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Analyzing the Role of ICTs in the Tunisian and Egyptian Unrest from an Information Warfare Perspective

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The Arab Spring

The Role of ICTs

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In January 2011, the Tunisian government stepped down after weeks of protests; this was followed by unrest and protests in Egypt against the Egyptian government, leading also to the resignation of its president. Demonstrations in both countries were facilitated in some part by the online social media and related information and communications technologies that impacted the flow of information. The manner in which the information and communication technologies were employed suggests that the uprisings were a form of social information warfare. To provide an alternative understanding of the role of technology and information in the events that led to the resignations of the Tunisian and Egyptian presidents, these uprisings are analyzed using the Information Warfare Lifecycle Model.

Introduction

Both the Tunisian and Egyptian leaders resigned after mass anti-government demonstrations in January and February 2011. The success of these protests also sparked additional protests throughout the North Africa and Middle East region (Sky News, 2011). These protests appear to have been facilitated through the use of information and communications technology (ICT). For the purposes of this article, we will consider ICTs to include the traditional mass media, online media, including social networks, and communications technologies such as mobile telephones.

The role of ICTs in the uprisings will be analyzed from an information warfare (IW) perspective through the use of the IW Lifecycle Model. Information warfare is a concept whereby information and its

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supporting systems have value and therefore can be considered as an asset to be attacked or defended; in fact, the information and information systems themselves may also be used to conduct the attack (Denning, 1999). The IW Lifecycle Model aims to describe an IW incident from the initial context to the resolution and consequences of the incident. The analysis using the model extracts the functions that the relevant ICTs performed in the uprisings and the attempts by the governments to subdue the protestors.

A more detailed background to information warfare and the model is provided in the following section, followed by a background to the unrest in Tunisia and Egypt. The turmoil in the region is analyzed using the model, and ICT roles are summarized.

Information Warfare and the IW Lifecycle Model

The philosophy of information warfare is that information and related technologies are an offensive weapon as well as a target. Offensive operations seek to utilize technology or information to corrupt, exploit, or deny access to the adversary's similar assets (van Niekerk & Maharaj, 2010). Brazzoli (2007) and Waltz (1998) have noted that information warfare may be conducted in three domains: the physical (hardware); the information (software, logical network connections, policies); and the cognitive (understanding, perceptions, and will). Information warfare consists of a number of "functional areas," and different nations have their own construct for the information warfare functional areas. For the purposes of this article, the following functional areas will be considered: psychological operations, network-centric warfare, and command and control warfare.

Psychological operations are actions taken to affect the will and perceptions of a target population to ultimately influence their behavior to be favorable to the objectives of the protagonists (Brazzoli, 2007). Additionally, Chatterji (2008) suggests that psychological operations may be used to achieve military or political goals. Network-centric warfare is the integration of individual elements or platforms to create a single cohesive fighting force through networking that can maximize the effective combat power (2008). Command and control warfare is the protection of the ability to manage forces while disrupting the adversary's similar capabilities (Brazzoli, 2007).

Cronin and Crawford (1999) discuss the concept of social information warfare, where political and social activists use the Internet and related technologies to further their objectives. They claim that the Internet provides an "immediacy of audience access" (p. 261), which cultivates a situation where social information warfare can thrive. The earliest example of a major social IW campaign was the Zapatista movement in Mexico from 1994 to 1996, where the Internet was successfully used to pressure the government into making reforms (Ronfeldt & Arquilla, 1998). Subsequently, mobile phones and online social networks have been used to orchestrate anti-government protests in the Philippines, Iran, Moldova, and Urumqi in China (Pillay, van Niekerk & Maharaj, 2010). The first use of ICTs in a protest context in Africa was in Mozambique during the 2010 riots over the increase in food prices (Jacobs & Duarte, 2010). The unrest in North Africa and the Middle East is the latest in this emerging trend of using ICTs to facilitate mass protest actions. These tools are also used for advocacy by nongovernment organizations, as well as for communication with their followers

and members (Pillay, van Niekerk & Maharaj, 2010). The online social media and the almost immediate delivery of messages to a global target audience make these tools ideal for psychological operations and perception management on a large scale (ibid.).

The IW Lifecycle Model was proposed by van Niekerk and Maharaj in a companion article submitted to the *South African Journal of Information Management*. The model is designed to be scalable and analyze events that employ the use of IW tactics. The model consists of a dual-layered process describing the high-level and more in-depth technical details of an event such as the tools employed to conduct the offensive and the defensive actions employed by the target. An IW incident evolves from some context whereby an aggressor attacks a target, employing certain tactics and tools to meet its objectives. This will have an impact on society as a whole, which, in turn, affects the individual. The target reacts to the attack to recover from it and to protect itself against the aggressors, as well as to possibly retaliate. The incident alters the original context, and the reaction results in the aggressor re-evaluating the original IW operation. The Information Warfare Lifecycle model is shown in Figure 1.

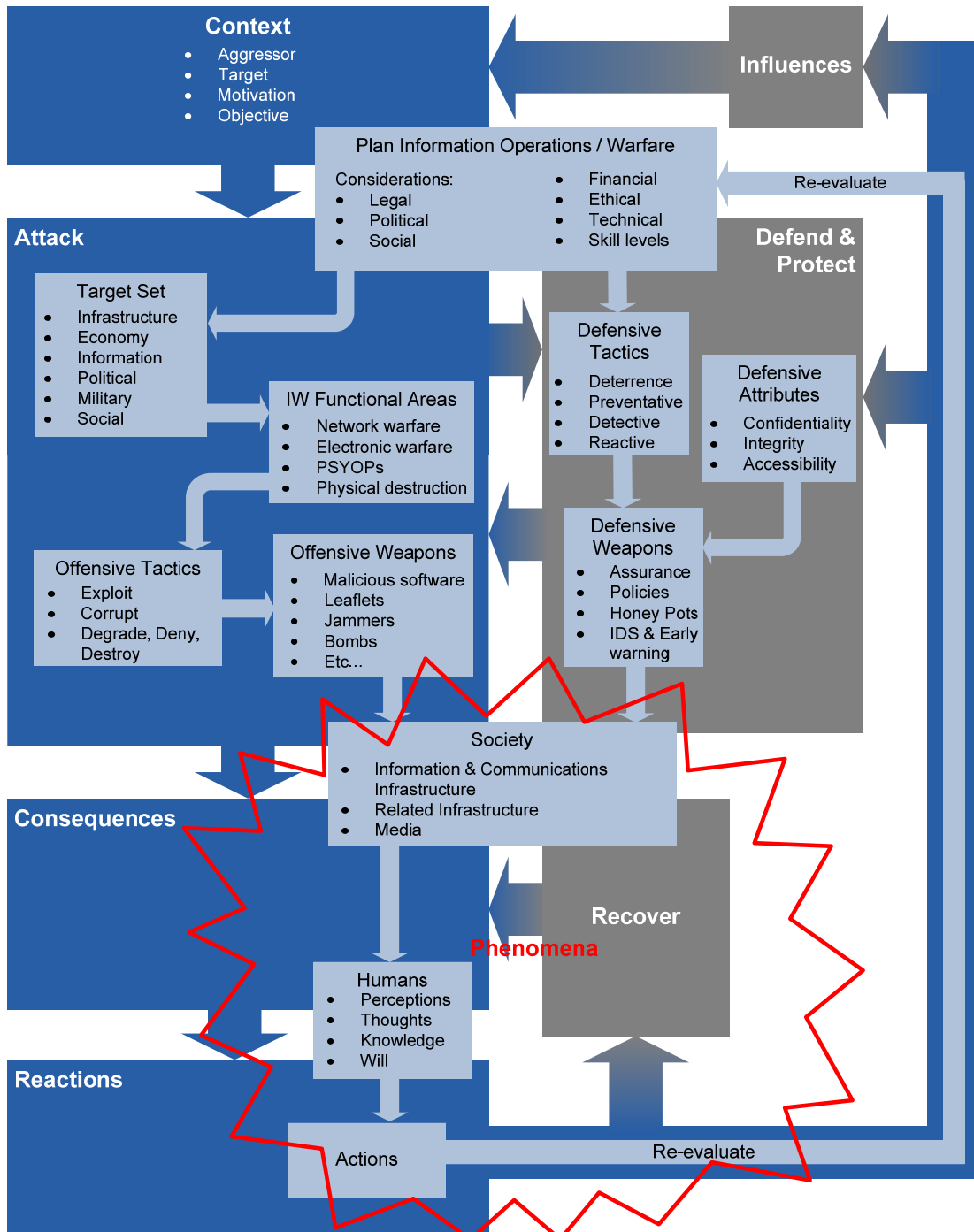


Figure 1. The Information Warfare Lifecycle Model.

Background to the Uprisings in North Africa

The United Nations Development Program (UNDP) Arab Human Development Report (2009) argues that few postindependence Arab states have transitioned to inclusive states, with the majority failing to introduce representative democratic governments and institutions. The report notes further that Arab states have instituted "varying degrees of repression and restrictions on the establishment and functioning of political parties." Furthermore, civil society has been subjected to restrictions and regulations that hinder their existence and ability to operate.

Young people are the fastest growing segment of Arab countries' populations. This "youth bulge" makes the Middle East one of the most youthful regions in the world, with a median age of 22 compared to a global average age of 28 (UNDP, 2009). However, many youth are unemployed, with 33% of Egypt's youth staying at home (Hokayem, 2011). This lack of employment among many youth, combined with nepotism, corruption and state repression, has seen the Arab social contract fracturing (Hokayem, 2011), making many countries ripe for a people's revolution. Radsch (2008) cites Meyer's (2002) argument that "dissidents and activists are created through common cause and the construction of identity around that cause, which is often in response to government policies and configurations of the political environment."

The Arab world has always been an early adopter of "mass media" technology. Egypt, in particular, is perceived as a leader in the adoption of technology and also as the country with the largest number of Internet users in the Arab world (Abdulla, 2007). Etling et al. (2010) state that "while offline political speech is highly regulated in Egypt, political discourse is very evident in the blogosphere." Lynch (2007) argues that Egypt has some of the most active political bloggers in the Arab public sphere, with Arab political blogging becoming more politically relevant. This is supported by Etling et al., who contend that Egypt bloggers comprise the largest structural cluster in the Arab world. Blogs intersect and compliment existing transnational media, allowing for dissident groups and their sympathizers to tap into the mainstream (Ajemian, 2008).

Tunisia has one of the most developed telecommunications infrastructures in North Africa, with a high mobile penetration rate and one of the lowest broadband prices in Africa. Of a population of 10.2 million inhabitants, 9 out of 10 Tunisians own a mobile telephone. Of these users, 84% access the Internet at home, 75.8% use the Internet at work, and 24% use public Internet cafés (OpenNet Initiative, 2009). Tunisia has approximately 3.6 million Internet users and just over 1.6 million Facebook users (Internet World Stats, 2011).

Through discontent and online political discourse, the North Africa region was on the verge of a popular uprising in late 2010. The Jasmine Revolution began in December and first gained global prominence in January 2011 when Tunisian President Ben Ali resigned and fled the country. The national uprising was fueled by two decades of government misrule (Bay, 2011) and instigated by unemployed university graduates. Additionally, leaked diplomatic cables released by WikiLeaks and outlining the extravagant lifestyle of the presidential family may have played a part in sparking the revolt (Kirkpatrick, 2011). The demonstrators used the Internet and, in particular, social media websites to promote their

cause and distribute videos documenting the protests. These tools and cell phones also aided in coordinating the protests (Bay, 2011; Kirkpatrick, 2011). The traditional mass media also played its part, as Al Jazeera covered the entire period of demonstrations, even prior to the Western media taking notice (Kirkpatrick, 2011).

Less than two weeks after the fall of the Tunisian government, massive antigovernment protests erupted in Egypt; many protestors claimed that they were inspired by the success in Tunisia. Again, online social media and cell phones appeared to be key to organizing the protests (Hendawi, 2011). The protests stemmed from high unemployment, poverty, and increasing prices. As was the case in Tunisia, Egyptian President Mubarak's regime had been in power for an extended period, in this case three decades (Hendawi, 2011).

The antigovernment protests in both Tunisia and then Egypt appeared to utilize social media to advertise and coordinate the protests (Kessler, 2011). Tunisian authorities were reported to have tried to hack into social media accounts in an attempt to delete users who were participating in encouraging antigovernment protests (Madriral, 2011). The response of the Egyptian authorities was to shut down Internet and mobile services (Kessler, 2011; Kravets, 2011). These actions were ultimately unsuccessful, as the social media served to initially spread the idea of the protest. It appears that once the uprisings had gained momentum, the involvement of social media was not as important as it had been in the early stages.

Analysis of the Uprisings

This section provides an analysis of the uprisings in Tunisia and Egypt using the IW Lifecycle Model.

Context

The aggressor is the general population of the two nations, targeting the senior government, and to a certain degree, the international community to get its support. The motivation of the aggressors is to remove the governments that are perceived to be oppressive and corrupt; they are essentially fighting for an improved way of life. The objective of each uprising is to call attention to a population that is unhappy and to a corrupt regime that needs to be replaced by a democratic government.

Attack

The IW functional areas employed are psychological operations and a form of network-centric warfare (or command and control of the protestors). The international community was targeted by psychological operations to "corrupt" or alter their perceptions about supporting the objectives of the protestors. The protests themselves were designed to break the will of the governments. The target set can therefore be defined as the political and social constructs of the nations, along with the minds of both the local and international communities. Technology was exploited to provide a delivery mechanism for the anti-government sentiments and as a form of command and control.

The offensive “weapons” can be considered to be the online social media and the Internet, the international mass media, and the mass human protests themselves. As many of the protest signs were in English, it may be assumed that the message was not only being directed at the national government but also at the international community to try to gain support and sympathy.

Consequences and Phenomena

As the thoughts and perceptions of the populations in Tunisia and in Egypt were affected, the protests grew and local society was impacted. Additionally, the mass media and online social networks affected the perceptions of the international community. The protests were also aimed to sap the will of the targeted government leaders. The success of the protests in Tunisia seems to have sparked similar unrest in Egypt. Then, as the idea of rebellion against unpopular government regimes spread, and as the impacted populations were encouraged by success, protests spread to other nations in the region, notably Jordan, Syria, Bahrain, Libya, Iran, and Yemen (Black & Chulov, 2011; Sky News, 2011). Other national leaders also put pressure on Mubarak to step down (Lee, 2011; Lekic, 2011; Robinson, 2011), indicating a level of success in that the behavior of these leaders was influenced to support the protestors’ objectives. Mobile phones were used by mass broadcast media to communicate with protestors on the ground via voice services, which, in turn, provided the individual protestors with a stage on which to voice their opinion.

Defense

The governments initially used the police force and the military to crack down on protestors. There were also reports of the Tunisian government attempting to hack into and delete social media profiles of major participants to try to mitigate the spread of the uprising. The Egyptian government shut off the Internet and mobile phone services to try to hinder the organization of demonstrations. This indicates a form of command and control warfare, as it was an attempt to prevent communication and co-ordination amongst the protestors and main opposition leaders.

Summary of the Role of ICTs in the Uprisings

From the analysis using the IW Lifecycle Model, it is apparent that ICTs were employed as a communication tool to disseminate information to alter the perceptions and will of both local and international target audiences in both uprisings. ICT usage also provided a degree of co-ordination for the initial protests. Attempts by authorities to control the protests in Tunisia and Egypt by denying the social media platform were ultimately unsuccessful. The social media served to initially disseminate news of and the reasoning behind the protests. Once the uprisings had gained momentum, the need for social media involvement was reduced. This indicates that the reacting actor is at a disadvantage while the initiating actor has the opportunity to shape the perspectives of the target audience. Therefore, the reaction needs to counter those effects in addition to providing an opposing message.

The role of ICTs in the uprisings from an IW perspective then could be construed as psychological operations and command and control warfare.

Conclusion

The role of ICTs in the Tunisian and Egyptian uprisings was primarily that of a transmission medium through which to spread anti-government perception and provide some organization and cohesion to the protests. Social media, in particular, facilitated communications and provided a degree of command and control for the protestors, therefore forming the basis for network-centric warfare. This technology, and the devices that support it, namely mobile phones, became the initial target of the government response as it attempted to restrict the spread of antigovernment perceptions. The mass media provided a platform for the protestors to present their message to the global community, again in an attempt to promulgate antigovernment perceptions and to apply further pressure on the respective government leaders to step down. In both cases, the objectives were met. While the use of ICTs alone did not achieve these successes, they certainly made a strong contribution.



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References

- Abdulla, R.A. (2007). *The Internet in the Arab world*. New York: Peter Lang Publishing.
- Ajemian, P. (2008, January). The Islamist opposition online in Egypt and Jordan. *Arab Media & Society*, Issue 4. Retrieved from <http://www.arabmediasociety.com/?article=577>
- Bay, A. (2011, January 18). *Tunisia's remarkable revolt*. Retrieved from <http://www.strategypage.com/point/20110118224752.aspx>
- Black, I., & Chulov, M. (2011, February 18). *Bahrain, Libya and Yemen try to crush protests with violence*. Retrieved from <http://www.guardian.co.uk/world/2011/feb/18/bahrain-libya-yemen-protests-violence>
- Brazzoli, M. S. (2007). Future prospects of information warfare and particularly psychological operations. In L. Le Roux (Ed.), *South African Army Vision 2020* (pp. 217–232). Pretoria, South Africa: Institute for Security Studies.
- Chatterji, S. K. (2008). An overview of information operations in the Indian army. *IOSphere, Special Edition*, 10–14.
- Cronin, B., & Crawford, H. (1999). Information warfare: Its application in military and civilian contexts. *The Information Society*, 15(4), 257–263.
- Denning, D. E. (1999). *Information warfare and security*. Boston: Addison-Wesely.
- Etling, B., Kelly, J., Faris, R., & Palfrey, J. (2010). Mapping the Arabic blogosphere: Politics and dissent online. *New Media and Society*, 12(8), 1225–1243.
- Hendawi, H. (2011, January 27). *Egypt protests pose threat for regime*. Retrieved from http://news.yahoo.com/s/ap/20110127/ap_on_re_mi_ea/ml_egypt_protest_66
- Hokayem, E. (2011). A universalism to the pleas from Cairo's streets. Retrieved from <http://www.thenational.ae/thenationalconversation/comment/a-universalism-to-the-pleas-from-cairos-streets>
- Internet World Stats. (2011). Usage and population statistics. Retrieved from <http://www.internetworldstats.com/africa.htm#eq>
- Jacobs, S., & Duarte, D. (2010, September 16). *Protest in Mozambique: The power of SMS*. Retrieved from <http://www.afronline.org/?p=8680>
- Kessler, S. (2011, January 25). *Twitter blocked in Egypt as protests turn violent*. Retrieved from http://news.yahoo.com/s/mashable/20110125/tc_mashable/twitter_blocked_in_egypt_as_protests_turn_violent

- Kirkpatrick, D. D. (2011, January 14). *Tunisia leader flees and prime minister claims power*. Retrieved from http://www.nytimes.com/2011/01/15/world/africa/15tunis.html?pagewanted=1&_r=2&nl=today%20headlines&emc=th2
- Kravets, D. (2011, January 27). *Internet down, tens of thousands protest in Friday of wrath*. Retrieved from <http://www.wired.com/threatlevel/2011/01/egypt-internet-down/#>
- Lee, M. (2011, February 1). *Obama urges Mubarak to step down*. Retrieved from <http://www.columbiamissourian.com/stories/2011/02/01/obama-urges-mubarak-step-down-now>
- Lekic, S. (2011, February 11). *Denmark prime minister Lars Loekke Rasmussen calls on Egypt's Mubarak to resign*. Retrieved from http://www.huffingtonpost.com/2011/02/11/denmark-lars-loekke-rasmussen-mubarak-egypt_n_821804.html
- Lynch, M. (2007, February). Blogging the new Arab public. *Arab Media & Society*, Issue 1. Retrieved from <http://www.arabmediasociety.com/?article=10>
- Madrigal, A. (2011, January 24). *The inside story of how Facebook responded to Tunisian hacks*. Retrieved from <http://www.theatlantic.com/technology/archive/2011/01/the-inside-story-of-how-facebook-responded-to-tunisian-hacks/70044/#>
- OpenNet Initiative. (2009). Tunisia. Retrieved from <http://opennet.net/research/profiles/tunisia>
- Pillay, K., van Niekerk, B., & Maharaj, M. (2010). Web 2.0 and its implications for the military. *Workshop on the Uses of ICT in Warfare and the Safeguarding of Peace* (pp. 50–57). Bela-Bela, October 11.
- Radsch, C. (2008, Fall). Core to commonplace: The evolution of Egypt's blogosphere. *Arab Media & Society*, Issue 6. Retrieved from <http://www.arabmediasociety.com/?article=692>
- Robinson, J. J. (2011, February 2). *Maldavian president joins calls for Mubarak to step down*. Retrieved from <http://minivannews.com/politics/maldivian-president-joins-calls-for-mubarak-to-step-down-15715>
- Ronfeldt, D., & Arquilla, J. (1998). *The Zapatista social netwar in Mexico*. Santa Monica: RAND Corporation.
- Sky News. (2011). *Middle East: See facts about all the countries in the region*. Retrieved from <http://news.sky.com/skynews/Interactive-Graphics/middleeast>
- United Nations Development Programme—Regional Bureau for Arab States. (2009). *Arab human development report: Challenges to human security in Arab countries*. Retrieved from <http://www.arab-hdr.org>

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van Niekerk, B., & Maharaj, M. (2010). Mobile security from an information warfare perspective. *9th Information Security South Africa Conference*. Sandton, August 2-4.

Waltz, E. (1998). *Information warfare: Principles and operations*. Boston & London: Artech House.