NAVAL POSTGRADUATE SCHOOL

DEFENSE ANALYSIS DEPARTMENT

FROM THE CORE

COMMON OPERATIONAL RESEARCH ENVIRONMENT

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PROVIDING WARFIGHTERS WITH A UNIQUE VIEW OF THE BATTLEFIELD

INSIDE THE ISSUE

CORE DYNAMIC TWEET NETWORK ANALYSIS

Visualization for Dark Network Analysis

By Patrick Dudas

Dark networks or terrorist informatics provide their own unique problem set because immediate reaction is critical to the success of authorities looking for terroristic or criminal activity. The CORE Lab has developed an architecture and visualization to enhance user decision making using various saliencies from key utilities designed for dark networks. We also connect this information processed in Twitter and map geotagged tweets to a Google Map, combining both network topology and spatial information. We built a Twitter feed that allows the user to click links embedded in the tweet directly so the user can see if a particular website, social feed, or video is causing the propagation of information or other sources they should consider viewing. An additional visualization allows the user the ability to see temporal pattern changes in the network. All of this tailored to be simplistic and individualized allowing the user to input a location and either a username, hashtag, or keyword to pull information and begin visualizing.

This platform is also novel in that as a website, the user can log in and work on the same dataset as another user by selecting that project. Multiple people can view multiple locations and multiple terms, but for a common goal in capturing and analyzing all information obtained in that project. We provide two mechanisms of visualizing: 1) Real-time network topology, and 2) Long term network analysis.

Visualization in Real-time

We developed a web application that allows an analyst the ability to: 1) collect information on Twitter by hashtag, username, or keyword; 2) visualize this information or network in real-time; and 3) change initial search criteria based on the visualization and applied social network analysis properties.

The process starts by having the user log into the website and selecting either an existing dataset or creating a new one. Once a project is selected or created, the user then inputs city, state, country or zip code and a search term. For the search term, s/he can either select hashtag, username, or keyword to search. Lastly, the user can select the type of network s/he is interested in collecting and viewing, which includes: 1) username -> username 2) username -> hashtag 3) hashtag -> hashtag.

With the geocode, search term and network type specified, the application creates a global search query, which is communicated to Twitter's Search API while the page is active.

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The CORE Program is a Center within the Defense Analysis department at NPS. Goals of CORE are to:

- Expose a generation of military officers to cutting-edge visual analytical methodolgies — produce Intellectual Capital
- Leader in education and research designed to operationalize advanced analytical methods — leverage emerging information technologies and analytical software packages to enable field operatives
- Advance DOD's Network Analysis capabilities — Illuminating Blue, Grey and Red Networks — Beyond Link Analysis
- Maintain currency with the leading innovations in visual analytic methods, research and related technologies — OSD and SOCOM's futures look at advanced analytical methods
- Benefit the Warfighter — reduce the risk of uncertainty in decision making

Crossing the Red Line

Examining Social Media and Social Network Analysis for Unconventional Campaign Planning

By MAJ Seth Lucente, COL Greg Wilson, RA Rob Schroeder, and RA Gregory Freeman

The outbreak of rebellion and conflict against the Assad regime in March 2011 has raised questions in the United States and European nations about the security of Syria's chemical weapons sites and potential use or transfer of such weapons. In the aftermath of the 1967 Arab-Israeli War, Syria sought to acquire and maintain an arsenal of chemical, biological and nuclear Weapons of Mass Destruction (WMD) with the help of Russia, China, Iran and North Korea. US policy toward Syria since the 1980s has ranged from confrontation, containment, and cautious engagement dealing with its clandestine WMD activities. On August 20, 2012, President Barack Obama cautioned Syria on the use of WMD saying, "Any attempt by the Syrian government to employ or strategically field biological or chemical weapons would cross a 'red line' that could lead the United States to change its posture in dealing with the Assad regime's attempt to remain in power." However, with the American public war-weary and US resources stretched to the breaking point from over 10 years of protracted conflict in Iraq and Afghanistan, a ground invasion is clearly an unattractive option.

> "Any attempt by the Syrian government to employ or strategically field biological or chemical weapons would cross a 'red line' that could lead the United States to change its posture in dealing with the Assad regime's attempt to remain in power."
>
> - PRESIDENT BARACK OBAMA

Developing unconventional intervention strategies that achieve US policy objectives and limit the expenditure of US blood and treasure will be increasingly in demand. Unconventional Warfare (UW) or assisting an ongoing rebellion offers US policy makers one such economy of force option to consider. However, UW requires in-depth knowledge of a country's socio-cultural dynamics, social structure, resistance potential, and how those willing to take up arms against their government might align with US policy objectives. Developing the intelligence picture to provide this level of insight typically takes years to build and normally requires an extensive human intelligence network. Using the Syrian Rebellion as a case study, this essay examines the utility of leveraging open source social media (YouTube, Twitter, and Facebook) along with advanced analytical methodologies like social network analysis (SNA) to increase our understanding of both the political and armed opposition. Expanding our analytical tools for illuminating dark networks, such as resistance forces operating in denied areas, is a critical requirement for SOF planners to develop UW intervention strategy.

METHODOLOGY

CORE Lab research associates at the Naval Postgraduate School in Monterey California conducted this study. The CORE Lab is an OSD sponsored research activity that serves as the center of gravity for teaching and research on Irregular Warfare (IW) analytical methods. Three visual analytic methodologies are emphasized in our courses and research projects: geospatial, temporal, and relational or social network analysis. The application of these methodologies, and the analytical software tools associated with them, enables operators to collect, manage, and fuse data in order to create a more complete picture of the common operational environment.

This study fuses open source, social media, temporal records, geospatial data, and relational analysis to create a Common Operational Picture (COP) from which policy-makers and SOF military commanders can make informed decisions. Geospatial data facilitated the visualization of both Syrian geography and the distribution of armed opposition forces and WMD sites located throughout the country. Social network analysis examines relational data associated with over 290 individual, political and military opposition entities identified through open source research.

The research team developed a detailed research plan that included the construction of ontologies and codebooks that standardize data collection and entry into analytical packages. Network visualizations were conducted using various analytical packages. Additionally, a network visualization package developed in the CORE lab, called Dynamic Tweet Network Analysis (DTna), was used to scrape twitter data and social media content in select Syrian cities based on key word search terms.

SYRIAN OPPOSITION NETWORK ANATOMY

Identifying the key stakeholders entangled in the Syrian rebellion is job one for UW campaign planners and is no easy task. Social network analysis has much to offer planners seeking to illuminate or map these dark networks. Social network analysis guru Valdis Krebs defines SNA as "the mapping and measuring of relationships and flows between people, groups, organizations and other connected information/knowledge entities. The nodes in the network are the people and groups while the links show relationships or flows between the nodes."

Social network analysis can provide key insights into the overall topography and structure of social networks. Utilizing SNA, we examine the political and armed opposition's network topography and in particular looked at the network's density and centralization. Network density gives planners a feel for how sparse or connected the network is, while centralization helps provide insights on whether the network is centralized around a few key actors. These measures confirmed our hypothesis that the opposition network is far from a formal, centralized hierarchy; in fact, it is an ad-hoc umbrella of interconnected, multi-relational, sub-organizations geographically dispersed throughout Syria that connects primarily through various social media applications

The most common network structure utilized by a revolutionary opposition force, whose units are spread geographically throughout the operational battlefield, is the federated model, which provides a good deal of autonomy to subordinate units. "In a federation, the core network serves as the hub of multiple, relatively autonomous hubs." For example the American Revolutionary War was a federation of numerous state militias combined to field the American Continental Army. Network centralization and variance are measures that capture the hierarchical dimension of network topography. They help researchers determine how hierarchical (or non-hierarchical) a network. Centralization uses the variation in actor centrality within the network to measure the level of centralization.

Social network visualizations (sociograms), like the one in Figure 1, provide key insights into the network's social structure. Planners can gain valuable insights by examining the structural position of key actors within the network. Here we can see that there is a group of actors (circled) who are in brokerage positions between the rebellion's political and armed opposition. If it is in the US interest to facilitate closer coordination between the political and armed opposition, then we would want to further examine these actors located in structurally advantageous positions. SNA was also used to identify central actors and cohesive subgroups within the network.

In fact, one such subgroup detected was a Syrian homegrown Salafi-jihadist group - Jabhat Nusra. A Syrian analyst argues "Jabhat Nusra is far more dangerous to the long-term stability of the Syrian state than foreign jihadist groups because it represents a metamorphosis of a Salafi-jihadist ideology into a domestic platform that is able to achieve popular resonance."

FSA COMMUNICATIONS NETWORK (SOCIAL MEDIA)

Social media has become a valuable political tool. "It is an unparalleled instrument for the purpose of mobilization, denouncing state violence and other human rights abuses, as well as enabling democratization." Applications such as Facebook, Twitter, and YouTube allow users to interact, participate, or collaborate nearly real-time with one another. The proliferation of the smart-phone and nearly universal accesses to wireless Internet technologies has enabled social media users to rapidly mobilize social protests, document a humanitarian crisis as it unfolds, and disseminate information globally simply by pushing "send" on their wireless device. The FSA's communication network is a unique "Web-based community" that expects to be notified via social media (Twitter, Facebook, YouTube). The FSA utilizes social media for disseminating information, monitoring current operations, logistics, and consolidating battle damage assessments reports – all critical for follow-on missions. This investigation found that nearly ninety percent of the primary data sources originated from the three most widely and effectively used social media sources - Facebook, Twitter, and YouTube. These social media sites provided a window into the armed opposition units and were leveraged to assess organizational structure, operational activities, unit strengths/

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weakness, combat effectiveness, and to determine if unit leadership might align with US policy objectives.

Analysis of the FSA's authoritative (Command and Control) network combined with social media information highlights the fact that only 27 of the 42 opposition units claiming to support FSA operations actual did so. The remaining 15 units are simply uncooperative rogue elements that undermine civil leaders and threaten any prospects for a viable post-Assad government. Further, research on the 27 FSA units using Facebook, Twitter and YouTube revealed that only 4 of the 27 units had demonstrated proficiency in offensive combat operations against Assad's Regime force, were closely aligned with the FSA at the strategic, operational and tactical level, and appeared to have the motivation and potential to align with US policy objectives.

> "We use Facebook to schedule the protests, Twitter to coordinate, and YouTube to tell the world."
>
> - ANONYMOUS CAIRO ACTIVIST

GEOSPATIAL ANALYSIS — RISK TERRAIN MODEL

Arguably, the best way to assess risk and predict future areas of conflict is to use past behavior, either in terms of actual incidents or as a collection of incidents (i.e. hotspots) as indicators of future behavior. Hotspot mapping is the use of cartographic techniques to create and visualize cluster density or the intensity of events over a geographic area. As better data and more advanced mapping techniques become available, opportunities emerge to move beyond historically based hotspot and density mapping to a near real-time evidence-based, predictive risk assessment strategy.

Risk Terrain Modeling (RTM) is an approach to spatial risk assessment that utilizes geographic information systems and remote sensing to visualize, measure, and analyze geospatial data. RTM is a combination of separate map layers that once overlaid together highlight the presence, absence, or intensity of numerous factors geospatially on a terrain map. A concise RTM is designed to be predictive and, as such, can illuminate which of Syria's WMD sites are at the greatest risk of compromise. This RTM examines (1) the disposition of the Syrian regime, FSA and Jihadist armed forces, (2) the locations that experienced the greatest level of conflict, and (3) identifies Syria's WMD sites. As expected, it found that most of the armed clashes have taken place inside villages and cities along the country's main north-south highway.

The strategic position of Homs at the intersection of Syria's main east-west and primary north-south highways has exposed it to the greatest level of conflict in Syria. The RTM highlighted the city of Homs as the greatest concern based on its strategic location and high frequency of combat operations, as well as other at risk WMD locations. We then overlaid the identified opposition units who were in close proximity and determined to have the highest potential of supporting US policy objectives.

OPPORTUNITIES AND CHALLENGES

This research project clearly demonstrates the usefulness of leveraging open source social media information (YouTube, Twitter, Facebook) and advanced analytical methodologies like social network analysis to increase our understanding of dark networks like the Syrian opposition. The insights provided by social media exploitation, social network analysis, and the geospatial risk terrain model received high marks from both military planners and leaders exposed to the project. Intelligence professionals marveled at how quickly three researchers could illuminate and map elements of the Syrian political and armed opposition with open source information. One officer familiar with the project said "this would have taken an entire intelligence section numerous months to develop the analytical products and potentially years for the intelligence community to develop the sources and contacts with access to this type of information."

Of course open source social media information and advanced analytical methodologies are not a panacea. Some wonder if we can really trust or verify the veracity of information posted using social media sources. Researchers involved in this study shared this same skepticism but were surprised at the overall accuracy of posted information. Much of the information, such as pictures, videos, and tweets, were geo-tagged and could be quickly verified geospatially. Researchers found one website that was crowd sourcing pictures of Syrian military installations and uploading the information into a visual map display. Leveraging this type of geo-tagged information can greatly expand our knowledge into denied areas where human intelligence sources are lacking. Additionally, some information can actually be self-correcting, in that the wisdom of the crowd can squash false statements. That being said, information gleaned from open-source should still be verified and cross-checked with other information sources.

Additionally, leveraging advanced analytical methodologies like social network analysis will require the development of highly skilled analysts with the proper education and training. Defining network boundaries and capturing complete relational data on networks is difficult work. Analysts must be capable of developing detailed ontologies and codebooks that standardize data collection and entry into analytical packages. Keeping social network analysis information current is also a challenge as resistance networks are constantly in flux as they recruit new members and suffer losses. However, in doing so analysts have the opportunity to glean insights on how the network is changing over time. Additional challenges include access to open-source information as many military networks restrict access to social media sites and most of the analytical software packages used in this study are currently not approved to be loaded on military networks.

CONCLUSION

Major General (MG) Michael T. Flynn recently noted that after ten years of continuous U.S. combat operations -- America's "intelligence apparatus still finds itself unable to answer fundamental questions about the environment in which we [DoD] operate and the people we are trying to protect and persuade." Both MG Flynn and General Stanley McChrystal emphasized the need for US intelligence collection efforts to continuously evolve as the asymmetrical conflicts in the future "will be won by persuading the population, not by destroying the enemy."

This is particularly true for developing UW intervention strategies that rely on deep socio-cultural understanding and seek to illuminate resistance elements that are often operating in denied areas. This essay demonstrates that by combining open source social media information and advanced analytical methodologies such as social network analysis and geospatial risk terrain modeling, researchers can provide insights and analytical products that can inform the crafting of UW intervention strategies. As we saw in this paper, researchers were able to leverage social media exploitation of open-source content (YouTube, Facebook, Twitter) and SNA to first examine the Syrian political and armed opposition network's topography which included the identification of central actors and actors with brokerage potential based on their structural position within the social network as well as cohesive subgroups within the network. These techniques enhance our understanding of complex networks and move well beyond traditional link analysis. Next, through social media exploitation they identify key FSA entities/individuals who appear "cooperative" and potentially could be leveraged in support US policy objectives. Finally, through Risk Terrain Modeling they mapped Syrian WMD sites and determined which sites were at greatest risk of compromise and which opposition units were in proximity to potentially assist given a change in the US posture towards the Assad Regime. It is this type analysis that informs the development of UW intervention strategies designed to provide US policy makers options to leverage indigenous resistance potential when appropriate.

In closing, given the unprecedented amounts of raw information today's analyst must ingest, MG Flynn highlighted four critical elements: "analysts must absorb information with the thoroughness of historians, organize it with the skill of librarians, and disseminate it with the zeal of a journalist…. [an analyst] must embrace open-source, population-centric information [social media] as the lifeblood of their analytical work." While each conflict is unique, one thing is clear, social media will continue to be leveraged to effect political change. With this in mind, future UW campaign planners will need to embrace open source social media information and the advanced analytical methodologies required to better understand the complex operational environment.

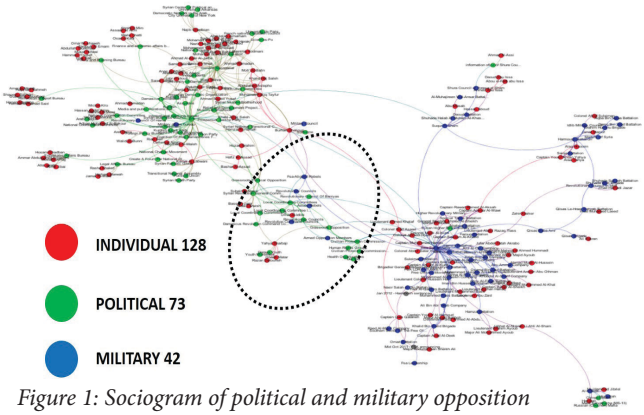

Figure 1: Sociogram of political and military opposition groups. Bridges and brokers operating at local level are circled.

DA Outstanding Theses Recipients using SNA

In December, MAJ Richard Teta and MAJ Jason Brown, two Defense Analysis (DA) graduates were awarded for outstanding theses.

MAJ Teta's thesis, titled "Getting Ugly: Exploring Network Development in 'The Ugly American'" illuminates and elucidates the unique characteristics of network design approaches that appear in the book. This study also seeks to re-emphasize the important and often overlooked principles of effective host nation interaction presented in "The Ugly American" that have been recognized and discussed by generations of Foreign Service officers, military advisors, and civilian volunteers.

MAJ Teta leveraged SNA theory, one of the CORE Lab staple methodologies to reveal how techniques designed for network analysis and dark network interdiction can also help reveal distinct characteristics of successful approaches to host nation interaction and indigenous network development.

MAJ Brown's thesis, titled "Improving Nonlethal Targeting: A Social Network Analysis Method for Military Planners", explores how a deception plan against a terrorist network can be informed and prepared using social network analysis methods.

Selecting targets that fragment the network becomes the object of the deception, whereas the actual targets of deception are individuals who are connected to these fragmentation nodes. A simulation of how information diffuses through the network helps identify how rapidly and how far a misinformation message might spread. Social network analysis also shows where intelligence collection might be incorporated to provide feedback about the success of message dissemination and the deception effort.

CORE COMMUNIQUÉ

September–Present

Center for Homeland Security Briefings
- CORE Lab methodologies
- DTNA
- Syria Project

October

VSO Academic Week
- Savannah, GA
- Mike Stevens and Lt. Cmdr. Max Moore

Army CYBERCOM
Lt. Gen. Hernandez Visit
- Syria Brief
- Rear Adm. Heimbigner Visit

November

Lt. Gen. William Caldwell Visit:
- Syria Brief

FBI, DOI Visit
- Syria Brief

State Dept and MISO Training
- Syria and Social Media

DevGroup Visit
- Syria Brief

December

Philippines Outreach:
- Col. Wilson, Dan C. and Rob

Winter Ball
- CORE Lab demonstration

February

IEDNA Lab and Training Creation Workshop
- LT Deak Childress; LT David Scherr, Rob Schroeder

Strategic Multi-Layer Assessment Teleconference
- Hosting organization Pentagon
- RA Schroeder, RA Freeman

March

IEDNA Lab and Training Creation Workshop
- LT Deak Childress; LT David Scherr, Rob Schroeder

The Internationalization of the FARC: Brokers, Key Players and Emergent Leaders

By Dr. Sean Everton, COL Greg Wilson, RA Dan Cunningham, MAJ Doug Zimmerman and COL Carlos Padilla (COLAR)

The FARC is an insurgent group based in Colombia that is believed to be the oldest and, at its height, the largest guerrilla movement in the world. It was officially founded in 1964 in order to protect rural peasants against the harsh policies of large landowners and provide them education in exchange for food and supplies. Over time, however, it has become increasing intertwined with narco-trafficking activities while transforming itself into a more internationally networked organization that displays little or no concern for the peasants it once protected. Its continual violation of human rights has led left-leaning intellectuals and the international community to turn against the movement. At the same time the Colombian government has become more adept at countering the FARC's activities, which has made it a difficult environment for the FARC to function, forcing it to increasingly operate across sovereign national borders.

The transformation of the FARC from a local insurgency into a more internationally networked organization is the subject of this recent paper produced by the CORE Lab. Using the tools of social network analysis (SNA), and drawing from a unique data set including information extracted from official documentation of the Colombian Government, it uncovers key leaders who are actively engaged in this transformation, many of whom have already established themselves outside of Colombia. Specifically, the authors utilize several social network analysis metrics in order to identify important brokers, key players, and emergent leaders within the FARC's leadership network. The brokerage potential and key player metrics identify potentially important leaders and those who may control the flow of information and resources within the network, while the emergent leader metrics seek to uncover those actors who may not be currently in positions of leadership but whose current position increases the likelihood that in the future they will. The authors then rank actors by the proportion in which they rank in the top-fifteen for each metric.

Consequently, the analysis uncovers a series of individuals who appear to be significant players within the FARC leadership network. Interestingly, of the top-ten, only two are listed as known leaders of the FARC by Wikipedia (2011). This finding highlights one of SNA's strengths: namely, its ability to not only identify known leaders within an organization, but to identify actors, in this case key front and bloc leaders, who either are or are at least in the position to exert influence on a group's operations. In other words, SNA has identified several FARC members who appear to be flying below the conventional wisdom radar, but are most likely playing (or will play) key roles in the FARC. What is striking is that only one of these leaders currently lives in Colombia fulltime. The rest live outside of Colombia's borders in some capacity: two bounce between Colombia and Venezuela, one between Venezuela and Cuba, another between Colombia and Brazil, and three live in Venezuela. The important players identified in the analysis also have known connections in several other countries, including Canada, Ecuador, Peru, Argentina, Paraguay, Cuba, Mexico, Bolivia, and Costa Rica, to name a few. The authors are clear, however, that they do not suggest this is an entirely new phenomenon or that the FARC is abandoning Colombia as its prime area of operations, but that attempts to disrupt the FARC in the future will need to take the FARC's international character (and key players) into account.

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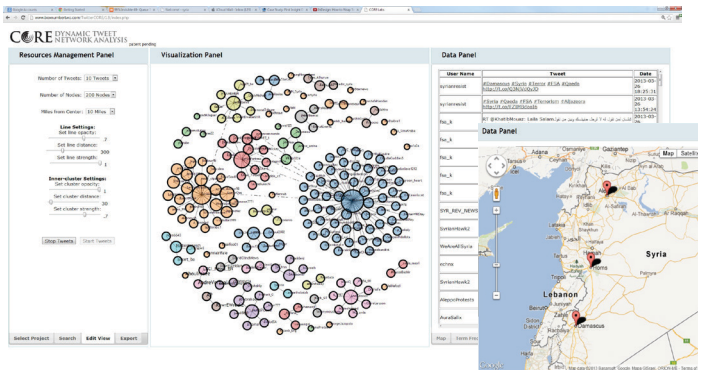


The graph for the tweets is created every time a query is requested from Twitter and can be automatically updated as quickly as 8 seconds after the initial message is tweeted. The nodes themselves are selectable and will augment the original search query to include this hashtag, username, or keyword. This is a measure to help limit the amount of noise in a given graph. A clustering algorithm is applied to the network and groupings are assigned and represented by color assignment. Based on log-based degree centrality, the size of the node reflects the number of connection each username or hashtag accompanies. Considering Twitter is a directed network, edges reflect the direction of the message. These directed networks highlight both the groupings and centrality, with a bias towards increased inner-cluster strength versus out of cluster nodes. The importance of these saliency changes is to highlight nodes of interest or key players, which is important in dark networks.

We appended a Google Map that shows geotagged tweets with the tweets themselves. This allows the user the ability to view the tweet and from where it originated. We created a text GUI that displays the tweets along with the URLs, hashtags, and users. The URLs are selectable and will show the website in a new window. This will allows the user to see if a news article, YouTube video, blog, social networking post, etc. is causing an increased number of tweets.

Visualization in Long Term

We provide a mechanism to group various datasets together for a single visualization. This can then be outputted as a .gexf, .net, or .dl network type.

We also developed our own means of visualizing entire projects called TweetViewer. This web application is to be used with DTNA and will display the completed network. TweetViewer for DTNA promotes the temporal data associated with the network by providing a timeline to allow a user the ability to specify at which point in time they are interested in viewing the network or the network's evolution over time. As DTNA's network visualization, edges reflect the direction of the message. Additionally, we differentiated the nodes that originated from the tweet by augmenting and animating the nodes' borders as time progresses. Lastly, users can search based on the tweet to showcase nodes that include certain text.

Current Usage and Initial Findings

This project was only recently developed, but has already been employed by 45 users from a variety of military groups or organizations, ranging from civilian use to higher ranking officers. This usage has accounted for more than 250 queries and has pulled roughly 100,000 tweets as of publication. The majority of the tweets have centered on search areas (geographically) in Syria and the Philippines. Only 18% of the tweets pulled from these areas are geotagged. The most common search term is the hashtag "#FSA" for Free Syrian Army. There were roughly 10,000 URLs from the 100,000 tweets, which suggest a high influence on external websites driving the tweets.

Future Development

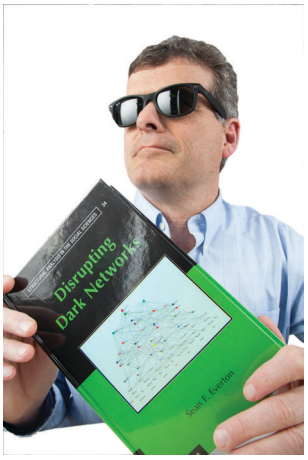
There are three avenues of research that we are currently interested in pursuing: 1) visualizing sentiment in Twitter posts, 2) determining the value of networks created using either username -> username, username -> hashtag, or hashtag -> hashtag connections, and 3) visualizing temporal data using more specific temporal dependent cluster algorithms and network centrality.

CORE Leadership and Faculty Spotlight

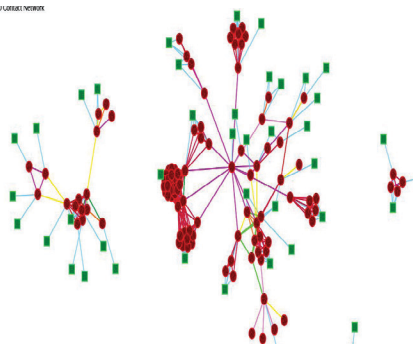
Dr. Sean Everton
Assistant Professor
and CORE Lab Co-Director

Dr. Sean Everton is an Assistant Professor in the Department of Defense Analysis and Co-Director of the CORE Lab at NPS. He currently specializes in the use of social network analysis to track and disrupt dark networks and teaches two courses within the CORE track. Before coming to NPS in 2007, he was an adjunct professor at both Santa Clara University and Stanford University — the latter, where he earned his MA and Ph.D. in Sociology.

In November, Dr. Everton published "Disrupting Dark Networks: Structural Analysis in Social Sciences" published by Cambridge Press. The book is the first of its kind in that it exposes readers to both the theoretical and the practical application of social network analysis within the context of dark networks (i.e. illegal and covert). Readers are introduced to a range of theories regarding dark networks along with exposure to network visualizations approaches, the four "metric families" (topography, cohesive subgroups, centrality and brokerage), positions, roles and block-modeling, and more advanced topics such as dynamic network analysis and statistical approaches to network analysis. Dr. Everton simultaneously introduces readers to three prominent social network analysis software packages, namely UCINET, Pajek, and ORA.



CORE Lab Provides Analytical Training to the State Department - Mapping the Syrian Opposition



The CORE Lab is providing advanced network analysis training and field data collection tools with the Lighthouse Project to Department of State's Conflict Stabilization Office (CSO) Team. The CORE Lab team (including a student from the Defense Analysis department) provided an orientation of Visual Analytics, Social Network Analysis (SNA) and Lighthouse field-data collection technology to improve CSO's situational awareness of Syrian key leaders and and visualizations of Syrian opposition networks. The sociogram to the right illustrates Syrian opposition members and related organizations using SNA network visualizations. Department of State's CSO Syria team has sent field operatives and analysts to the CORE Lab in Monterey in March to receive social network analysis training. The CORE Lab also provide on-scene training and education in Turkey on several analytical capabilities and field-data collection methods that could support their mission in providing non-lethal support to non-violent Syrian opposition members. This effort provides CSO a new capability to collect and visualize data in the field as well as Palantir stand-alone computers to aid CSO in transmitting data from its location in Turkey back to its headquarters in Washington, D.C. This partnership continues to expand and the hope is to have State Department officers attend the Defense Analysis program in the future.

CORE Welcomes LTC Max Moore and LTC Glenn Johnson as the Lab's First Deputy Directors

LTC Max Moore is serving as a CORE Lab Deputy Director and is working on the lab's structured collection tool suite. He is a career Armor officer who has served as a Divisional Cavalry Troop Commander in Korea, Brigade and Battalion S3 in 4-25 IN(ABN) in Alaska and Iraq, and as a JCS Afghan Hand. LTC Moore came to the CORE Lab from El Paso where he commanded 4-17 IN BN (Stryker). LTC Moore has a BS in Biology from State University of New York at New Paltz, an MS from the School of Advanced Military Studies (SAMS), and a MS from the Naval Postgraduate School's Operations Research Department. LTC Moore speaks fluent Spanish, passable English, and Dari.

LTC Johnson is serving as a CORE Lab Deputy Director and Unconventional Warfare Fusion Cell Program Manger. LTC Johnson is a career Special Forces officer who has served as an SFODA Commander in 5th Special Forces Group (Airborne) and multiple company commands in 3rd Special Forces Group (Airborne). Following 3rd Group, LTC Johnson was the Professor of Military Science at Northern Arizona University. LTC Johnson came to the CORE Lab from Afghanistan where he commanded a Security Forces Assistance Team. LTC Johnson has a BS from Weber State University and a MS from the Naval Postgraduate School.

www.nps.edu/da/corelab

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