

Assessing Nuclear Sentiments in Egypt Using Social Media Data

Mining: A Pilot Project

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Abstract

Nuclear energy and nuclear proliferation are linked concerns in the Middle East, a region with one de facto nuclear state, at least one very active nuclear proliferant nation, a number of states with nuclear-power interests and nuclear-security concerns, and major sub-state actors such as Hezbollah and Hamas. Egypt, with nuclear energy interests and substantial involvement in the nonproliferation regime, is a bellwether for developments in both areas in the Middle East. Further, there is considerable interest in how Egypt's positions will evolve in the post-Arab Spring environment, and the extent to which popular sentiment will influence the decisions of the new leadership. We have scoped out a pilot project to use social media to diagnose the evolution of popular sentiment in the nuclear realm, postulating at this point that messaging dealing with nuclear-related topics will constitute a weak signal against the backdrop of other popular concerns in Egypt.

Motivating Factors for the Study

The Middle East poses some of the most pressing challenges for U.S. nonproliferation policy, with one *de facto* nuclear state, at least one very active nuclear proliferant nation, a number of states with nuclear-power interests and nuclear-security concerns, and major sub-state actors such as Hezbollah and Hamas. The regional concerns of these actors overlap with the broader pursuit of U.S. nonproliferation policy. Management of the five-year review cycle for the Nuclear Nonproliferation Treaty (NPT) is a critically important element of U.S. nonproliferation policy. The next NPT Review Conference (RevCon) will be held in 2015, with

yearly Preparation Committee (PrepCom) meetings in the run-up. Participation at the RevCon and PrepComs includes every nation but India, Israel, North Korea, and Pakistan. Success of a RevCon is broadly defined as the ability of the parties to agree, by consensus, on a Final Document¹ summarizing past performance and laying out actions to be completed by the next conference. For the United States, success is defined in terms of the degree to which the Final Document is aligned with U.S. interests in the major treaty areas: nonproliferation, the peaceful use of nuclear energy, and nuclear disarmament.

Egypt, as a member and sometimes leader of several influential factions in the NPT review process – the Arab and African Groups, the Non-Aligned Movement, and the nuclear-disarmament-activist New Agenda Coalition² – has played a major role in shaping the outcome of the Review Conferences. In 1995, as a condition for the indefinite extension of the NPT, Egypt was influential in the inclusion of the Resolution on the Middle East³ in the final documents from the RevCon. Egypt and its supporters introduced this resolution to expose Israel’s status as a nuclear weapons state outside the NPT by (1) calling for the accession to the treaty by all states in the region, (2) demanding that all facilities be placed under International Atomic Energy Agency (IAEA) safeguards, and (3) requiring steps be taken toward creating a Middle East WMD-Free Zone. Most significantly, the Final Document of the 2010 RevCon⁴ contained in its Action Plan a call for renewed attention to the 1995 Resolution on the Middle

¹ See, for example, “Final Document, 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons,” vol. I, New York, 2010, NPT/CONF.2010/50 (Vol. I).

² See, for example, “Working paper submitted by Egypt on behalf of Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden as members of the New Agenda Coalition (NPT/CONF.2010/WP.82010),” Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, 23 March 2010, NPT/CONF.2010/50 (Vol. II).

³ “Resolution on the Middle East, The Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons,” 17 April – 22 May, 1995, New York, NPT/CONF.1995/32 (Part I), Annex.

⁴ “Final Document, 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons,” vol. I, New York, 2010, NPT/CONF.2010/50 (Vol. I).

East and specifically for a conference on the establishment of a nuclear-free zone in the Middle East. This is significant because Egypt has threatened to hold up negotiations at these meetings, sometimes succeeding, over these issues in direct conflict with US interests. Furthermore, Egypt has become an ardent critic of U.S. initiatives to establish multilateral approaches to controlling the diffusion of sensitive stages of the fuel cycle, while renewing its long-standing interest in developing a national nuclear energy program. Success or failure of the 2015 NPT Review Conference, therefore, could very much depend on how the United States can influence the negotiations leading up to the 2015 RevCon. At the very least, it is imperative that the United States have a solid understanding of Egypt's thinking.

Given the new social and political environment in Egypt and many parts of the Arab world, the United States can no longer rely on pre-2011 methods to gauge sentiments of the leadership and society. We expect that social media could provide one means of discerning popular sentiment in Egypt – now a more robust foreign policy input – toward the broad issues of nuclear power and energy, nuclear proliferation, and the pursuit of the goals of the Resolution on the Middle East from the 1995 NPT Review Conference. Moreover, in the context of sweeping political change in Egypt, we anticipate that discussion in the public space devoted to the broad topic of “Egyptian nuclear” will constitute what we would characterize as a “weak signal” against a strong political background. We view this as an advantage at this time, since it will allow us to scope these attitudes with relatively simple search terms in advance of the Middle East WMD-Free Zone conference and the 2015 NPT RevCon while domestic and regional political issues dominate the social media traffic.

US Nonproliferation Strategy and the Middle East

The challenges for U.S. nonproliferation policy in the Middle East are complicated, not least because they are tightly coupled to regional security issues in a part of the world with great strategic significance and that is strongly polarized by historical, ethnic, and religious considerations. The threat of the development of Iranian nuclear weapons could be a driver for any of a number of undesirable developments, notably further nuclear proliferation by other nations in the region, either through their own development of nuclear weapons or through the acquisition of nuclear weapons with the assistance of another nation.

Of course, that is not the only undesirable outcome possible generated by the Iranian nuclear threat. Possibly even more likely is the occurrence of one or more events that constitute a “rearrangement of the regional security deck chairs” in which other nations in the region choose from a range of possibilities:

- Becoming more accommodative toward Iran.
- Appealing to the United States to extend deterrence to them.
- Building a stronger relationship with other powers outside the region, some with security interests that compete with those of the United States, under the assumption that they can provide a security guarantee, perhaps based on a different relationship to Iran.
- Building a competing regional security bloc to counter Iran.

All but the second of these bullets result in reduced U.S. influence in the region, while the second – extension of U.S. deterrence to other nations in the region – might bring a level of involvement that is politically challenging in the United States. The final bullet might promote a regional factionalism with unintended, undesirable consequences.

Along another line, Iranian nuclear developments shine a bright light on Israel, and could serve to further isolate Israel even if Iran does not take the final step to weaponization. The problem is only heightened if impatience grows over the pace of progress toward a nuclear-weapon-free zone in the Middle East.

Iran is not the only source of challenges to U.S. nonproliferation policy in the region. The Middle East is a region in which a number of states have not yet signed and ratified an Additional Protocol, a separate agreement between a nation and the International Atomic Energy Agency (IAEA) that extends the inspection rights associated with a nation's Safeguards Agreement beyond those facilities declared in the Safeguards Agreement. The Additional Protocol is regarded as particularly important for strengthening the nonproliferation regime by allowing inspections of undeclared or clandestine facilities or programs.

As the events of the so-called "Arab Spring" have shown, change can come rapidly to the region, and from directions that were unexpected. Given the conflation of strong ethnic and religious feelings with the nonproliferation and regional security issues in the region, positions could shift in directions, and with a swiftness, that was not expected.

Why Egypt is Important

Egypt has held a traditional leadership role in Arab circles. It is certainly the most populous of all Middle Eastern states. In addition, Egypt is the previous leader of the Non-Aligned Movement, having been succeeded by Iran in 2012. Within the nonproliferation regime, its position as a member of the nuclear disarmament activist group, the New Agenda Coalition (NAC), is significant, especially because of the group's carefully constructed neutrality and multiregionalism, with fellow members Brazil, Ireland, Mexico, New Zealand, South Africa, and Sweden. The NAC was the source of the important Thirteen Practical Steps to nuclear disarmament that were included in the Final Document of the 2000 NPT Review Conference and that continue to serve as the template for manageable steps toward nuclear disarmament by the NPT Nuclear Weapon States (China, France, Russia, the United Kingdom, and the United States). Also as mentioned, Egypt was one of the major motivators for the 1995 Resolution on the Middle East and the inclusion of a conference on a Middle East WMD-Free Zone in the Action Plan from the 2010 NPT Review Conference.

Nevertheless, Egypt is one of the nations that refuses to sign the aforementioned Additional Protocol, as does fellow NAC member Brazil. Drawing on the experience of Brazil, which claims that its unique four-party safeguards agreement with Argentina, the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials, and the IAEA is a sort of substitute for the Additional Protocol, Egypt floated a similar idea for a multilateral substitute at a 2012 meeting of the Arab League.⁵

⁵ "Nine Arab Centers Join Initiative for Setting up Arab Nuclear Energy," 14 June 2012, Cairo MENA (in English, official, state-controlled news agency covering the Middle East and North Africa), <http://www.mena.org.eg/index.aspx>

From a regional security standpoint, in signing the 1979 peace treaty with Israel, Egypt became the first Arab nation to officially recognize Israel. In fact, Jordan is the only other Arab state to do so, and Turkey is the only other nation in the region to have done so. How the Egyptian relationship with Israel holds up under the new government, particularly under the pressure to counter Iranian proliferation and reach agreement on a Middle East WMD-Free Zone, is one object of our interest.

Finally, Egypt has one of the most highly developed nuclear sectors in the region, with one currently operating research reactor and plans to build a nuclear power reactor at El Debaa that have reportedly been submitted for Presidential approval, which has not to date been announced.

Can Social Media Identify Societal Sentiments or Predict Policy Change?

Social Media as a Proxy for Public Opinion Polling

There is significant controversy in developed nations as to whether social media sentiment analysis accurately reflects public attitudes. O’Conner, et. al.⁶ used a sentiment detector based on simple text analysis to track public perceptions in two areas: consumer confidence ratings and presidential job approval polls. Their research indicated a correlation between Twitter sentiment and polls:

In the paper we find that a relatively simple sentiment detector based on Twitter data replicates consumer confidence and presidential job approval polls. While the results do not come without caution, it is encouraging that expensive and time-intensive polling can be supplemented or supplanted with the simple-to-gather text data that is generated from online social networking. The results suggest that more advanced NLP [natural language processing] techniques to improve opinion estimation may be very useful.⁷

The Pew Research Center⁸, on the other hand, has consistently found that Twitter reactions do not reflect public opinion polling results, and that these reactions are not skewed in a predictable direction, hence making correlations impossible. They attribute the lack of correlation between polling data and Twitter sentiment not only to the self-selection of Twitter users who feel compelled to respond to any given political issue, but also to the limited use of Twitter amongst the general adult public, and to the demographics of Twitter users:

At times the Twitter conversation is more liberal than survey responses, while at other times it is more conservative. Often it is the overall negativity that stands out. Much of

⁶ For a discussion of the specific methodology used and limitations of the study, see O’Conner, Brendan, et al. 2010. “From Tweets to Polls: Linking Text Sentiment to Public Opinion Time Series”, Proceedings of the Fourth International AAAI Conference on Weblogs and Social Media, 2010.

<http://www.aaai.org/ocs/index.php/ICWSM/ICWSM10/paper/viewFile/1536/1842>

⁷ Ibid.

⁸ Mitchell, Amy and Hitlin, Paul, 2013. “Twitter Reaction to Events Often at Odds with Overall Public Opinion”, Pew Research Center, available at: <http://www.pewresearch.org/2013/03/04/twitter-reaction-to-events-often-at-odds-with-overall-public-opinion/>

the difference may have to do with both the narrow sliver of the public represented on Twitter as well as who among that slice chose to take part in any one conversation.⁹

Looking in more detail at Twitter demographics in the U.S., it becomes clear that the amalgam of Twitter users who choose to post on any given political topic are clearly not representative of the population at large, much less a scientifically selected polling sample:

The overall reach of Twitter is modest. In the Pew Research Center's 2012 biennial news consumption survey, just 13% of adults said they ever use Twitter or read Twitter messages; only 3% said they regularly or sometimes tweet or retweet news or news headlines on Twitter. Twitter users are not representative of the public. Most notably, Twitter users are considerably younger than the general public and more likely to be Democrats or lean toward the Democratic Party. In the 2012 news consumption survey, half (50%) of adults who said they posted news on Twitter were younger than 30, compared with 23% of all adults. And 57% of those who posted news on Twitter were either Democrats or leaned Democratic, compared with 46% of the general public.¹⁰

Mapping the demographics of social media users in developing countries such as Egypt is much more challenging. Estimates of the number of Facebook users residing in Egypt range from 10 to 16 million out of a population of 80 million:

The number of Facebook users in Egypt reached 10.7 million in May 2012, according to the latest figures from a report produced by the Ministry of Information. This number translates to around 13.4 per cent penetration of a population of around 80 million, placing Egypt 20th worldwide in terms of Facebook usage.¹¹

The number of active Twitter users is far more difficult to pin down, ranging from less than 15,000 to 215,000:

We analyzed 52 million Twitter users, and discovered that only 14,642, or 0.027%, identified their location as Egypt, Yemen or Tunisia... It is important to note this number probably doesn't reflect the number of Twitter users since many users in Egypt, Tunisia and Yemen likely do not provide their location information to protect their identities.¹²

⁹ Ibid.

¹⁰ Ibid.

¹¹ "Egypt's Facebook users double: Ministerial report", Ahram Online, June 12, 2012.

<http://english.ahram.org.eg/NewsContent/3/12/44676/Business/Economy/Egypt-Facebook-users-double-Ministerial-report.aspx>

¹² Ibid.

The Arab Social Media Report¹³ claims 215,000 Twitter users in Egypt as of March, 2012.

Whatever the real numbers, it is clear that active social media users in Egypt represent only a small percentage of the overall population, and it is likely that the demographics of these users are also not representative of the population at large. The case for social media sentiment analysis as a proxy for public polling is weak, and given that accurate scientific polling in Egypt is extremely difficult anyway, even if there were correlations between sentiment analysis and poll results, it would not necessarily follow that either provides an accurate measure of social attitudes.

Can Social Media Predict, Identify, or Affect Government Policy Decisions?

The role of social media during recent events in two parts of the world provides a framework for assessing whether impending major changes in government policies – and even in governments themselves – can be accurately predicted through data mining of social media. Furthermore, there is a case to be made that social media itself may have served as a catalyst for changes of government policies. The regions concerned are the Middle East and China.

The Iranian example: the “Green Revolution”

One of the first instances in which social media played a role in a social uprising was the so-called “Green Revolution”, which erupted in Iran after the June 13, 2009 elections.

Although the authorities had banned access to Facebook during the run-up to the elections, users found ways around the restrictions and, during the demonstrations, Mousavi himself used Facebook to contact supporters and the outside world. As Ahmadinejad was calling the protesters “football hooligans”, messages relayed via the social media (often repeated on global media outlets such as the BBC and CNN) showed the protests to be peaceful.¹⁴

¹³ Mourtada, R. & Salem, F. (2011) “Facebook Usage: Factors and Analysis.” Arab Social Media Report. 1 ed. Dubai, Dubai School of Government. http://www.dsg.ae/en/ASMR3/ASMR_TwitterUser3.aspx

¹⁴ Christensen, Christian, 2009. “Iran: networked dissent”, Le Monde Diplomatique English Edition, July 9, 2009. <http://mondediplo.com/blogs/iran-networked-dissent>

The uprising showcased the power of social media to mobilize dissent in an authoritarian regime where the media is strictly censored:

The Iranian case reveals the new and complex role of social media in contemporary geopolitics. For traditional media such as newspapers, television and radio are often territorially-bound, and thus subject to national laws (libel, censorship) and political-economic power structures (political pressure, ownership bias, advertiser demands); whereas social networking media are often decentralised, non-hierarchical and contain user-generated content.¹⁵

Social media traffic during the Green Revolution highlighted the role of “power users”, or individual users with large numbers of followers or whose influence is far greater than those who simply retweet messages:

Two of the major figures in post-election Iranian twittering were Persiankiwi (with over 39,000 followers) and Mousavi1388 (over 28,000 followers). Persiankiwi rapidly became one of the most trusted sources of information from inside Iran, with news outlets such as the *New York Times* and *Daily Telegraph* lauding her/his reports. On 24 June Persiankiwi’s posts to Twitter abruptly ended, leading to speculation that she/he had been arrested.¹⁶

While the international press made much of the use of Facebook and Twitter by protest organizers, the Iranian government also used the same technology to identify individual dissidents, and it actively blocked the open proxies through which social media users were able to stay connected. The uprising was eventually put down and all access to social media blocked by the Ahmadinejad regime.

In the case of Iran, the most obvious drawback of using social media to announce lists of open proxies was that as soon as the information was made available, Iranian censors would immediately identify and blacklist them. Crowie indicated that within two weeks of the elections, there were very few, if any, open proxies still available for use in Iran.¹⁷

The outcome of the Green Revolution was proof that the use of social media to mobilize mass dissent was no guarantee of a movement’s success.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

Mousavi, via his Facebook page, famously called for his supporters to shout “Allah wa Akbar”, or God is great from their rooftops in the days after the June 12th election. And Iranians in and outside the country have received numerous messages of support through Facebook, FriendFeed and Twitter. But Golnaz Esfandiari points all that online buzz hasn’t translated into any meaningful political change.¹⁸

Tahrir Square and the “Arab Spring”

A more relevant example of the use of social media to mobilize antigovernment protests occurred during the demonstrations in Tahrir Square in Cairo, which began in January, 2011.

While the protests eventually led to the removal of Egyptian president Hosni Mubarak, there is no consensus to this day about whether social media played a critical role in the overthrow of the Mubarak regime:

A preliminary descriptive analysis of the Tahrir Data Sets suggests that while digital media was not dominant in Egyptian protest activity, digital media—and social media, especially—were nevertheless an integral and driving component in the media landscape.¹⁹

While individual “power users” again played a dominant role in organizing protests, the low pervasiveness of internet access and of social media use among the Egyptian population led some to conclude that social media was only useful in mobilizing an elite group of Egyptians.

Though only a fraction of Egyptians have Internet access, Ghonim writes, the number of Web users in the country increased to 13.6 million in 2008 from 1.5 million in 2004. Through blogs, Twitter and Facebook, the Web has become a haven for a young, educated class yearning to express its worries and anxieties.²⁰

Developments in Egypt since the regime change also indicate that the government of Mohammad Morsi is determined to silence critics who use social media to communicate with their followers.

¹⁸ “Iran’s failed revolution – one year on”, PRI’s THE WORLD, June 11, 2010.

<http://www.theworld.org/2010/06/irans-failed-revolution-one-year-on/>

¹⁹ Wilson, Christopher, and Dunn, Alexandra. “Digital Media in the Egyptian Revolution: Descriptive Analysis from the Tahrir Data Sets”, International Journal of Communication 5 (2011), Feature 1248–1272.

<http://www.ijoc.org/ojs/index.php/ijoc/article/viewDownloadInterstitial/1180/682>

²⁰ Vargus, Jose Antonio, “Spring Awakening: How an Egyptian Revolution Began on Facebook”. The New York Times Sunday Book Review, February 19, 2012. <http://www.nytimes.com/2012/02/19/books/review/how-an-egyptian-revolution-began-on-facebook.html>

We can expect the worst. Morsi's threat signals the death of the state of law. They show that he is president only of the Muslim Brotherhood," Khaled Daud, spokesman of the National Salvation Front opposition coalition told *Agence France Presse*.²¹

"Imagine Jon Stewart being arrested on charges of insulting Obama and contempt of Christianity. Yeah, that's how it is with Bassem Youssef," tweeted prominent commentator Mona Eltahawy. The heart surgeon turned comedian took to Twitter where he has 1.2 million followers during his questioning, at one point saying: "The officers and the prosecution lawyers want to have their photo taken with me. Maybe that's the reason for my summons?"²²

The larger issue in examining the role of social media in the Arab Spring uprisings is whether by analyzing the data from millions of tweets and posts by activists, a case can be made that social media traffic caused or even predicted "tipping points" in the fall of the relevant regimes. There is little evidence so far to suggest that either is true, although in some cases it appears to have played a contributing role.

Diffusion has nonetheless been critical to the Arab Spring, in some new and novel ways. The Internet and social media played a pivotal role in empowering the protestors and accelerating demonstration and contagion effects. Armed with cellphones, the protestors were able to broadcast photos and footage of the uprisings over the Internet. Middle East expert Stephen McInerney argued that new media was particularly indispensable in Tunisia, where clashes began in the small town of Sidi Bouzid. Had they occurred 10 years earlier, they would have been most likely quashed locally by the government, without the world or even other Tunisians ever learning what had happened.²³

Evidence of the influence of China's blogosphere on government policy

If there is laboratory for the study of the effects of social media on governmental policy, it is China. China's internet space is tightly controlled and monitored by the government, as are the official media, so when comments critical of Chinese government policy are allowed to

²¹ Rossomando, John. "Morsi Threatens Opponents", For The Record - The IPT Blog, Mar 25, 2013. <http://www.investigativeproject.org/3956/morsi-threatens-opponents>

²² Sherlock, Ruth. "Egypt's top comedian in court on charges of insulting President Mohamed Morsi", *The Telegraph*, March 31, 2013.

<http://www.telegraph.co.uk/news/worldnews/africaandindianocean/egypt/9963897/Egypt-s-top-comedian-in-court-on-charges-of-insulting-President-Mohamed-Morsi.html>

²³ "The Tipping Point: Transitions to Democracy in Latin America and the Middle East", January, 2012. Kellogg Institute for International Studies, University of Notre Dame, Notre Dame, IN. p. 10.

<https://kellogg.nd.edu/about/Tipping%20Point-Arab%20Spring.pdf>

survive on any of China's social media platforms after they have been seen by censors, it is a clear sign that someone in a position of authority is listening. And because the government should not be considered as monolithic, critical comments that survive censorship should be viewed as being in the enlightened self-interest of some individuals or factions, while clearly being prejudicial to the interests of others. Recent social media phenomena in China provide the most unambiguous signals yet that government policies can indeed be influenced by public opinion, and that social media analysis can provide important insights into the inner workings of a regime that many consider to be among the most opaque in the world.

Government controls over social media

The history of the Chinese government's censorship of both official and unofficial media makes it clear that the government is not only keenly aware of everything that is being said about it, but that it will not permit "unauthorized" criticism in any form. The Central Propaganda Department of the Chinese Communist Party is ultimately responsible for keeping official media in line and punishing individuals and publications that violate its directives, as was demonstrated in January, 2013 when the editors of the Southern Weekly protested after an editorial they had written was replaced by an homage to Communist Party rule. The resulting swell of protests, both online and in the streets, took the government by surprise:

What began as a largely online protest by Southern Weekly journalists quickly gathered steam around the country, drawing support from noted actors, writers, business leaders and others who have used their weibo accounts — the Chinese version of Twitter — to decry heavy-handed government censorship of Chinese media and demand more freedom of expression.²⁴

But the government quickly moved in to quash the protests and reassert its primacy:

²⁴ Richburg, Keith B. "Amid protests, China's communist censors say their control over media is 'unshakable'". The Washington Post. January 08, 2013. http://articles.washingtonpost.com/2013-01-08/world/36207457_1_chinese-media-protests-censorship

The Chinese government's main propaganda organ took a hard line Tuesday against anti-censorship protesters at the offices of the Guangdong newspaper Southern Weekly, declaring that Communist Party control over Chinese media is "unshakable" and accusing "external" agitators of fomenting the unrest. The "urgent memo" from the ruling party's Central Propaganda Department was sent to media heads and local party chiefs. "The party has absolute control over the media, and this principle is unshakable," the memo said.²⁵

There are clear limits to dissent in China, and activists are routinely rounded up before major national events and transitions of power. Censorship of social media also increases during such times of perceived sensitivity, as happened in 2008 when violent protests erupted in Tibetan communities across China, and in 2012 during the Party Conference that named Xi Jinping as the new Chinese President.

The basic idea is really that anybody who could cause trouble has to be kept under control," said Eva Pils, an associate professor and director of the Centre for Rights and Justice at the Faculty of Law of the Chinese University of Hong Kong. "It is a very tense period. Many people will be under some pressure." Prof. Pils said security officials' methods went from "pestering text messages that purport to be caring but are really intimidating" to "house arrest".²⁶

Netizens' response to North Korean nuclear proliferation

One characteristic of China's social media is that certain types of criticisms are often allowed, in part to allow the populace to blow off steam on issues that the CCP does not consider threatening to its own survival. The most common manifestation of allowable criticism comes in the form of highly nationalistic rhetoric, almost always directed at Japan or the West. But the government's tolerance for such criticism has had to walk a fine line to prevent demonstrations from getting out of hand, and to head off criticism of the government's foreign policy as being "too soft" before it transforms into criticism of domestic policy.

²⁵ Ibid.

²⁶ Phillips, Tom. "China cracks down on dissent as handover of power nears", The Telegraph, October 19, 2012. <http://www.telegraph.co.uk/news/worldnews/asia/china/9621003/China-cracks-down-on-dissent-as-handover-of-power-nears.html>

Displays of Chinese nationalism are not new, but a divided leadership may not be able to control the increasingly frequent nationalist protests, and might find it hard to resist nationalist demands for a tougher stance on foreign policy issues, especially issues of territorial integrity. Adding fuel to the flames of this nationalism are the internet and new social media outlets that Beijing can no longer fully control. Many of China's netizens are criticising authoritarian domestic policies, as well as calling for Beijing to take a harder and more militaristic line on territorial disputes with countries like Japan and Vietnam. In a worst-case scenario, this could translate into Beijing being less willing to negotiate with its neighbours over territorial disputes and more willing to flex its military might.²⁷

One topic in particular shows that strident criticism of a longstanding Chinese ally has been tolerated deliberately by government censors, and that they have done so at their own risk:

Back in May 2012, Chinese netizens showed strong resentment toward North Korea regarding its abduction of Chinese fishermen for ransom. On January 10, 2013, China Central Television aired a summary of North Korea's stringent internet censorship. But the public's response quickly took aim at Chinese government censorship, underscoring how China's North Korea policy has become another possible avenue where criticism of foreign policy can tip into a discussion of domestic policy that ultimately could call the government's legitimacy into question. Consequently, North Korea's staging of the third nuclear test during China's leadership transition posed an early challenge for the incoming administration led by new Chinese Communist Party (CCP) chief Xi Jinping.²⁸

It is not only the tone, but the numbers of social media mentions of North Korea that are astounding. And the fact that these posts were allowed to remain on Sina Weibo indicates complicity at some levels of government, even when there is a danger that free discussion of the North Korean human rights violations may be turned against the CCP.

Over the past few weeks, animosity among China's general public toward North Korea has increased rapidly. A recent search of the word "North Korea" in Chinese showed over 41 million mentions on China's major social media platform Sina Weibo. The most popular postings on Weibo describe North Korea as a threat to China's domestic security interests and urge the Chinese government to change its policies toward North Korea.

²⁷ Nowak, Spike. "China: New Leaders, Old Policy", 2point6billion.com, November 5, 2012. <http://www.2point6billion.com/news/2012/11/05/china-new-leaders-old-policy-11779.html>

²⁸ Wang, Tianyi. "Chinese Public Opinion toward North Korea's Nuclear Test: Another Push for Policy Change?", Center for Strategic & International Studies Asia Policy Blog, Mar 25th, 2013. <http://cogitasia.com/chinese-public-opinion-toward-north-korea%E2%80%99s-nuclear-test-another-push-for-policy-change/>

Chinese netizens also condemned North Korea's nuclear provocations and North Korea's violation of human rights.²⁹

But the vehemence of the anti-Kim rhetoric in terms usually reserved for redressing ancient grievances with the Japanese is startling, as is the relatively benign criticism of the role of the US in the Korean current conflict.

In the aftermath, Sina Weibo, a Twitter-like service in China, was filled with canine references about the China-North Korea relationship. One netizen wrote Pyongyang was like a "crazy dog" that had humiliated Beijing.³⁰

"Mao raised a dog to watch the door," wrote another user. "Turns out the dog is crazy." "North Korea slapped China," wrote another. "China raised a dog to bite its owner." "The watchdog is making trouble in front of the owner's door," wrote another. "But the owner can't do anything."³¹

Sina Weibo post from 记者刘向南:

"From 18 minutes onward in the video, the Chinese expert says, 'China has made great efforts towards the denuclearization of the North Korean peninsula, such as assembling the Six-Party Talks, providing free venues, providing free coffee and drinks...' Vice-director Ruan Zongze, you're truly a genius [hilarious]!!"³²

Even some very influential Chinese government journalists have dared to speak out against the continuing support for the DPRK, at the risk of their livelihoods, as in the case of Deng Yuwen, who was suspended on April 1, 2013 from his job as deputy editor of Study Times, a weekly published by the Central Party School, for suggesting in an article published in the Financial Times that North Korean nuclear proliferation was not in China's interests:

Mr. Deng's article in The Financial Times did not deal with sanctions, but it offered a harsh critique of the Chinese government's policy of support for North Korea and, in particular, its new leader, Kim Jong-un. "It is entirely possible that a nuclear-armed North Korea could try to twist China's arm if Beijing were to fail to meet its demand or if the U.S. were to signal good will toward it," Mr. Deng wrote.³³

²⁹ Ibid.

³⁰ Hilburn, Matthew. "China's Netizens React Colorfully to N. Korean Nuke Test", Voice of America, February 14, 2013. <http://www.voanews.com/content/chinese-netizens-react-north-korea-nuclear-test-weibo/1603971.html>

³¹ "Chinese netizens call for their government to suspend aid to North Korea", offbeatchina.com, February 14th, 2013. <http://offbeatchina.com/chinese-netizens-call-for-its-government-to-suspend-aid-to-north-korea>

³² "Chinese netizens call for their government to suspend aid to North Korea", offbeatchina.com, February 14th, 2013. <http://offbeatchina.com/chinese-netizens-call-for-its-government-to-suspend-aid-to-north-korea>

³³ Perlez, Jane. "Chinese Editor Suspended for Article on North Korea", The New York Times, April 1, 2013.

Taken together with other recent instances of the “allowed” criticism of corrupt officials, food contamination, environmental pollution, and unsafe transportation networks, it seems likely that the Chinese government has permitted such discussion to take place in the social media sphere not just as a way of blowing off steam, but also to get the attention of the relevant authorities. There are several recent instances in which social media chatter has led to changes in government policies, and even to the dissolution of a branch of the government. Shortly after the deluge of anti-North Korean posts on Sina Weibo, Chinese representatives at the U.N. helped draft a measure to increase sanctions of North Korea for the first time.³⁴ And in August, 2011, after initially trying to cover up a high-speed train accident near Wenzhou and heavily censoring trending social media posts on the event, the government fired several high-level officials.³⁵ The entire railway ministry was disbanded in early 2013, many believe as a direct result of the withering criticism it received on social media after the Wenzhou crash.³⁶

<http://www.nytimes.com/2013/04/02/world/asia/chinese-suspend-editor-who-questioned-north-korea-alliance.html>

³⁴ Gladstone, Rick and Sanger, David E. “New Sanctions on North Korea Pass in Unified U.N. Vote”, The New York Times, March 7, 2013.

<http://www.nytimes.com/2013/03/08/world/asia/north-korea-warns-of-pre-emptive-nuclear-attack.html>

³⁵ Jacobs, Andrew. “Spokesman Fired After Chinese Train Crash Has New Job”, The New York Times, August 18, 2011. <http://www.nytimes.com/2011/08/19/world/asia/19rail.html>

³⁶ Hatton, Celia. “Demise of China’s unloved railways ministry”, BBC News, March 13, 2013.

<http://www.bbc.co.uk/news/world-asia-china-21756726>

Proposed Pilot Project: Developing Insights into Egyptian Attitudes towards Verification through Social Informatics

Objective

Our overarching goal is to obtain information and provide analysis supportive of the pursuit of U.S. nonproliferation and regional nuclear security objectives. Our more immediate goal with this pilot project is to sharpen our capability to analyze Egyptian social media postings on nuclear-related issues by developing an initial understanding of (a) the social networks in cyberspace, (2) the nuclear-related subjects of interest for Egyptians, and (3) the relevance of those areas of interest to U.S. nuclear proliferation and regional nuclear security policy. In the longer term, building on our initial understanding, we would hope to develop the capability to address higher-level issues, such as (1) gauging popular sentiment, (2) determining the influential power users, and (3) tracking the evolution of the effect of popular sentiment on national decision making. And while the focus is on Egypt, these capabilities can and should be expanded to other Arab countries, particularly those who play an important role in the NPT process and those who are proliferation risks.

Organization of the Project

Our project will have three parts:

First, we will collect data from Facebook and Twitter, in Arabic and English.

Anticipating that there will be a limited number of posts involving nuclear issues (i.e., we anticipate that it will constitute a “weak signal”), we will start with the simplest possible search terms available, beginning with the term “nuclear” (nawawi) and a small number of colloquial

terms (e.g., WMD). We will expand our search terms as necessary to acquire a tractable and topically germane set of posts.

Second, we will analyze the collected data. We intend to start with relatively straightforward techniques for (1) laying out the social networks using data and metadata and (2) organizing and analyzing content using the text to perform principal components analysis (PCA) and semantic mapping (SM). In the analysis of the social networks, we will work with the identities in cyberspace to look for groupings of individuals both socially and thematically. We will leave the detailed analysis of influences and actual identities outside of cyberspace to a later time. With regard to PCA and SM, we will work directly with the text at this point. Note that these decompositions can be done directly in the Arabic initially, so that translation can be reserved to refining the output to take account of synonyms, for example, and then examining the resulting output in English to produce the final product. This technique will be cross-checked with analysis of portions of the collected data that have been translated from the outset.

Third, we will perform a subsequent analysis of the information derived from our initial analysis of the collected data. At this stage of the analysis, our goals will include (1) first differentiating between nuclear power, nuclear weapons, nuclear proliferation, and nuclear disarmament and arms control; (2) next differentiating between concerns in these regards associated with Egypt, Israel, Iran, other regional states and sub-state actors, as well as the IAEA (i.e., identifying the areas of concern, but not attempting to yet tackle the more demanding question of attitudes); and (3) finally taking an initial look at higher level concerns such as perceptions of threats or desired pursuits, support or opposition to these threats or pursuits from different regional players, and attitudes toward a Middle East WMD-Free Zone, the IAEA, and

the larger non-proliferation regime. We will intentionally adopt an open viewpoint at this early stage, anticipating that we will find surprises in the information obtained.

Data collection strategy

We plan to adopt a hybrid data collection strategy: (1) For sites offering data retrieval Applications Programming Interfaces (APIs) we will attempt these APIs first. (2) To crawl data from websites, we will apply deep Web crawling methods. With other social media outlets, researchers need to download the social media through a combination of web crawling and screen scraping. Different kinds of data can be extracted from different social media.

We can computationally evaluate these posts for content and sentiment and can develop social network visualizations of who influences the public debate on “nuclear” in Egypt and how that debate spreads through cyberspace.

We will create a database of Egyptian social media posts related to nuclear issues going back to 2010 – updating the holdings to include posts that meet the search criteria – and store for pre-processing and analysis. We will produce a dataset containing both structured data elements and unstructured text. We will apply a unified representational and storage design to facilitate data collection, maximize the extensibility of the approach, and improve data processing efficiency.

“Dirty Data” will be refined for analysis. At this first stage, we will not be addressing the sentiments expressed, on the subject matter. At this early stage, we assume that rule-based solutions using algorithms developed for use with English sentiments do not work in Arabic with content or sentiment. However, in the longer run, we plan to follow up on the successes that have been achieved with machine learning techniques.

Analyzing the data

For this pilot project, we intend to concentrate on the following:

- Content – keyword search can initially be done in Arabic
- Principal Components Analysis – to look at subjects of interest, without regard to sentiment
- Social Network – initially to map the connections in cyberspace.

Social Network analysis

Using references in social media of who influenced the poster and the decisions of posters to repost posts with which they agree, that occur in the media, that were made by friends and colleagues, or that were made by celebrities, intellectuals, and gadflies, one can computationally develop models of how Egyptian attitudes form.

Dr. Erica Briscoe of the Georgia Tech Research Institute (GTRI) Behavioral Modeling and Computation Social Systems Team³⁷ has done extensive research with the Georgia Tech High Performance Lab on how to model social networks when one only has access to "weak" signals. Using data about who reposts or who references whom within social media, one can develop maps of who is instigating discussions on a particular topic and how they spread through society. In addition, if desired, one can examine how long it takes for a topic to diffuse.

Special considerations for social media data mining in Arabic

Algorithms written to analyze American social media like Facebook and Twitter cannot be applied to Arabic text³⁸. In the early days of global social media mining, some researchers

³⁷ <http://www.gtri.gatech.edu/atas/bmc/ss/team>

³⁸ Abbasi, A., H. Chen, A. Saleem (2008), "Sentiment Analysis in Multiple Languages: Feature Selection for Opinion Classification in Web Forums", ACM Transactions on Information Systems"

translated the Arabic text into English and would then use algorithms that worked for English social media on this new translated text. These efforts have been shown not to be very effective. Academic researchers have developed social media algorithms honed to different languages and have found that different techniques work better according to the language, domain, and the structure of the social media provider.

Since social media contents are highly unstructured and writings tend to be exceedingly informal with extensive uses of neologisms, acronyms, nonstandard abbreviations, slang terms, the use of non-standard Romanized Arabic scripts embedded in Arabic sentences, etc., a suite of preprocessing techniques need to be applied before attempts to make sense of the data. Some of these preprocessing steps are language-dependent.

Analyzing the information derived from our analysis of the collected data

As stated, we will be analyzing the information generated by the analysis of the collected data looking primarily in three areas: (1) nuclear-related subject-matter content – differentiating between nuclear power, nuclear proliferation, nuclear-weapon-free zones, nuclear weapons, and the like; (2) associated countries or groupings of interest in the nuclear realm – Egypt, Israel, Iran, other nations in the region, groupings in contexts such as an “Arabic bomb” or an “Islamic bomb;” and (3) if possible, some higher-level concerns such as perceptions of threat or opportunity, support or opposition, and attitudes toward larger institutions or regimes, such as the IAEA or the nonproliferation regime writ-large. At this early stage, this will essentially be manual analysis, involving the consideration of the information derived from the data based on the expectation that such an approach will be tractable in the small-signal regime.

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