[48] For him, "the spread of information and its value as a coordinating force increased dramatically"[49] with the development of technology that removes "two old obstacles—locality of information, and barriers of group action".[50]

As the availability and distribution of information in the public sphere is a significant factor in the theory of information cascades, Shirky specifically refers to Lohmann when arguing that "social media improves [sic] political information cascades".[51] To support his argument, Shirky introduces the military concept of "shared awareness" as "the ability of many different people and groups to understand a situation, and to understand who else has the same understanding".[52] As "easier and wider dissemination of information changes [this] group awareness", social media positively affect information cascades in their success to lead to regime change by enhancing access to and dissemination of information.[53] Shirky specifically takes Lohmann's example of the Leipzig Monday demonstrations of 1989 as an illustration:

> Every week the march happened without a crackdown offered additional evidence that the marches provided an outlet for their disaffection; each successful march diminished the fear felt by some additional part of the populace. Finally people in Leipzig could see others acting on the knowledge that the GDR was rotten—"everyone knows that everyone knows

[48] Shirky, *Here Comes Everybody*, 148ff. To this regard, Lynch agrees that "[a]t the micro-level, mobile phones and text messaging have played an important role in changing communication patterns and dissemination of information" - Lynch, M. (2006). *Voices of the New Arab Public: Iraq, Al Jazeera, and Middle East Politics Today.* New York: Columbia University Press, 50.

[49] Shirky, *Here Comes Everybody*, 159.

[50] Ibid., 153. There is a broad discussion on how blogs changed the locality of information and communication, thus adding to certain types of group action: Al-Roomi, S. (2007). Women, Blogs, and Political Power in Kuwait. in Seib, P. (ed.) (2007). *New Media and the New Middle East.* New York, NY: Palgrave Macmillan, 139-155; Seib, P. (2008). *The Al Jazeera Effect: How the New Global Media Are Reshaping World Politics*. Washington, D.C: Potomac Books, Inc., 160 & 181ff. It is worthwhile to mention here that for Shirky social media do not "create collective action - they merely remove the obstacles to it" - Shirky, *Here Comes Everybody*, 159.

[51] Shirky, The Net Advantage, para 5.

[52] Shirky, *Here Comes Everybody*, 163.

[53] Ibid., 151. Lee argues in this context that "[i]n terms of mobilizing structures, the Internet can promote and enrich supporters' participation by 'faster' delivery of 'more' information in 'cheaper' ways" - Lee, J. (2009). Net Power in Action: Internet Activism in the Contentious Politics of South Korea. *Dissertation Submitted to the Graduate School-New Brunswick*. New Brunswick: Rutgers, The State University of New Jersey, 57. Lee refers hereby to the works of Garrett, R. K. (2006). Protest in an Information Society. A Review of Literature on Social Movements and New ICTs. *Information, Communication & Society*, 9 (2), 202-224, and Smith, J. (2000). Globalization Resistance: The Battle of Seattle and the Future of Social Movements. *Mobilization*, 6 (1), 1-19.

> that everyone knows". This shared awareness is the step necessary for real public action.[54]

It is within this model that Shirky argues for a positive account of the Iranian Green Movement of 2009: "the insurgency has nevertheless achieved the transition from distributed but uncoordinated discontent to being an actual protest movement, and part of that transition was achieved with these tools [social media, my note]" (my accentuation), stating that "[c]learly, the protests following the 12th June elections were aided by social media." Shirky further explains his understanding of the nexus between information cascades and social media with regard to the shutdown of communication technology: "In the Iranian case, once the information about general discontent had successfully cascaded, the coordination among the populace remained intact, even when the tools which helped disseminate that information were shut down". For Shirky, the continuation of protests despite a crackdown on social media access does not infringe the point made, as social media helped coordinating and spreading the information about the protest in the first place. Once set in motion, the information cascade does not necessarily depend on social media anymore.

Shirky's embedding of social media into the model of information cascades thus aims at adapting the model to our present time, and will possibly enhance our understanding of how social media may contribute to the formation and development of public protests.[55] With Shirky, we might thus expect that by reducing the cost of information distribution and communication, social media tools might positively affect information cascades as understood by Lohmann.

1.3.3 Summary of the Research Design: Lohmann & Shirky Read Together

While in Lohmann's model, regime change is the possible outcome of public protests understood as an information cascade that reveals, aggregates and diffuses information dismissive of the incumbent regime, Shirky adds that social media improve information cascades by reducing the costs of revealing and aggregating information while increasing the access to and diffusion of this information. With regard to the prospect of public protests to

[54] Shirky, *Here Comes Everybody*, 162f. Compare Seib for the role of information dissemination in the context of political change: "[w]hen a critical mass has better access to information, political processes are more likely to change" - Seib, P. (ed.) (2007). *New Media and the New Middle East.* New York, NY: Palgrave Macmillan, 9. Later, Seib talks about "a critical mass of awareness" that can enable "a political tipping point" - Seib, *The Al Jazeera Effect*, 179.

[55] Shirky also agrees with Lohmann in her approach to regard a larger protest history when analyzing regime change: "both the empirical and the theoretical work suggest that protests, when effective, are at the end of a long process, rather than a replacement for it" - Shirky, The Net Advantage, para 26.

succeed in effecting regime change, the model of information cascades is thus applied with two distinct aspects: *the sequencing of protests before regime change is effected* and *the role of social media in enhancing the information cascade*.

In order to test my first hypothesis concerning the sequencing of protests before regime change is effected, I run a simple media research with the full text information service LexisNexis, counting any manifested protest held against the respective regime that was mentioned in press agency reports between January 2009 and January 2011 (Chapter 2). Testing my second hypothesis concerning the role of social media in enhancing information cascades, I use an *adjusted Digital Access Index* (aDAI) to measure the ability of individuals in both countries to access and use social media and ICTs (Chapter 3). The aDAI is inspired by Digital Access Index which was established by the Market Information and Statistics Unit of the International Telecommunications Union in 2003, focusing on landline and mobile phone subscriptions, Internet access prices, adult literacy, Internet bandwidth and overall Internet usage. The modified aDAI enables the consideration of social media use as an additional factor by combining the indicator of Facebook use and the indicator of the diffusion of blogs in each country respectively. In addition, I gathered updated data for the compilation of the aDAI, as the data used for the DAI is highly outdated. Before testing for the two aspects of the model respectively in Chapters 2 and 3, an explanation is given below on the choice of cases of this study.

1.4 Choice of Cases

Within the frame of a comparative case study, this paper follows a "most similar design" approach with the choice of Egypt and Syria as the two case countries to compare. In this way, a number of background variables can be controlled for as both countries share a number of similar features, specifically with regard to (i) the political system, (ii) the state-security apparatus and the degree of (digital) censorship, as well as (iii) the level of economic development.

Egypt and Syria share a similar and partly common history.[56] (i) Since independence from European colonial rule, and after a certain period of political instability ended by a coup d'état, both countries have been consistently ruled by a succession of autocratic leaders, and have been authoritarian regimes since independence throughout the 20th century.

[56] Information in this section is taken from the *Britannica Online Encyclopedia* country description for Syria and Egypt, if not otherwise stated.

Authoritarian rule in both countries was centered on a military hierarchy, and tightened by an emergency law giving unrestricted power to the ruling elite. The emergency laws in force in Syria (since 1963) and Egypt (since 1981) also allow both states to build a wide-ranging state security network and to intensely suppress dissidents, including imposing heavy crackdowns on the Islamist opposition.[57] In its annual analyses from 2002 to 2010, the Freedom House Index, measuring the political rights and civil liberties on a worldwide country-to-country basis, categorized both Egypt and Syria consistently as "not free"—the lowest of the three groups on the index.[58]

(ii) Particularly, the elaborated state security apparatus plays an important part in suppressing basic political and civil liberties in both countries, famous as they are/were for arbitrary imprisonment and torturing of suspected dissidents.[59] Concerning censorship of the media, including the Internet, both countries adopted multiple mechanisms to suppress opposing views. Egypt and Syria are ranked 127th and 173rd respectively out of 178 countries on the Reporters Without Borders' Press Freedom Index.[60] With regard to suppressing opposing views on the Internet, both countries monitor and restrict Internet use, harassing and arresting those expressing dissent.[61] Syria, in addition, filters Internet content, and has been blocking major social media sites such as Facebook and YouTube until recently.[62]

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[57] The "Hama Massacre" of 1982 by the Syrian army to quell an Islamist revolt is one of "the single deadliest acts by any Arab government against its own people in the modern Middle East", see: Wright, R. (2008). *Dreams and Shadows: the Future of the Middle East.* New York, NY: Penguin. Thousands of suspected Islamist militants were jailed in the 1990s in Egypt <http://www.freedomhouse.org/template.cfm?page=363&year=2009>.

[58] Freedom House (2011, Jan.). *Freedom in the World 2011. The Authoritarian Challenge to Democracy.* Freedom House Report.

[59] Human Rights Watch (2010, Jul.). *A Wasted Decade. Human Rights in Syria during Bashar al-Asad's First Ten Years in Power.* © 2010 Human Rights Watch; Human Rights Watch (2011, Jan.). *Work on Him Until He Confesses. Impunity for Torture in Egypt.* © 2011 Human Rights Watch.

[60] Reporters Without Borders (2010). *2010 World Press Freedom Index*. Paris. For a detailed description of Internet censorship and the oppression of dissent in both countries see: Abdulla, R. A. (2007). *The Internet in the Arab World: Egypt and beyond.* New York: Peter Lang.

[61] Open Net Initiative (2009a, Aug. 6). *Internet Filtering in Egypt*. Country Profile Report; Open Net Initiative (2009b, Aug. 7). *Internet Filtering in Syria.* Country Profile Report. Both countries are on the "List of the 13 Internet enemies" produced by Reporters Without Borders <http://en.rsf.org/list-of-the-13-internet-enemies-07-11-2006,19603.html>. Compare also the International Freedom of Expression Exchange country profiles for Egypt and Syria <http://www.ifex.org>, and the Threatened Voices Project <http://threatened.globalvoicesonline.org/>, as well as El Gody, A. (2007). New Media, New Audience, New Topics, and New Forms of Censorship in the Middle East, in: Seib, P. (ed.). *New Media and the New Middle East*, 213-234.

[62] Al-Shagra, A.F. (2011, Feb. 8). Facebook and YouTube Unblocked in Syria Today [Updated]. *The Next Web.* Retrieved 20 April 2011 from: <http://thenextweb.com/me/2011/02/08/facebook-and-youtube-to-be-unblocked-in-syria-today/>.

(iii) Despite pledges for political and economic reform, both Hosni Mubarak (President of Egypt from 1981 to 2011) and Bashar al-Assad (President of Syria succeeding his father since 2000 until today) never had it implemented. The Human Development Index lists both countries throughout the last two decades as among the countries with "Medium Human Development".[63] In the beginning of 2011 and after the ousting of former Tunisian President Ben Ali, public protests developed in both Egypt and Syria. While the ones in Egypt quickly gained momentum and finally lead to the fall of Mubarak's regime, those in Syria developed slowly in comparison, and at the time of writing (May 2011) did not result in major political changes in Syria.[64] As stated before (Section 1.2), and with regard to the dependent variable proposed in this study, we have observed regime change in Egypt but not in Syria so far. To state the obvious, yet for this research still important: both cases seem ideal for this study, as the uprisings in both Syria and Egypt clearly demand(ed) a change of regime as understood here.

[63] United Nations (2010). *Human Development Report 2010.* United Nations Development Program. Retrieved 1 April 2011 from <http://hdr.undp.org/en/statistics/hdi/>. Developed by the UN, the Human Development Index measures indicators of health, education and living standards. See specifically Table 2 of the 2010 report: <http://hdr.undp.org/en/media/HDR_2010_EN_Table2_reprint.pdf>.

[64] Al Jazeera, The Arab Awakening.

2. Independent Variable 1: Number of Manifested Protests

2.1 Introduction

In line with Lohmann's model of information cascades, the process of protest development over time is crucial to understanding regime change through information cascades. The underlying hypothesis is: *the more political protests manifested before a given moment, the more probable the success of subsequent political protest to effect regime change*. The first independent variable (IV-1) examined in this paper is thus *the number of manifested protests held against the regime in the last two years of each country*. This variable serves to include previous manifestation of protests in Egypt and Syria, contextualizing the recent uprisings in a broader protest history.

2.2 Operationalization

To operationalize this independent variable, I count all manifested protests held against the regime that was mentioned in press agency reports between January 2009 and January 2011. "Manifested protest" refers to any protest taken to the street, and "held against the regime" refers to any slogan, sign or symbol used during the protest that indicates a clear criticism of the political system and/or clear demands for the change of that very system present at the time of the protest. I thus exclude national and local sectarian protests. Protests on regional and/or international events or actors that occurred during the period of observation are not of interest here either.[65]

To simplify the search considering the scope of this study, I run a simple media research with the full text information service LexisNexis.[66] To focus only on relevant results, I set the input search parameter "sources" to "press – all languages", and parameter "date" to "from 1. January 2009 to 1. January 2011", and use search terms "protest in Egypt" and "protest in Syria" respectively. I control the results using the same search parameters with the

[65] Those are, for example, protests against Israel or the United States, e.g. in the case of the June 2010 Gaza-Flotilla.

[66] LexisNexis is a commercial provider of professional databases of economic, finance and legal information, as well as of full text international press databases <http://e-solution.lexisnexis.de/KSH/de/index.html>. For discussion, compare also: Stock, M. & Stock W. (2005). LexisNexis Recht und LexisNexis Wirtschaft: Informationsquelle für den deutschen Markt. *Password*, 4, 24–31.

search terms “demonstration in Egypt” and “demonstration in Syria” respectively. To limit the results, I regard only outputs in the category “news agency- and press reports”. Given the operationalization parameters, I analyze the search output, counting only those indicating a clear criticism of the political system and/or clear demands for the change of that very system. The time frame “1. January 2009 to 1. January 2011” is congruent with Lohmann's application of the model (compare FN 45) and seems appropriate here, as it is long enough to analyze the development of a recent protest history while excluding any protests that could be interpreted as a direct reaction to the political uprisings in Tunisia in early 2011.

2.3 Results & Discussion

The result shows a significant difference between the two countries observed (for a detailed list of the events falling under the given search parameters, see Annex 1):

Country	Egypt	Syria
Number of manifested protests against the regime	6	0

Note: Time frame is 1 January 2009 to 1 January 2011.

Over the course of two years preceding the early 2011 uprisings in Syria and Egypt – and given the aforementioned search parameters – there were a total of six manifested protests mentioned in international news reports on Egypt. There was no protest in Syria mentioned using the same search parameters during the same period. Considering the situation of both countries at the time of writing with regard to the value of the dependent variable, this result supports the first hypothesis that the preceding protest history of a country can be a correlating factor of the success of ongoing protests in effecting regime change, and this correlation is positive in nature. It can be said that a sequence of protests prior to a given protest may have a positive correlation with the latter's success in effecting regime change. This outcome is thus in accordance with Lohmann's model of information cascades, highlighting the relevance of accounting for a protest history.

For further research, it would be interesting and worthwhile to examine each country in greater detail.[67] Just a detailed glimpse reveals a clear difference between the protest history in the two cases. In Egypt, a strong opposition movement was formed during the 2005 presidential election and “opposed a fifth term for President Mubarak or the succession of his

[67] For the case of Egypt, compare: Faris, *Revolutions Without Revolutionaries?*

son Gamal, seeking genuine democratic reforms in Egypt".[68] Started as a blogring (a loose association of blogs) termed Kefaya (Egyptian Arabic for "Enough!"), it "organized tens of thousands of citizen protests on several occasions using the Internet for their cause".[69] In interplay with a growing labor protest movement that included tens of thousands of workers going on strike and demonstrating for higher wages on numerous occasions between 2006 and 2008,[70] this strong, albeit diverse and loosely connected oppositions inspired the so-called "April 6 Movement". This movement staged, in reference to the massive and violently suppressed labor protests of April 6, 2008, a wave of protests on the "Day of Anger", April 6, 2009, that were "initially organized by an Internet-based activist group (...) using Facebook to spread word of the action".[71] In Syria, we miss this kind of modern protest history. The last major uprising in Syria ended in the so-called "Hama Massacre" of 1982 (compare FN 57). In the case of Egypt, it is obvious to claim that these experiences informed the protests listed in Annex 1 that were held during the years of 2009 and 2010, preceding the so-named Egyptian Revolution in 2011. And it is equally obvious to claim that this protest history, either viewed from a 2-year or from a 5-year perspective,[72] had an effect on the Egyptian society and on how this society perceived itself vis-à-vis the authoritarian regime it was ruled by, or, speaking with Lohmann's model: these previous protests revealed the information of widespread disagreement with the regime.

2.4 Limitations

Despite these results, we cannot claim that this sequence of previous protests *probably*, much less *necessarily*, lead to a regime change. The scope of this study is way to small to make such bold claims. We can neither allow any generalizations with regard to other cases despite the obvious correlation in the examined ones (6 protests in Egypt, 0 in Syria). The result from a large-N research study might indeed be very different from this one. It would also be interesting to compare if the uprisings in Tunisia early 2011 that eventually led to

[68] Seib, *New Media and the New Middle East*, 221.

[69] Ibid.

[70] There were, according to media, "more than 200 labor protests in Egypt during 2006". See: Targeted News Service (2007, Apr. 27). Egyptian Government Should Reverse Its Order to Close CTUWS Offices. *Targeted News Service*. Compare also: Morrow, A. & Al-Omrani, K. M. (2007, May 15). Spate of Strikes and Protests in Egypt; EGYPT: Labour Unrest Spreads. IPS – Inter Press Service (Latin America); and Bel Aiba, I. (2008, Apr. 8). Egypt Scrambles to Appease Workers after Deadly Riots. *Agence France Presse – English*.

[71] Morrow & Al-Omrani, Spate of Strikes and Protests in Egypt. See also: Radsch, C. (2008, Sept.). Core to Commonplace: The Evolution of Egypt's Blogosphere. *Arab Media & Society*, 6.

[72] The outcome of this research does not change significantly when the time-period observed is extended from 2 to 6 years. Between 2005 and 2010, Egypt is coded with 17 protests, while Syria still counts none (see Annex 2).

regime change were preceded by a sequence of protests or not; and if yes, how the situation had developed. Besides, the hypothesis on information cascades and regime change is only supported by *ex-post* scenarios, in which regime change already occurred, and does not provide a prospect of just how long a protest history needs to be to have a positive impact on regime change.

In this regard, we have to acknowledge that this research design does not allow for a quantifiable value of it. The hypothesis that *the more political protest was manifested before a given moment, the more probable the success of subsequent political protests to effect regime change* is actually not affirmed by the result of this two-country comparison, as the number of protest in Syria is zero. It may well be that the *number* of protests preceding a given protest is not correlative with the latter's success in effecting regime change, but rather the overall *occurrence* of a foregoing protest history is. Another difficulty lies in the operationalization adopted in this study. Due to the research scope, I only regarded press agency articles listed in LexisNexis containing the exact phrase "protest in Egypt (or Syria)" and "demonstration in Egypt (or Syria)", disregarding those that may have dealt with protests during the same period but did not include this specific phrase. A search with "protest" and "Egypt" as single yet added ("AND") operators would have included several thousand outputs. Adding to this is the fact that news agencies might not be a totally reliable source when wanting to include a complete history of protests: "If it's not in the news does not mean it's not happening", as Meier criticized correctly.[73] When controlling for a five-year period (see FN 72), the massive April 6, 2008 labor protests in Egypt[74] were not included in the results, for example.

Despite the shortcomings, this outcome nevertheless hints at the importance of analyzing protest history when looking at factors relating a protest to its success in effecting regime change.

[73] Meier, P. (2010, Jan. 7). Where I Disagree with Morozov vs Shirky on Digital Activism. *iRevolution Homepage.* Retrieved 26 April 2011 from <http://irevolution.net/2010/01/07/morozov-vs-shirky/>. Meier points out that news agencies are not a reliable source when it comes to completeness of protest coverage, comparing, in the case of Pakistan, local Field Monitors of Swisspeace who counted 54 individual protests during 2007 while Reuters covered only 7 of these in the same period.

[74] Bel Aiba, Egypt Scrambles to Appease Workers after Deadly Riots.

3. Independent Variable 2: Social Media Use

3.1 Introduction

I now turn to the possible influence of social media in information cascades leading to regime change. In line with Shirky, we would expect that social media improve information cascades. The hypothesis formulated is thus: *the more social media tools are used in a given regime, the more successful political protests can be in effecting regime change*. To test this hypothesis, we will have to measure the use of social media in both cases. Therefore, the second independent variable (IV-2) examined in this paper is the *degree of social media use* in the two countries observed.

3.2 Operationalization

It is difficult to operationalize the degree of social media use. The Digital Access Index (DAI) established by the Market Information and Statistics Unit of the International Telecommunications Union serves as an informative reference. As a global index measuring "the overall ability of individuals in a country to access and use new ICTs" in a unified approach, it provides a sufficient approximation of the use of social media.[75] The DAI consists of eight variables with an impact on social media use and access. These variables are compiled into five categories: fixed telephone subscribers per 100 inhabitants and mobile cellular subscribers per 100 inhabitants (measuring infrastructure); Internet access price as percentage of per capita GNI(measuring affordability); adult literacy and combined primary, secondary and tertiary school enrollment level (measuring knowledge); per capita international Internet bandwidth (bits) and broadband subscribers per 100 inhabitants (measuring quality); and Internet users per 100 inhabitants (measuring Internet use).[76]

As the DAI includes the percentage of mobile cellular subscribers and Internet users in a country's population, it includes two of the basic categories of interest of the second independent variable. Furthermore, by measuring Internet bandwidth, it accounts for the

[75] International Telecommunication Union (2010a). Digital Access Index (DAI). *International Telecommunication Union Homepage.* Retrieved 26 April from <http://www.itu.int/ITU-D/ict/dai/>.

[76] International Telecommunication Union (2003, Nov. 19). *ITU Digital Access Index: World's First Global ICT Ranking Education and Affordability Key to Boosting New Technology Adoption.* International Telecommunication Union Press Release. Geneva.

quality of ICTs in a given country, which is an important indicator with regard to the uploading and use of images and videos in social media platforms such as Facebook or YouTube.

Unfortunately, so far the DAI has only been compiled once with data from 2003 and earlier. As examining ICTs and social media means examining a field where rapid development is prevalent – especially in areas with previously low access and use of social media like the Middle East and North Africa – the DAI of 2003 can therefore not serve as the basis of this study. I therefore compiled a proper index on the basis of the DAI categories, henceforth called the *adjusted Digital Access Index*, or *aDAI*. In this proper index, I made two adjustments to the original DAI: (1) excluding the category "affordability" and (2) including the category "social media networks".

(1) The category "affordability" is disregarded as there was no up-to-date data on Internet access prices available for the two cases observed. Disregarding the prices of Internet in the overall comparison of Egypt and Syria does not significantly change the outcome of this comparison since Internet users mostly connect through Internet cafés where prices are generally stable (and equally cheap) in both countries. (2) Introducing the new category "social media networks" reflects our definition of social media of referring not only to information and communication technologies but also to their software applications. Therefore, this new category, combining the indicator "Facebook use" and the indicator "diffusion of blogs", approximates to the use of social media networks. The indicator "Facebook use" is aggregated through the variables "Facebook penetration per 100 inhabitants" and "Facebook penetration per 100 Internet users", while the indicator "diffusion of blogs" is based on the variable "estimated number of bloggers" in each country.

The compilation of aDAI follows the calculation structure of the original DAI. Each variable introduced is thus converted to an indicator with a value between 0 and 1 by dividing it by the maximum value or "goalpost". The maximum value or "goalpost" here is taken from the original DAI. In the case of the new variables introduced, the maximum value or "goalpost" is based on the maximum value reached for each variable worldwide at the time of writing. For the variable "Facebook penetration per 100 inhabitants", the goalpost is 60 (Facebook penetration rate in the US[77]), while the goalpost for "Estimated number of bloggers per 100 inhabitants" is 11 (equivalent to the percentage of bloggers in inhabitants in the US[78]). For the

[77] eMarketer (2011, Feb. 24). Facebook Reaches Majority of US Web Users. eMarketer Press Release. Retrieved 29 April 2011 from <http://www.emarketer.com/PressRelease.aspx?R=1008250>.

[78] Calculated from the data of estimated bloggers in the US for 2012 and the projected population size in

variable "Facebook penetration per 100 Internet users", the "natural goalpost" is 100.[79] Each indicator is then weighted within its category. The weighing values are equally borrowed from the original DAI. In the case of the new category "social media networks" both indicators introduced are weighted equally (0.5). The resulting category index values are finally averaged to obtain the overall aDAI value (compare ITU 2003).

CATEGORY	VIARIABLE	GOALPOST	WEIGHT IN CATEGORY
INFRASTRUCTURE	Fixed telephone subscribers per 100 inhabitants	60	1/2
	Mobile cellular subscribers per 100 inhabitants	100	1/2
KNOWLEDGE	Adult literacy	100	2/3
	School enrollment	100	1/3
QUALITY	Internet bandwidth (bits) per capita	10,000	1/2
	Broadband subscribers per 100 inhabitants	30	1/2
INTERNET USE	Internet users per 100 inhabitants	85	1
SOCIAL MEDIA USE	Facebook penetration per 100 inhabitants	60	1/4
	Facebook penetration per 100 inhabitants	100	1/4
	Estimated number of bloggers per 100 inhabitants	11	1/2

For the acquisition of data, the following serve, with few exceptions, as main sources: Arab Social Media Report,[80] the International Telecommunication Union database,[81] the World Factbook of the US Central Intelligence Agency,[82] and United Nations reports.[83]

the US for 2012 - see: Verna, P. (2008, May). The Blogosphere: A Mass Movement from Grass Roots. *eMarketer*. Retrieved 28 April 2011 from: <http://www.emarketer.com/Report.aspx?code=emarketer_2000494&AspxAutoDetectCookieSupport=1> ; and United Nations (2008, Apr. 28). *World Population Prospects: The 2008 Revision*. Department of Economic and Social Affairs of the United Nations Secretariat, Population Division.

[79] Though we cannot assume that all Internet users will have a Facebook account, some countries in the Arab world have a Facebook penetration rate higher than 100 per 100 Internet users as there are people having more than one Facebook account or logging in via different IP addresses, e.g. using their mobile phone. Iraq and Djibouti have a penetration rate of 119.07 and 174.58 respectively. See: Mourtada, R. & Salem, F. (2011). Facebook Usage: Factors and Analysis. *Arab Social Media Report*, 1 (1). Dubai School of Government's Governance and Innovation Program.

[80] Ibid.

[81] International Telecommunication Union (2010b). ICT Statistics Database. *International Telecommunication Union Homepage*. Retrieved 26 April from <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>.

[82] Central Intelligence Agency (2011). The World Factbook. Retrieved 21 April 2011 from <https://www.cia.gov/library/publications/the-world-factbook/index.html>.

[83] United Nations (2009a). *Human Development Report 2009.* United Nations Development Program. Retrieved 1 April 2011 from <http://hdrstats.undp.org/en/indicators/90.html>. Arab Statistics. United Nations Development Program, Programme on Governance in the Arab Region (POGAR).

3.3 Results & Discussion

The aDAI index values for each of the two cases observed are as follows (for a detailed presentation of the results and calculation of the aDAI, including the exact source for each variable measured, see Annex 3):

	INFRASTRUC-TURE	KNOWLEDGE	QUALITY	INTERNET USE	SOCIAL MEDIA USE	**aDAI**
Egypt	0.44	0.73	0.40	0.29	0.08	**0.39**
Syria	0.38	0.75	0.34	0.24	0.02	**0.35**

The difference in the aDAI value for both countries is visible, albeit not significant. The aDAI value for Egypt is 0.39, while that for Syria is 0.35. Both countries seem to have established a similar digital infrastructure of telephone lines, mobile phones and Internet. Although the values in each category—except "knowledge"—are higher for Egypt than for Syria, the difference in value points is marginal, as it does not exceed 0.06 for any of the categories. It is difficult to draw any significant conclusion from this result on the relevance of social media in the development of information cascades specifically, much less with regard to regime change in general. In line with our hypothesis, we would have expected a much higher aDAI value for Egypt than Syria, as political protests in the former led to regime changes, while in the latter they failed to do so at the time of writing. Within the research design established in this paper, the hypothesis that *the more social media tools are used in a given regime, the more successful political protest can be in effecting regime change* is thus not strongly supported by our results. In addition, the category "social media networks" does not change the outcome of the comparison between the two countries, nor does it weigh much in each country's calculation of the aDAI. This is due to the structure of the index as such. As I tried to stay true to the nature of the original DAI as a global index, I set the so-called "goalposts" that convert one variable into an indicator to the highest levels shown worldwide as the possible maximum value observed today – a value both countries are still far from approaching.

Yet again, a separate research confined to a more detailed analysis on social media use between the countries may come to a different conclusion, and would, in any case, be worthwhile. If the category "social media networks" is compared between the two countries independently from the aDAI, for example, interesting differences can be observed. In general, the use of social media platforms is much more developed, and more significant in

terms of content in Egypt than in Syria. This is mainly due to Syria having officially allowed platforms such as Facebook and YouTube only at the beginning of 2011 and only as a response to the public protests unfolding in the region. Before, these platforms had been banned since 2007, although Syrian Internet users could and in part did access them through proxy servers.[84] This explains the relatively low number of 250,000 Facebook users in Syria.[85] In comparison, Egypt has, with its 5 million Facebook users, the largest Facebook community in the region (22% of all Facebook users in the Middle East and North Africa), growing at more than 100% per year.[86] Egypt also has a much more established and lively blogosphere, not only when compared to Syria, but also in an overall comparison within the region. With an estimated 16,000 blogs,[87] it is known for its impressive history of political blogging and blog-related-activism.[88] Meanwhile, the Syrian blogosphere is much less developed as there are only about 600 blogs in Syria in total.[89] Still, when comparing blogs per capita – 1.2% for Egypt vs. 0.3% for Syria – the difference is less intriguing, while low on a global scale (there are approximately 34.7 million blogs in the US[90]). When examined in greater detail, one might thus come to a different conclusion on the difference in social media use between both countries. A qualitative study could therefore also be informative for the possible relevance between social media and information cascades.[91]

3.4 Limitations

That the aforementioned difference in social media use between Egypt and Syria is not covered by quantitative analysis can be viewed as one limitation of this research. In

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[84] Syria Today (2011, March). Government Loosens Internet Restrictions. *Syria Today Online.*

[85] Mourtada & Salem, Facebook Usage: Factors and Analysis.

[86] Malin, C. (2010, May 24). *Middle East & North Africa Facebook Demographics.* Dubai: Spot On Public Relations.

[87] Open Net Initiative, *Internet Filtering in Egypt.*

[88] Al Malky, R. (2007). Blogging for Reform: The Case of Egypt. *Arab Media & Society*, 1; Etling, B. et al. (2009). Mapping the Arabic Blogosphere: Politics, Culture, and Dissent. *Berkman Center Research Publication,* No. 2009-06. Internet & Democracy Project at The Berkman Center for Internet & Society, Harvard University; Faris, *Revolutions Without Revolutionaries?*; Lynch, M. (2007, Feb.). Blogging the New Arab Public. *Arab Media & Society*, 1; Radsch, Core to Commonplace.

[89] An estimation of Syrian blogs is difficult to find on the web, let alone an accurate count. I therefore contacted Syrian bloggers themselves who are part of Syrian blogrings, asking for their approximation (see Annex 3, "Sources"). The number of 600 is also astonishingly close to the number of blogs registered on two popular Syrian blogrings in March 2011 (<http://syplanet.com> and <http://www.almudawen.net/en/>).

[90] Verna, *The Blogosphere.*

[91] For an interesting detailed analysis of the April 6 Movement, compare Faris, *Revolutions Without Revolutionaries?* He specifically analyzes the related protests staged in Egypt in 2008 and 2009 as an information cascade.

addition, the use of social media assessed with the aDAI is only an indication of *access to* and *degree of use* of the former. It does not measure the *content* that users access or spread.[92] Although this is "an almost impossible task given the relative independence of Internet users to choose content", we have to acknowledge that a content-sensitive analysis of social media use is necessary (and, in part, possible)[93] when approaching the impact that social media may have on information cascades and regime change or even simply on political activism. In the information cascades model, content has its place as it is important to analyze what information signals are given, i.e. what kind of information is spread. Most quantitative approaches lack this detailed perspective.[94]

Another problem encountered here lies in the data itself. As it is enormously difficult to get reliable data on social media access and use for research on the scope of this paper—much more so for digitally developing countries such as Syria and Egypt—the data used in this study is collected from a diverse set of sources, limiting any hope for a unified approach while unfortunately disregarding the variety in methodological approaches used. This difficulty of access to reliable data also explains, in part, the choice of taking social media platforms into consideration here. Other famous platforms such as Twitter and YouTube were disregarded, as it was almost impossible to get any data for those, especially in the case of Syria. Yet, considering the various publications on social media use in the Middle East, Facebook and blogging seem to be by far the most important tools in the social media landscape of the region, at least for now.[95]

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[92] Klotz refers to the difference between ability/access to use and actual use of the Internet. See: Klotz, R. J. (2004). *The Politics of Internet Communication.* Lanham, Md.: Rowman & Littlefield Publishers, 19-20.

[93] Calfano & Sahliyeh, Transmitting Reform?, 67. Compare also: Etling et al., Mapping the Arabic Blogosphere; Herring, S.C. et al. (2004a, Jan.). Bridging the Gap: A Genre Analysis of Weblogs. *Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS'04)* - Track 4, p.40101.2, January 05-08, 2004; Herring, S. (2004b). Content analysis for new media: Rethinking the paradigm. *New Research for New Media: Innovative Research Methodologies Symposium Working Papers and Readings,* 47-66. Minneapolis, MN: University of Minnesota School of Journalism and Mass Communication.

[94] The same is true for mobile phone services, obviously. The index used does not reflect how often and especially for what mobile phone and SMS-services are used, nor how prices vary across the region. Compare <http://www.arabadvisors.com/Pressers/presser-221110.htm>.

[95] Compare, for example: Al Malky, Blogging for Reform; Etling et al., Political Change in the Digital Age; Lynch, Blogging the New Arab Public; Murphy, C. (2009, Nov.). Arab Facebook. *Al Majalla.* Retrieved 2 April 2011 from: <http://www.majalla.com/en/cover_story/article10699.ece?service=print>; Radsch, Core to Commonplace.

Conclusion

The aim of this study was to contribute to our understanding of the possible impact of social media on the success of political protests in effecting regime change. As the model of information cascades previously served to explain regime changes (Lohmann), and was adapted to new media theory by Clay Shirky, it was chosen as the theoretical blueprint to be applied to and tested for in the comparison of the recent public uprisings in Egypt and Syria. After two aspects of the model that are supposed to increase the prospects of an uprising to effect regime change – the number of protests before the uprising (Lohmann) and the degree of social media use (Shirky) – were derived and elaborated upon, two hypotheses were formulated and tested accordingly. To this end, Egypt served as a case for regime change, while Syria was not considered as such.

The findings of this study, limited as they may be, suggest that the number of protests before an uprising, i.e. the protest history, has a greater relevance for the success of an uprising to effect regime change than the degree of social media use.

Within the research design proposed and the two cases chosen, there was a strong positive correlation between the independent variable "number of previous protests" (IV-1) and the dependent variable "effected regime change". This outcome thus supports our first hypothesis that the preceding protest history of a country can be a correlating factor with regard to the success of ongoing protests in effecting regime change, and this correlation is positive in its nature, i.e. that *the more political protest was manifested before a given moment, the more probable the success of subsequent political protests to effect regime change is*. With regard to our cases chosen, it thus seems that the protest history in Egypt which developed prior to the public uprisings against the authoritarian regime of Hosni Mubarak in spring 2011 had a positive impact on the latter's success in effecting regime change, while the prospect of the current protests in Syria to effect regime change is lower as a similar protest history is missing there.

The correlation between our dependent variable and the independent variable "the degree of social media use" (IV-2) was much less obvious, albeit positive. Although the index used to assess social media use showed a higher value for Egypt, our case with a regime change, than for Syria, the difference in value points is marginal. It is difficult to draw any significant conclusion from this result with regard to the impact of social media on protests

and their success in effecting regime change. Thus, the second hypothesis proposed, i.e. that *the more social media tools are used in a given regime, the more successful political protests can be in effecting regime change*, could not be strongly confirmed by our findings.

In conclusion, it seems obvious that the scope of this paper cannot serve to give a definitive answer to the question *Why were the public uprisings in Egypt successful in effecting regime change, while those in Syria did not have a similar effect so far.* Nevertheless it seems illuminative to apply the model of information cascades to the study of regime change in the two cases chosen, as it can enhance our perspectives to understand why protests led to a regime change in Egypt but not in Syria. The limited results of this study suggest that Susanne Lohmann's approach of analyzing the protest history of a country can still bear some fruits as a protest sequence before a given uprising may be of relevance to the latter's prospect to effect regime change.

Meanwhile, Clay Shirky's claim that social media improve information cascades cannot be verified, as it is neither supported nor refuted by our results, though we have to acknowledge that the design chosen to test this claim has its limitations. When analyzed in greater detail, the degree of social media use seems more developed – and more political as well – in Egypt than in Syria. Although social media was obviously used during protests in Egypt (in the past as well as in the spring of 2011), their impact on the protests' success in effecting regime change could not be elaborated upon in this paper and remains to be clarified in future researches.

Undoubtedly, much remains to be done on regime change, and social media – and even more on the impact of the latter to contribute to the former. To do this effectively, research needs to be broadened and opened to combine several perspectives and methodological approaches. Meier rightly claims that the prevailing anecdotes in the field of social media research need to be balanced with large-N quantitative data. Yet this paper suggests that the qualitative aspect of research on social media matters as well, as we need to assess content, i.e. what social media is in fact *used for*. It seems equally important not to lose other more "traditional" media out of sight: the role of Al Jazeera in the Arab uprisings, for example, was neglected in this study, yet it seems to matter in the analysis of media's impact on the development of the protests as well.[96] Other aspects may concern means to circumvent digital censorship, like the use of proxy technology, which reportedly increased

[96] El Oifi, M. (2011, May). Der Al-Dschasira-Effekt. *Le Monde Diplomatique (German Edition)*, May 2011, 9.

fourfold in Egypt in the weeks leading to the overthrow of Hosni Mubarak.[97] The model of information cascades itself could also be applied on a wider scale, with the aim to analyze how the successful Tunisian Revolution might have sparked an information cascade effecting uprisings in other Arab countries.[98]

Despite the shortcomings mentioned before, this paper's outcome seems to support the stand that a much broader time span needs to be considered when analyzing the effects of social media use, especially with regard to regime change, while the focus needs to be put on the process. Shirky himself points to what Lohmann's approach suggests to this regard: "that protests, when effective, are at the end of a long process, rather than a replacement for it".[99] The same may be said of the effects of social media use in any given country. There is still a lot of development potential of social media ahead of us. And yet, in their struggle for change, Arab populations in North Africa and the Middle East, while having been exposed to a relatively low degree of social media development, have nevertheless given the world a whole new perspective on its application and use. And as a former imprisoned blogger who is selected youth minister by the Tunisian interim government tweets cabinet meetings,[100] these countries may even more importantly set new standards on how to benefit from social media and harvest the momentum of regime change.

[97] Compare: Index on Censorship (2011, Mar. 11). Free Expression Awards 2011: New Media. *Index on Censorship Homepage.* Retrieved 15 April 2011 from <http://www.indexoncensorship.org/2011/03/free-expression-awards-2011-new-media/>.

[98] Compare: Howard, P. (2011, Feb. 23). The Cascading Effects of the Arab Spring. *Miller McCune Online*. Retrieved 24 May 2011 from <http://www.miller-mccune.com/politics/the-cascading-effects-of-the-arab-spring-28575/>.

[99] Shirky, The Net Advantage, para 26. Compare also: Seib, *The Al Jazeera Effect*, 111, and Olsson-Yaouzis, N. (2010, Dec.). An Evolutionary Dynamic of Revolutions. *Public Choice*, 11127, 1-19.

[100] Compare: POMED (2011, Feb. 7). The Role of Citizen Journalism and Social Media in the Middle East and North Africa. *Project on Middle East Democracy (POMED).* Discussion at the National Democratic Institute, Washington, D. C; and: Séréni, J-P. (2011, May). Mit Ernst, Geduld und Mut. *Le Monde Diplomatique (German Edition)*, May 2011, 8.

Bibliography

Abdulla, R. A. (2007). *The Internet in the Arab World: Egypt and beyond.* New York: Peter Lang.

Acemoglu, D. & Robinson, J. (2005). *Economic Origins of Dictatorship and Democracy.* New York: Cambridge University Press.

Aday, S., Farrell, H., Lynch, M., Sides, J., Kelly, J. & Zuckerman E. (2010, Sept.). *Blogs and Bullets. New Media in Contentious Politics*. Peaceworks Report. Washington, DC: United States Institute of Peace. Retrieved 03 March 2011 from: <http://www.usip.org/node/5228/publications-tools>.

Ahlqvist, T., Bäck, A., Halonen M. & Heinonen S. (2008). *Social Media Roadmaps: Exploring the Futures Triggered by Social Media*. VTT Tiedotteita Research Notes 2454. Helsinki: Edita Prima Oy. Retrieved 14 April 2011 from <http://www.vtt.fi/inf/pdf/tiedotteet/2008/T2454.pdf>.

Al Jazeera (2011a, Feb. 22). The Arab Awakening. *Al Jazeera Online*. Retrieved 23 February 2011 from <http://english.aljazeera.net/indepth/spotlight/2011/02/2011222121213770475.html>.

Al Jazeera (2011b, Apr. 7). Mubarak's Former Chief of Staff Arrested. *Al Jazeera Online*. Retrieved 10 May 2011 from <http://english.aljazeera.net/news/middleeast/2011/04/20114720540306784.html>.

Al Jazeera (2011c, Apr. 16). Egypt Dissolves Former Ruling Party. *Al Jazeera Online*. Retrieved 10 May 2011 from <http://english.aljazeera.net/news/middleeast/2011/04/2011416125051889315.html>.

Al Jazeera (2011d, May 17). Mubarak's Wife Released from Detention. *Al Jazeera Online.* Retrieved 10 May 2011 from <http://english.aljazeera.net/news/middleeast/2011/05/201151718219682587.html>.

Al Jenaibi, B. (2010). New Age of Press Democracy in the Middle East. Arabic News Channels: Al-Jazeera. *International Journal of Academic Research*, 2(4), 385-394.

Al Malky, R. (2007). Blogging for Reform: The Case of Egypt. *Arab Media & Society*, 1. Retrieved 2 March 2011 from <http://www.arabmediasociety.com/?article=12>.

Al-Masry Al-Youm (2011, Mar. 23). Student Protests Continue across Egypt. *Al-Masry Al-Youm English Edition*. Retrieved 10 May 2011 from <http://www.almasryalyoum.com/en/node/371028>.

Al-Roomi, S. (2007). Women, Blogs, and Political Power in Kuwait. In: Seib, P. (ed.) (2007). *New Media and the New Middle East.* New York, NY: Palgrave Macmillan, 139-155.

Al-Shagra, A.F. (2011, Feb. 8). Facebook and YouTube Unblocked in Syria Today [Updated]. *The Next Web.* Retrieved 20 April 2011 from: <http://thenextweb.com/me/2011/02/08/facebook-and-youtube-to-be-unblocked-in-syria-today/>.

Alterman, J.B. (2000, Jan.). The Middle East's Information Revolution. *Current History,* 21-26.

Bel Aiba, I. (2008, Apr. 8). Egypt Scrambles to Appease Workers after Deadly Riots. *Agence France Presse – English*. Retrieved 26 April 2011 from the LexisNexis Academic database.

Best, M. & Wade, K. (2009). The Internet and Democracy: Global Catalyst or Democratic Dud? *Bulletin of Science, Technology & Society*, 29 (4), 255-271.

Bikhchandani, S., Hirshleifer, D. & Welch, I. (1992). A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades. *Journal of Political Economy*, 100 (5), 992-1026.

Boyd, D. M. & Ellison, N. B. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*, 13 (1), Article 11. Retrieved 14 April 2011 from <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>.

Burkhart, G. E. & Older, S. (2003). *The Information Revolution in the Middle East and North Africa.* Santa Monia, CA: RAND.

Calfano, B. R. & Sahliyeh, E. (2008). Transmitting Reform? Assessing New Media Influence on Political Rights in the Middle East. *Critique: Critical Middle Eastern Studies*, 17 (1), 63–77.

Calvert, P. (ed.) (1987). *The Process of Political Succession.* London: Macmillan.

Campante, F. R. & Chor, D. (2012). Why Was the Arab World Poised for Revolution? Schooling, Economic Opportunities, and the Arab Spring. *Journal of Economic Perspective*, 26 (2), 167-188.

Central Intelligence Agency (2011). The World Factbook. Retrieved 21 April 2011 from <https://www.cia.gov/library/publications/the-world-factbook/index.html>.

Cohen, G., Salomon I. & Nijkamp P. (2002). Information-Communication Technologies (ICT) and Transport: Does Knowledge Underpin Policy? *Telecommunications Policy*, 26, 31-52.

Deutsche Welle (2011, Jan. 28). Protests in Egypt Continue Despite Government Shut Down of Internet. *Deutsche Welle Online.* Retrieved 2 April 2011 from <http://www.dw-world.de/dw/article/0,,14801752,00.html>.

Earl, J., Kimport, K., Prieto, G., Rush, C. & Reynoso K. (2010). Changing the World One Webpage at a Time: Conceptualizing and Explaining Internet Activism. *Mobilizationg: An International Journal*, 15 (4), 425-446.

Eickelman, D. F. & Anderson, J. W. (1999) (eds). *New Media in the Muslim World: The Emerging Public Sphere.* Bloomington: Indiana University Press.

El Gody, A. (2007). New Media, New Audience, New Topics, and New Forms of Censorship in the Middle East. In: Seib, P. (ed.). *New Media and the New Middle East.* New York, NY: Palgrave Macmillan, 213-234.

El-Mahdi, R. (2009). Enough! Egypt's Quest for Democracy. *Comparative Political Studies*, 42 (8), 1011-1039.

El Oifi, M. (2011, May). Der Al-Dschasira-Effekt. *Le Monde Diplomatique (German Edition)*, May 2011, 9.

Ellis, C. J. & Fender, J. (2010). Information Cascades and Revolutionary Regime Transitions. *The Economic Journal*, 121 (553), 763-792.

eMarketer (2011, Feb. 24). Facebook Reaches Majority of US Web Users. *eMarketer Press Release*. Retrieved 29 April 2011 from <http://www.emarketer.com/PressRelease.aspx?R=1008250>.

Etling, B., Kelly, J., Faris, R. & Palfrey, J. (2009). Mapping the Arabic Blogosphere: Politics, Culture, and Dissent. *Berkman Center Research Publication*, No. 2009-06. Internet & Democracy Project at The Berkman Center for Internet & Society, Harvard University. Retrieved 2 March 2011 from <http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Mapping_the_Arabic_Blogosphere.pdf>.

Etling, B., Faris, R. & Palfrey, J. (2010). Political Change in the Digital Age: The Fragility and Promise of Online Organizing. *The SAIS Review of International Affairs*, 30 (2), 37-49.

European Union (2001, Dec. 14). *Communication from the Commission to the Council and the European Parliament. Information and Communication Technologies in Development: The Role of ICTs in EC Development Policy*. European Commission, COM(2001) 770. Retrieved 14 April 2011 from <http://ec.europa.eu/development/icenter/repository/com2001_0770en01_en.pdf>.

Faris, D. (2010). *Revolutions Without Revolutionaries? Social Media Networks and Regime Response in Egypt.* Publicly Accessible Penn Disseratations. Paper 116. University of Pennsylvania. Retrieved 28 February 2011 from <http://repository.upenn.edu/edissertations/116/>.

Freedom House (2011, Jan.). *Freedom in the World 2011. The Authoritarian Challenge to Democracy.* Freedom House Report. Retrieved 20 April 2011 from <http://www.freedomhouse.org/template.cfm?page=594>.

Garrett, R. K. (2006). Protest in an Information Society: A Review of Literature on Social Movements and New ICTs. *Information, Communication & Society*, 9 (2), 202-224.

Ghonim, W. (2011, Mar.). Wael Ghonim: Inside the Egyptian Revolution [video file]. Retrieved 15 April 2011 from <http://blog.ted.com/2011/03/04/inside-the-egyptian-revolution-wael-ghonim-on-ted-com/>.

Gladwell, M. (2010, Oct. 4). Small Change: Why the Revolution will not be Tweeted. *The New Yorker.* Retrieved 08 April 2011 from: <http://www.newyorker.com/reporting/2010/10/04/101004fa_fact_gladwell>.

Granovetter, M (1978). Threshold Models of Collective Behavior. *American Journal of Sociology*, 83, 1420-1443.

Groschek, J. (2010). A Time–Series, Multinational Analysis of Democratic Forecasts and Internet Diffusion. *International Journal of Communication*, 4, 142-174.

Hendrix, C., Haggard, S., Magaloni, B. (2009). Grievance and Opportunity: Food Prices, Political Regime, and Protest. *Paper Prepared for Presentation at the International Studies Association Convention.* New York, February 15-18, 2009. Retrieved 16 August 2012 from <http://www.kent.ac.uk/brussels/conference/documents/Food_prices-protests.magahaggahendrix_isa.pdf>.

Herring, S.C., Scheidt, L.A., Bonus, S. & Wright, E. (2004a, Jan.). Bridging the Gap: A Genre Analysis of Weblogs. *Proceedings of the 37th Hawaii International Conference on System Sciences (HICSS'04)* - Track 4, p.40101.2, January 05-08, 2004.

Herring, S. (2004b) Content Analysis for New Media: Rethinking the Paradigm. *New Research for New Media: Innovative Research Methodologies Symposium Working Papers and Readings,* 47-66. Minneapolis, MN: University of Minnesota School of Journalism and Mass Communication. Retrieved 29 April 2011 from: <http://ella.slis.indiana.edu/~herring/newmedia.pdf>.

Hindeman, M. (2008). *The Myth of Digital Democracy*. Princeton, NJ: Princeton University Press.

Hounshell, B. (2011, Feb. 14). Think Again: Egypt. From the Rise of the Muslim Brotherhood to the Arab Autocracy Domino Theory, Five Myths about Egypt's Revolution. *Foreign Affairs*. Retrieved 15 May 2011 from <http://www.foreignpolicy.com/articles/2011/02/14/think_again_egypt?page=0,0>.

Howard, P. (2010). *The Digital Origins of Dictatorship and Democracy: Information Technology and Political Islam*. Oxford: Oxford University Press.

Howard, P. (2011, Feb. 23). The Cascading Effects of the Arab Spring. *Miller McCune Online*. Retrieved 24 May 2011 from <http://www.miller-mccune.com/politics/the-cascading-effects-of-the-arab-spring-28575/>.

Human Rights Watch (2010, Jul.). *A Wasted Decade. Human Rights in Syria during Bashar al-Asad's First Ten Years in Power.* © 2010 Human Rights Watch. Retrieved 20 April 2011 from <http://www.hrw.org/en/reports/2010/07/16/wasted-decade-0>.

Human Rights Watch (2011, Jan.). '*Work on Him Until He Confesses'. Impunity for Torture in Egypt.* © 2011 Human Rights Watch. Retrieved 20 April 2011 from <http://www.hrw.org/en/reports/2011/01/30/work-him-until-he-confesses-0>.

Index on Censorship (2011, Mar. 11). Free Expression Awards 2011: New Media. *Index on Censorship homepage.* Retrieved 15 April 2011 from <http://www.indexoncensorship.org/2011/03/free-expression-awards-2011-new-media/>.

International Telecommunication Union (2003, Nov. 19). *ITU Digital Access Index: World's First Global ICT Ranking Education and Affordability Key to Boosting New Technology Adoption*. International Telecommunication Union Press Release. Geneva. Retrieved 26 April 2011 from <http://www.itu.int/newsroom/press_releases/2003/30.html>.

International Telecommunication Union (2009). *Measuring the Information Society: The ICT Development Index*. Geneva. Retrieved 14 April 2011 from <http://www.itu.int/ITU-D/ict/publications/idi/2009/material/IDI2009_w5.pdf>.

International Telecommunication Union (2010a). Digital Access Index (DAI). *International Telecommunication Union Homepage*. Retrieved 26 April 2011 from <http://www.itu.int/ITU-D/ict/dai/>.

International Telecommunication Union (2010b). ICT Statistics Database. *International Telecommunication Union Homepage*. Retrieved 26 April 2011 from <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>.

Joyce, M.C. (2011, Jan. 20). Activism, Repression, and ICT: What We Know Now. *Meta-activism Homepage.* Retrieved 10 March 2011 from <http://www.meta-activism.org/2011/01/activism-repression-and-ict-what-we-know-now/>.

Kalathil, S. & Boas T. C. (2003). *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*. Washington, DC: Carnegie Endowment For International Peace.

Kaplan, A. & Haenlein, M. (2010). Users of the World, Unite! The Challenges and Opportunities of Social Media. *Business Horizons*, 53 (1), 59-68.

Karpf, D. (2008, Dec.). Understanding Blogspace. *Journal of Information Technology & Politics*, 5 (4), 369-385.

Kedzie, C. R. (1997). *Communication and Democracy: Coincident Revolutions and the Emergent Dictator's Dilemma.* Santa Monia, CA: RAND. Retrieved 13 April 2011 from <http://www.rand.org/pubs/rgs_dissertations/RGSD127/index.html>.

Klotz, R. J. (2004). *The Politics of Internet Communication.* Lanham, Md.: Rowman & Littlefield Publishers.

Krasner, S. D. (ed.) (1983). *International Regimes.* Ithaca: Cornell University Press.

Kuran, T. (1991). Now out of Never: The Element of Surprise in the East European Revolution of 1989. *World Politics*, 44 (1), 7-48.

LaGraffe, D. (2012). The Youth Bulge in Egypt: An Intersection of Demographics, Security, and the Arab Spring. *Journal of Strategic Security*, 5 (2), 65-80.

Lawson, S. (1993). Conceptual Issues in the Comparative Study of Regime Change and Democratization. *Comparative Politics*, 25 (2), 183-205.

Lee, J. (2009). Net Power in Action: Internet Activism in the Contentious Politics of South Korea. *Dissertation Submitted to the Graduate School-New Brunswick*. New Brunswick: Rutgers, The State University of New Jersey.

Lohmann, S. (1993). A Signaling Model of Informative and Manipulative Political Action. *The American Political Science Review*, 87 (2), 319-333.

Lohmann, S. (1994a). Rationality, Revolution, and Revolt: The (Hap-) Hazards of Informational Cascades. *Graduate School of Business Studies Research Paper No. 1213*. Stanford, CA: Stanford University. Retrieved 30 March 2011 from the Stanford Graduate School of Business Research Paper database: <http://gsbapps.stanford.edu/researchpapers/detail1.asp?Document_ID=652>.

Lohmann, S. (1994b). The Dynamics of Informational Cascades: The Monday Demonstrations in Leipzig, East Germany, 1989-1991. *World Politics*, 47 (1), 42-101.

Lohmann, S. (2000). Collective Action Cascades: An Informational Rationale for the Power in Numbers. *Journal of Economic Surveys*, 14 (5), 654-684.

Lowrey, A. (2011; Jan. 31). Protesting on an Empty Stomach: How the Egyptian economy is Fueling Unrest in Egypt. *Slate Homepage.* Retrieved 16 August 2012 from <http://www.slate.com/articles/business/moneybox/2011/01/protesting_on_an_empty_stomach.html>.

Lund, A. (2011). *The Ghosts of Hama: The Bitter Legacy of Syria's Failed 1979-1982 Revolution.* Swedish International Liberal Centre. Stockholm, Sweden. Retrieved 16 August 2012 from <http://old.silc.se/files/pdf/The%20Ghosts%20of%20Hama%20by%20Aron%20Lund.pdf>.

Lund, A. (2012). *Divided They Stand: An Overview of Syria's Political Opposition Factions*. Foundation for European Progressive Studies & Olof Palme International Center. Uppsala, Sweden. Retrieved 16 August 2012 from <http://www.palmecenter.se/Documents/Kunskapsbanken/Rapporter/Syrian%20opposition%20paper%20-%20PALME%20FINAL.pdf>.

Lynch, M. (2006). *Voices of the New Arab Public: Iraq, Al Jazeera, and Middle East Politics Today.* New York: Columbia University Press.

Lynch, M. (2007, Feb.). Blogging the New Arab Public. *Arab Media & Society*, 1. Retrieved 2 March 2011 from <http://www.arabmediasociety.com/?article=10>.

Malin, C. (2010, May 24). *Middle East & North Africa Facebook Demographics.* Dubai: Spot On Public Relations. Retrieved 3 March 2011 from <http://www.spotonpr.com/mena-facebook-demographics/>.

Malin, C. (2011, Jan. 16). Can We Say Twitter Revolution Now? Can We? *Spot On Homepage*. Retrieved 15 April 2011 from <http://www.spotonpr.com/twitter-revolution-and-tunisia/>.

Meier, P. (2009a). The Impact of the Information Revolution on Protest Frequency in Repressive Contexts. *Conference Paper Presented at the 50th Annual Convention of the International Studies Association*. New York, February 15-18, 2009. Retrieved 16 March 2011 from: <http://irevolution.files.wordpress.com/2009/02/meier-isa-2009-final.pdf>.

Meier, P. (2009b, Nov. 19). Digital Activism and the Puffy Clouds of Anecdote Heaven. *iRevolution Homepage*. Retrieved 15 April 2011 from <http://irevolution.net/2009/11/19/anecdote-heaven/>.

Meier, P. (2010, Jan. 7). Where I Disagree with Morozov vs Shirky on Digital Activism. *iRevolution Homepage*. Retrieved 26 April 2011 from <http://irevolution.net/2010/01/07/morozov-vs-shirky/>.

Miard, F. (2009). Call for Power? Mobile Phones as Facilitators of Political Activism. *Conference Paper Presented at the 50th Annual Convention of the International Studies Association.* New York, February 15-18, 2009. Retrieved 16 April 2011 from: <http://www.miard.ch/papers/phonesandpowerII.pdf>.

Michael, M. (2011, Apr. 8). Egypt Army Kills 1 Dispersing Overnight Protest. *Associated Press.* Retrieved 10 May 2011 from <http://abcnews.go.com/International/wireStory?id=13329347>.

Morozov, E. (2009). Downside to the 'Twitter Revolution'. *Dissent*, 56/4, 10-14.

Morozov, E. (2010, May/June). Think Again: The Internet. *Foreign Affairs*. Retrieved 15 April 2011 from: <http://www.foreignpolicy.com/articles/2010/04/26/think_again_the_internet?page=full>.

Morozov, E. (2011a). *The Net Delusion: The Dark Side of Internet Freedom*. New York, NY: Public Affairs.

Morozov, E. (2011b, Jan. 15). Picking a Fight with Clay Shirky. *Foreign Policy*. Retrieved 10 April 2011 from <http://neteffect.foreignpolicy.com/>.

Morrow, A. & Al-Omrani, K. M. (2007, May 15). Spate of Strikes and Protests in Egypt; Egypt: Labour Unrest Spreads. *IPS – Inter Press Service (Latin America)*. Retrieved 26 April 2011 from the LexisNexis Academic database.

Morrow, A. & Al-Omrani, K. M. (2009, Apr. 7). Egypt: Online Group Stages "Day of Anger" over Prices, Politics. *IPS - Inter Press Service.* Retrieved 26 April 2011 from the LexisNexis Academic database.

Mourtada, R. & Salem, F. (2011). Facebook Usage: Factors and Analysis. *Arab Social Media Report*, 1 (1). Dubai School of Government's Governance and Innovation Program. Retrieved 3 March 2011 from <http://www.dsg.ae/NEWSANDEVENTS/UpcomingEvents/ASMRHome.aspx>.

Murphy, C. (2009, Nov.). Arab Facebook. *Al Majalla.* Retrieved 2 April 2011 from: <http://www.majalla.com/en/cover_story/article10699.ece?service=print>.

Olsson-Yaouzis, N. (2010, Dec.). An Evolutionary Dynamic of Revolutions. *Public Choice*, 11127, 1-19.

Open Net Initiative (2009a, Aug. 6). *Internet Filtering in Egypt*. Country Profile Report. Retrieved 20 April 2011 from <http://opennet.net/research/profiles/egypt>.

Open Net Initiative (2009b, Aug. 7). *Internet Filtering in Syria.* Country Profile Report. Retrieved 20 April 2011 from <http://opennet.net/research/profiles/syria>.

O'Reilly, T. (2005). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *O'Reilly Hompage*. Retrieved 14 April 2011 from <http://oreilly.com/web2/archive/what-is-web-20.html>.

Paciello, M. C. (2011). Egypt: Changes and Challenges of Political Transition. *MEDPRO Technical Report*, No. 4 (May 2011). Centre for European Policy Studies, Brussels. Retrieved 16 August 2012 from <http://www.iai.it/pdf/mediterraneo/MedPro/MedPro-technical-paper_04.pdf>.

Philipps, C. (2012). After the Arab Spring: Power Shift in the Middle East?: Syria's Bloody Arab Spring. *LSE IDEAS Reports - Special Reports*, SR011. London, UK: London School of Economics and Political Science. Retrieved 16 August 2012 from <http://eprints.lse.ac.uk/43464/1/After%20the%20Arab%20Spring_Syria%E2%80%99s%20bloody%20Arab%20Spring%28lsero%29.pdf>.

POMED (2011, Feb. 7). The Role of Citizen Journalism and Social Media in the Middle East and North Africa. *Project on Middle East Democracy (POMED).* Discussion at the National Democratic Institute, Washington, D. C. Retrieved 2 April 2011 from <http://pomed.org/wordpress/wp-content/uploads/2011/02/pomed-notes_the-role-of-social-media-and-citizen-journalism-in-mena.pdf>.

Radsch, C. (2008, Sept.). Core to Commonplace: The Evolution of Egypt's Blogosphere. *Arab Media & Society*, 6. Retrieved 2 March 2011 from <http://www.arabmediasociety.com/UserFiles/AMS6%20Courtney%20Radsch.pdf>.

Rahman, O. (2011, May 11). Egypt's Trial by Fire. *Al Jazeera Online*. Retrieved 10 May 2011 from <http://english.aljazeera.net/indepth/features/2011/05/201159115219476806.html>.

Reporters Without Borders (2010). *2010 World Press Freedom Index*. Paris. Retrieved 20 April 2011 from <http://en.rsf.org/press-freedom-index-2010,1034.html>.

Rheingold, H. (2003). *Smart Mobs: The Power of the Mobile Many*. Cambridge, MA : Perseus Publications.

Ryan, Y. (2011a, Jan. 20). The Tragic Life of a Street Vendor. *Al Jazeera Online*. Retrieved 15 April 2011 from <http://english.aljazeera.net/indepth/features/2011/01/201111684242518839.html>.

Ryan, Y. (2011b, Jan. 26). How Tunisia's Revolution Began. *Al Jazeera Online*. Retrieved 15 April 2011 from: <http://english.aljazeera.net/indepth/features/2011/01/2011126121815985483.html>.

Seale, P. (2011, May). Syrien, der Große Irrtum. *Le Monde Diplomatique (German Edition)*, May 2011, 7.

Seib, P. (ed.) (2007). *New Media and the New Middle East.* New York, NY: Palgrave Macmillan.

Seib, P. (2008). *The Al Jazeera Effect: How the New Global Media Are Reshaping World Politics*. Washington, D.C: Potomac Books, Inc.

Séréni, J-P. (2011, May). Mit Ernst, Geduld und Mut. *Le Monde Diplomatique (German Edition)*, May 2011, 8.

Shirky, C. (2003, Mar. 9). Social Software and the Politics of Groups. *Clay Shirky's Writings About the Internet Homepage*. Retrieved 14 April 2011 from <http://www.shirky.com/writings/group_politics.html>.

Shirky, C. (2008). *Here Comes Everybody: The Power of Organizing Without Organizations*. New York, NY: Penguin Press.

Shirky, C. (2009, Dec. 11). The Net Advantage. *Prospect Magazine*, 165. Retrieved 16 April 2011 from <http://www.prospectmagazine.co.uk/2009/12/the-net-advantage/>.

Shirky, C. (2011, Jan/Feb.). The Political Power of Social Media: Technology, the Public Sphere, and Political Change. *Foreign Affairs*. Retrieved 14 April 2011 from <http://www.foreignaffairs.com/articles/67038/clay-shirky/the-political-power-of-social-media>.

Smith, J. (2000). Globalization Resistance: The Battle of Seattle and the Future of Social Movements. *Mobilization*, 6 (1), 1-19.

Stock, M. & Stock W. (2005). LexisNexis Recht und LexisNexis Wirtschaft: Informationsquelle für den deutschen Markt. *Password*, 4, 24–31. Retrieved 20 April 2011 from <http://www.phil-fak.uni-duesseldorf.de/infowiss/admin/public_dateien/files/1/11168499841116330466.pdf>.

Syria Today (2011, March). Government Loosens Internet Restrictions. *Syria Today Online.* Retrieved 12 May 2011 from <http://www.syria-today.com/index.php/news/14479-government-loosens-internet-restrictions>.

Targeted News Service (2007, Apr. 27). Egyptian Government Should Reverse Its Order to Close CTUWS Offices. *Targeted News Service*. Retrieved 26 April 2011 from the LexisNexis Academic database.

Trading Economics (2011). International Internet Bandwidth (Bits per Person) in Egypt. *Trading Economics Homepage*. Retrieved 2 April 2011 from <http://www.tradingeconomics.com/egypt/international-internet-bandwidth-bits-per-person-wb-data.html>.

United Nations (2008, Apr. 28). *World Population Prospects: The 2008 Revision*. Department of Economic and Social Affairs of the United Nations Secretariat, Population Division. Retrieved 1 March 2011 from: <http://esa.un.org/unpp>.[101]

United Nations (2009a). *Human Development Report 2009.* United Nations Development Program. Retrieved 1 April 2011 from <http://hdrstats.undp.org/en/indicators/90.html>.

United Nations (2009b). Arab Statistics. United Nations Development Program, Programme on Governance in the Arab Region (POGAR). Retrieved 2 April 2011 from <http://www.arabstats.org/country.asp?cid=19&ind=319&gid=4&sgid=35#notes>.

United Nations (2010). *Human Development Report 2010.* United Nations Development Program. Retrieved 1 April 2011 from <http://hdr.undp.org/en/statistics/hdi/>.

Verna, P. (2008, May). The Blogosphere: A Mass Movement from Grass Roots. *eMarketer*. Retrieved 28 April 2011 from:

[101] Just before the date of first submission of this paper (May 2011), the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, released the *World Popupulation Prospects – The 2010 Revision*, thus disabling *The 2008 Revision* website, replacing it by the current one <http://esa.un.org/unpd/wpp/index.htm>. This does not change the outcome of this paper, as the two revisions do not significantly differ with regard to the data used here.

<http://www.emarketer.com/Report.aspx?code=emarketer_2000494&AspxAutoDetectCookieSupport=1>.

Wardrip-Fruin, N. & Montfort, N. (eds) (2003). *The New Media Reader*. Cambridge, MA: The MIT Press.

Wheeler, D. (2006). *Empowering Publics: Information Technology and Democratization in the Arab World – Lessons from Internet Cafés and beyond*. Research Report No. 11. Oxford: Oxford Internet Institute.

Wright, R. (2008). *Dreams and Shadows: the Future of the Middle East.* New York, NY: Penguin.

Zimbra, D., Abbasi, A., Chen, H. (2010). A Cyber-Archaeology Approach to Social Movement Research: Framework and Case Study. *Journal of Computer-Mediated Communication*, 16, 48–70.

Zuckerman, E. (2011, Jan. 14). The First Twitter Revolution? *Foreign Affairs*. Retrieved 15 April 2011 from <http://www.foreignpolicy.com/articles/2011/01/14/the_first_twitter_revolution>.

Websites Used (Last Access: 24 May 2011):

ABC News: http://abcnews.go.com/

Al Maktaba (blog): http://maktabahsharq.blogspot.com

Al-Masry Al-Youm Online (English): http://www.almasryalyoum.com

Almudawen: (blog-directory): http://www.almudawen.net/

Al-Jazeera Online (English): http://english.aljazeera.net/

Arab Advisors Group, Arab Jordanian Investment Bank Group: http://www.arabadvisors.com

Arab Media & Society: http://www.arabmediasociety.com

Asharq Al-awsat Online (English): http://www.asharq-e.com/

Baheyya (blog): http://baheyya.blogspot.com/

BBC News Online: http://news.bbc.co.uk/

Berkman Center for Internet & Society (BCIS): http://cyber.law.harvard.edu

BCIS, Internet & Democracy Project: http://blogs.law.harvard.edu/idblog/

CIA World Factbook: https://www.cia.gov/library/publications/the-world-factbook/index.html

Cyber Dissidents: http://www.cyberdissidents.org/

Democracy & Society (blog): http://www.democracyandsociety.com/blog/

Deutsche Welle Online: http://www.dw-world.de/

DigiActive: http://www.digiactive.org

Dubai School of Government: http://www.dsg.ae/

eMarketer: http://www.emarketer.com/

Encyclopedia Britannica Online: http://www.britannica.com/

European Commission: http://ec.europa.eu/

Facebook: http://www.facebook.com

Foreign Affairs: http://www.foreignaffairs.com

Foreign Policy: http://www.foreignpolicy.com

Foreign Policy, NetEffect: http://neteffect.foreignpolicy.com/

Foreign Policy, The Middle East Channel: http://mideast.foreignpolicy.com
Freedom House: http://www.freedomhouse.org/
Global Voices: http://globalvoicesonline.org/
Global Voices' Threatened Voices Project: http://threatened.globalvoicesonline.org/
Human Rights Watch: http://www.hrw.org/
Index on Censorship: http://www.indexoncensorship.org
Info Cascades: http://www.info-cascades.info/
Inside Facebook: http://www.insidefacebook.com/
International Freedom of Expression Exchange: http://www.ifex.org
International Telecommunication Union: http://www.itu.int
Internet World Stats: http://www.internetworldstats.com
Lexis-Nexis: http://www.lexisnexis.com/de/business/
Manalaa (blog): http://www.manalaa.net/
Meier, Patrick's Homepage (blog): http://irevolution.net
Meta-Activism: www.meta-activism.org
Miard, Fabien's Homepage: http://www.miard.ch/fabien/fabien.html
Middle East Institute: http://www.mei.edu/
Miller McCune Online: http://www.miller-mccune.com
Morozov, Evgeny's Homepage: http://www.evgenymorozov.com/writings.html
Online Marketing Trends: http://www.onlinemarketing-trends.com
OpenNet Initiative: http://opennet.net
O'Reilly, Tim's Homepage: http://oreilly.com/
POMED, Project on Middle East Democracy: http://pomed.org/
Privacy International: https://www.privacyinternational.org
Prospect Magazine: http://www.prospectmagazine.co.uk
Reporters Without Borders: http://en.rsf.org
Sandmonkey (blog): http://www.sandmonkey.org
Shirky, Clay's Homepage: http://shirky.com
Smart Mobs: http://www.smartmobs.com
Social Bakers: http://www.socialbakers.com
Spot On: http://www.spotonpr.com
Syrian News Wire (blog): http://newsfromsyria.com/
Syrian Planet (blog-directory): http://syplanet.com/
Technocrati: http://technorati.com
TED Blog (blog): http://blog.ted.com/
The Majalla: http://www.majalla.com/en/
The New Yorker: http://www.newyorker.com
The New York Times Online: http://www.nytimes.com
The Nex Web: http://thenextweb.com/
Trading Economics: http://www.tradingeconomics.com/

UN, Population Division of the Department of Economic and Social Affairs, World Population Prospects, *The 2008 Revision* http://esa.un.org/unpp/ (not available anymore), replaced by *The 2010 Revision*: http://esa.un.org/unpd/wpp/index.htm.

United Nations Development Programme (UNDP): http://www.undp.org/

UNDP, International Human Development Indicators: http://hdrstats.undp.org/

UNDP, Human Development Report: http://hdr.undp.org/en/statistics/hdi/

UNDP, Programme on Governance in the Arab Region, Arab Stats: http://www.arabstats.org/

United States Institute of Peace: http://www.usip.org/

Washington Post Online: http://www.washingtonpost.com/

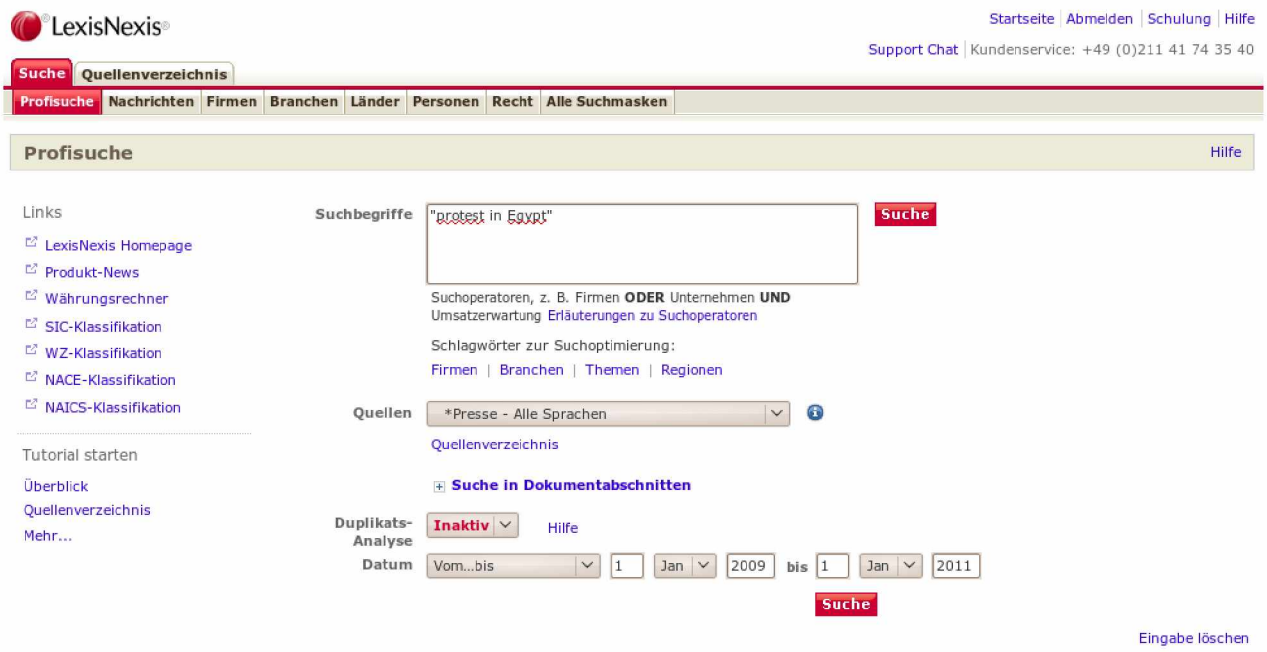
Zittrain, Jonathan's Homepage: http://futureoftheinternet.org

Annex 1: Detailed List of Manifested Protests Accounted for (2 Year-Period)

The following lists present the results for manifested protests in Egypt and Syria accounted for through a LexisNexis database research. The following were the coded search parameters:

- search terms (respectively): “protest in Egypt” // “protest in Syria”;
- sources: “press – all languages”;
- date: “from 1. January 2009 to 1. January 2011”;
- controlling with search terms (respectively) (otherwise same search parameters): “demonstration in Egypt” // “demonstration in Syria”.

Example:



Results for Egypt:

EGYPT				
DATE	SOURCE	TITLE OF ARTICLE	NUMBER OF PRO-TESTERS	ADD. INFORMATION (REASON FOR/AIM OF PROTEST)
Apr 7, 2009	Inter Press Service	Egypt: Online group stages "Day of Anger" over prices, politics	"several hundred" to 3,000	"Day of Anger": April 6 Movement. Demonstrations across the country, initially organized by an Internet-based activist group, The April 6 Youth, using Facebook. The group also issued a list of basic demands, some economic and some political. The call to action was endorsed by most of Egypt's opposition parties, including the Muslim Brotherhood.
Jul 16, 2009	Associated Press Worldstream	Fifteen people injured in protest in Egypt	3,000	Clashes between police and thousands of quarry workers in the south of Egypt demonstrating against government plans to raise extraction costs.
Apr 6, 2010	UPI	Security forces quell Cairo protests	n/a	Security forces in Cairo scuffled with pro-democracy groups calling for democratic reform in front of the upper house of Parliament. Protests broke out in other parts of Egypt, including Alexandria.
Jul 25, 2010	UPI	"Down with Mubarak", protesters chant	4,000	Death of Khaled Mohammed Said at the hand of police officers prompted widespread public protests in Egypt.
Nov 29, 2010	The Press Trust of India	Counting of votes underway amid opposition protests in Egypt	n/a	Counting of votes from the controversial parliamentary elections in Egypt amid Opposition charges of ballot fraud and protests at various locations.
Dec 13, 2010	The Associated Press	Egypt protesters say new parliament is "void"	"hundreds"	Opposition activists protested outside the Supreme Court in downtown Cairo over bogus elections.

Results for Syria:

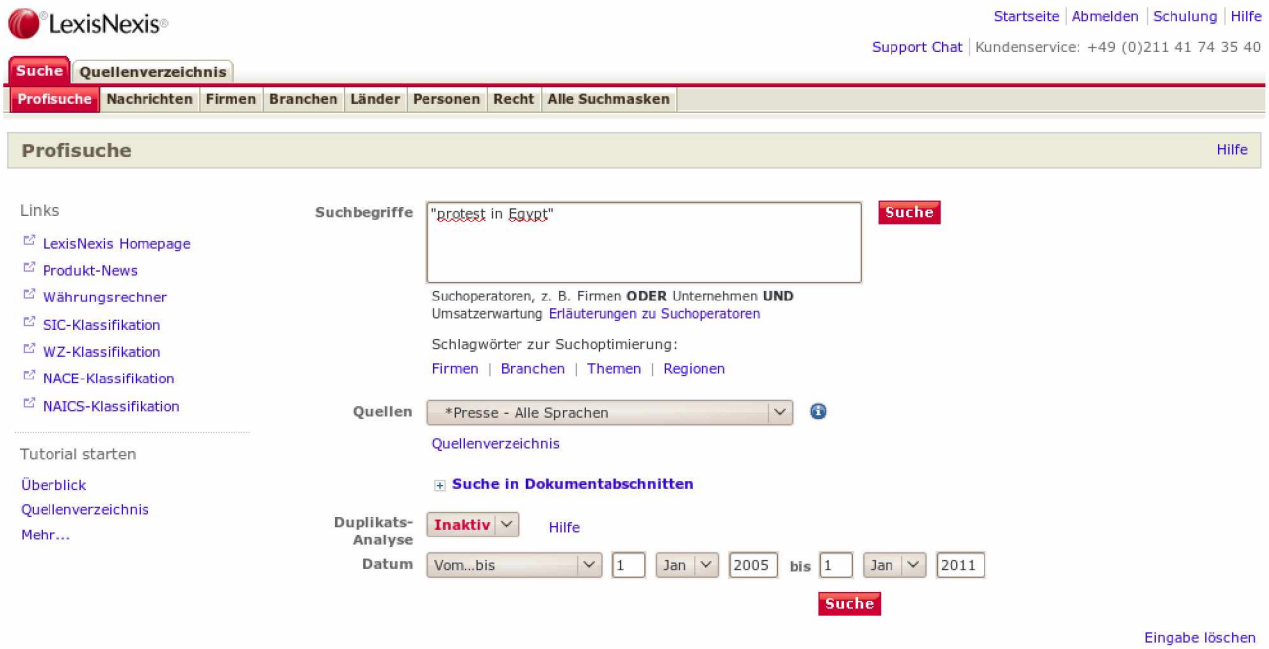
SYRIA				
DATE	SOURCE	TITLE OF ARTICLE	NUMBER OF PRO-TESTERS	ADD. INFORMATION (REASON FOR/AIM OF PROTEST)
N/A	N/A	N/A	N/A	N/A

Annex 2: Detailed List of Manifested Protests Accounted for (6 Year-Period)

The following lists present the results for manifested protests in Egypt and Syria accounted for through a LexisNexis database research. The following were the coded search parameters:

- search terms (respectively): “protest in Egypt” // “protest in Syria”;
- sources: “press – all languages”;
- date: **“from 1. January 2005 to 1. January 2011”**;
- controlling with search terms (respectively) (otherwise same search parameters): “demonstration in Egypt” // “demonstration in Syria”.

Example:



Results for Egypt:

EGYPT				
DATE	SOURCE	TITLE OF ARTICLE	NUMBER OF PRO-TESTERS	ADD. INFORMATION (REASON FOR/AIM OF PROTEST)
May 4, 2005	Associated Press Online	Banned Islamic group protests in Egypt	“thousands”	Organized by the Muslim Brotherhood, demanding political reform. 77th birthday of President Hosni Mubarak.
May 29, 2005	Agence France Presse - English	Egypt accuses foreign media of exaggerating vote violence	n/a	Constitutional Referendum on May 25. “A wave of pro-reform protests in Egypt in the weeks leading up to the election”.
May 30, 2005	Agence France Presse - English	Egyptian women demand Mubarak apology over vote violence	n/a	Female activists protesting against the nature of the constitutional referendum submitted to Egyptians on May 25, as well as against “police brutality, beating and sexual harassment” of several women during the referendum.
Jul 5, 2005	AP Worldstream	Families of detained Muslim Brotherhood members stage protest in Egypt	200	Relatives of 1,200 detained Muslim Brotherhood members stage a peaceful sit-in outside the state prosecutor's office in Cairo demanding their release.
Jul 22, 2005	The Associated Press	Mubarak casts himself as guarantor of Egypt's stability ahead of election	n/a	An unprecedented series of small but highly vocal protests in Egypt in recent months have demanded greater democratic reforms while seeking an end to Mubarak's rule.
Aug 25, 2005	US Fed News	Egypt's Kifaya protests keep pressure on Mubarak	fewer than 200	Dozens of protests in the last several months by the “Kifaya” movement. Anti-government protests in Egypt are keeping pressure on the government of President Mubarak as the country prepares presidential election.
Sept 27, 2005	AP Worldstream	Mubarak sworn in for a new term, promises more reform	2,000	Opposition activists stage a noisy anti-Mubarak protest in downtown Cairo.
May 25, 2006	US Fed News	VOA news: Police crackdown follows peaceful protests in Egypt	300+	Pro-reform judges stood in silent protest outside the high court, demanding an end to government interference in the judiciary while several other peaceful protests also took place in Cairo
Apr 27, 2007	Targeted News Service	Egyptian Government Should Reverse Its Order to Close CTUWS Offices	1,300	Textile workers in Suez went on strike to ask for wages they said management had not paid. More than 20,000 workers eventually went on strike until the government offered them an increased bonus.

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May 15, 2007	IPS (Latin America)	Spate of strikes and protests in Egypt; Egypt: Labour Unrest Spreads	3,000	Employees of the state-run Transportation Authority threaten a general strike.
Apr 2, 2008	ABC Premium News (Australia)	Egyptian elections under scrutiny after candidate arrests	"hundreds"	Muslim Brotherhood supporters take to the streets to protest against arrests of co-supporters by the regime.
Apr 7, 2009	IPS	Egypt: Online group stages "Day of Anger" over prices, politics	"several hundred" to 3,000	"Day of Anger": April 6 Movement. Demonstrations across the country, initially organized by an Internet-based activist group, The April 6 Youth, using Facebook. The group also issued a list of basic demands, some economic and some political. The call to action was endorsed by most of Egypt's opposition parties, including the Muslim Brotherhood.
Jul 16, 2009	Associated Press Worldstream	Fifteen people injured in protest in Egypt	3,000	Clashes between police and thousands of quarry workers in the south of Egypt demonstrating against government plans to raise extraction costs.
Apr 6, 2010	UPI	Security forces quell Cairo protests	n/a	Security forces in Cairo scuffled with pro-democracy groups calling for democratic reform in front of the upper house of Parliament. Protests broke out in other parts of Egypt, including Alexandria.
Jul 25, 2010	UPI	"Down with Mubarak", protesters chant	4,000	Death of Khaled Mohammed Said at the hand of police officers prompted widespread public protests in Egypt.
Nov 29, 2010	The Press Trust of India	Counting of votes underway amid opposition protests in Egypt	n/a	Counting of votes from the controversial parliamentary elections in Egypt amid opposition charges of ballot fraud and protests at various locations.
Dec 13, 2010	The Associated Press	Egypt protesters say new parliament is "void"	"hundreds"	Opposition activists protested outside the Supreme Court in downtown Cairo over bogus elections.

Results for Syria:

SYRIA				
DATE	SOURCE	TITLE OF ARTICLE	NUMBER OF PRO-TESTERS	ADD. INFORMATION (REASON FOR/AIM OF PROTEST)
N/A	N/A	N/A	N/A	N/A

Annex 3: Detailed Calculation of the aDAI, Including Sources

The following chart is based on the calculation and presentation of results of the original DAI, as compiled by the International Telecommunication Union (2003). Data is taken from a set of different sources (compare „Sources“ below) covering the years between 2008 and 2011.

On its webpage, the International Telecommunication Union gives following „Digital Access Index Technical Note“, equally valid for the calculation of the aDAI:

> The Digital Access Index (DAI) measures the overall ability of individuals in a country to access and use Information and Communication Technology. It consists of eight variables organized into five categories. Each variable is converted to an indicator with a value between zero and one by dividing it by the maximum value or "goalpost". Each indicator is then weighted within its category and the resulting category index values are averaged to obtain the overall DAI value.[102]

Calculation for Egypt:

Category	Variable	Values for Egypt	Goal-post	Indicator	Weight	Category index
1. Infrastructure	1. Fixed telephone subscribers per 100 inhabitants	12.42[1] /	60 =	0.207 *	(1/2) =	0.104 + = 0.44
	2. Mobile cellular subscribers per 100 inhabitants	66.69[1] /	100 =	0.667 *	(1/2) =	0.334
2. Knowledge	3. Adult Literacy	71.4[2] /	100 =	0.714 *	(2/3) =	0.476 + = 0.73
	4. School enrollment	76.4[3] /	100 =	0.764 *	(1/3) =	0.255
3. Quality	5. International Internet bandwidth (bits) per capita	332.12[illegible] /	10'000 =	0.754[a] *	(1/2) =	0.377 + = 0.40
	6. Broadband subscribers per 100 inhabitants	1.33[1] /	30 =	0.044 *	(1/2) =	0.022

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[102] International Telecommunication Union, *ITU Digital Access Index.*

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4. Internet Use	7. Internet users per 100 inhabitants	24.26[1]	/	85	=	0.29	*	1 = 0.29
5. Social Media Use	8. Facebook penetration per 100 inhabitants	5.49	/	60	=	0.092	*	(1/4) = 0.023 +
	9. Facebook penetration per 100 Internet users	22.61	/	100	=	0.226	*	(1/4) = 0.0565 = 0.08 +
	10. Estimated Number of bloggers per 100 inhabitants	0.019	/	11	=	0.0017	*	(1/2) = 0.00085
Egypt	**Digital Access Index (Average of 5 categories above)**							**0.39**

Calculation for Syria:

Category	Variable	Values for Syria		Goal-post		Indicator		Weight		Category index
1. Infrastructure	1. Fixed telephone subscribers per 100 inhabitants	17.67[1]	/	60	=	0.295	*	(1/2)	=	0.147 + = 0.38
	2. Mobile cellular subscribers per 100 inhabitants	45.57[1]	/	100	=	0.456	*	(1/2)	=	0.228
2. Knowledge	3. Adult Literacy	79.6[2]	/	100	=	0.796	*	(2/3)	=	0.531 + = 0.75
	4. School enrollment	65.7[3]	/	100	=	0.657	*	(1/3)	=	0.219
3. Quality	5. International Internet bandwidth (bits) per capita	98.9	/	10'000	=	0.67[a]	*	(1/2)	=	0.335 + = 0.34
	6. Broadband subscribers per 100 inhabitants	0.16[1]	/	30	=	0.005	*	(1/2)	=	0.003
4. Internet Use	7. Internet users per 100 inhabitants	20.40[1]	/	85	=	0.24	*	1	=	0.24

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5. Social Media Use	8. Facebook penetration per 100 inhabitants	1.07	/	60	=	0.017	*	(1/4)	= 0.0043
	9. Facebook penetration per 100 Internet users	5.27	/	100	=	0.053	*	(1/4)	+ 0.0133 = 0.02
	10. Estimated Number of bloggers per 100 inhabitants	0.003	/	11	=	0.0003	*	(1/2)	+ 0.00015
Syria	**Digital Access Index (Average of 5 categories above)**								**0.35**

Note: Because of the large spread of values among economies, a logarithm is used to calculate this value: (LOG (1'867) – LOG (0.01)) / (LOG (10'000) – LOG (0.01)) (see ITU 2003).

Sources:

1. International Telecommunication Union, *ICT Statistics Database* <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>.
2. Central Intelligence Agency, *The World Factbook* <https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html>.
3: United Nations, *Human Development Report 2009* <http://hdrstats.undp.org/en/indicators/90.html>.
4: Trading Economics (2011). International Internet Bandwidth (Bits per Person) in Egypt. *Trading Economics Homepage*. Retrieved 2 April 2011 from <http://www.tradingeconomics.com/egypt/international-internet-bandwidth-bits-per-person-wb-data.html>.
5: Arab Social Media Report (ASMR): Mourtada & Salem, *Facebook Usage: Factors and Analysis* <http://www.dsg.ae/NEWSANDEVENTS/UpcomingEvents/ASMRHome.aspx>.
6: Open Net Initiative, *Internet Filtering in Egypt* (data for 2008), <http://opennet.net/research/profiles/egypt>.
7: UNDP-POGAR: United Nations, *Arab Statistics* (data for 2008), <http://www.arabstats.org/country.asp?cid=19&ind=319&gid=4&sgid=35>.
8: Personal Correspondence with Syrian News Wire-Blogger "Sasa"<http://newsfromsyria.com/2006/03/14/building-syrian-blogosphere-syria-planet/> and with Maha Taki, PhD Candidate at the Media and Communications Research Institute (CAMRI), Univ. of Westminster <http://blogs.nyu.edu/projects/materialworld/2009/09/bloggers_and_the_blogosphere_i.html>.