



# **11<sup>th</sup> Annual Strategic Multi-Layer Assessment (SMA) Conference**

**Graduate Student Poster Session Booklet:  
Titles & Abstracts**

The Graduate Students will display their posters at the SMA Conference in the break out room of the Smart Building on Joint Base Andrews.

They will be available to take questions on their subject areas during the Conference breaks and lunch periods.

Please take advantage of these times to talk with the Graduate Students and discuss their work.

**Clara Braun**

School of Criminology and Criminal Justice  
University of Nebraska at Omaha

**Title:** The Intersection of Online Branding and Individualistic Escalation: Categorizations of Digital Involvement in Foreign Terrorist Organizations

**Abstract:** With the accessibility of the internet playing an instrumental part in providing access to radical propaganda, analyzing roles to identify digital involvement and cyber influence is an important research agenda. For the purposes of the current study, six distinct roles of digital participation were identified to categorize individual interaction with violent extremist content. These six typologies, organized by escalating levels of involvement- inactives, lurkers, joiners, collectors, critics, and creators- provide a taxonomy to analyze the intersection of online branding and individualistic escalation. Preliminary findings indicate that individuals experience involvement across multiple roles, often escalating from a joiner to a critic. The relationship between this escalation in a digital community and their level of involvement in activities offline indicates a parallel degree of both cyber and physical mobilization. The central contribution for this effort is the identification of case examples of Foreign Terrorist Organizations and Salafist-inspired individuals in varying stages of escalation of digital jihadi lifestyles.

**Michala Braun**

Nonproliferation and Terrorism Studies. Concentration in Arabic and African Security Studies  
Middlebury Institute of International Studies at Monterey

**Title:** Female and Child Suicide Bombers in West Africa: Transnational Threats, Border Security, and Regional Stability

**Abstract:** This poster will detail the use of women and children as suicide bombers in West Africa. Throughout history, suicide terrorism has regularly been the weapon of choice for many terrorist groups, in order to carry out their plots with maximum casualties. This poster will examine the use of female and child suicide bombers as a tool for terrorism, using three case studies, while geographically concentrating on West Africa. The poster will also identify the core differences between child terrorists and child soldiers.

During 2017, researcher Michala Braun interned with the Diplomatic Security Service at US Embassy Dakar Senegal. During her time in Dakar, Michala researched transnational threats, national security and stability, and West African terrorist groups.

**Andres Cremisini**

Computer Science

Florida International University

**Title:** Detecting and Aligning Narrative Variants for Countering Disinformation

**Abstract:** Modern information streams have allowed our adversaries to promote disinformation to serve their strategic goals. In response, we are developing new technology for detecting and analyzing disinformation in these information streams. The basic premise of the work is that an adversary will be trying to push its own “narrative” of events, and to do so will introduce specific narrative variants in the form of alternative events, facts, or statements. These narrative variants may range from (i) a single misleading statement carefully calibrated to sow doubt, to (ii) a set of statements that presents an alternative, more favorable interpretation of accepted events, to (iii) a completely alternative set of facts that contradict reality. We are developing methods to classify documents in information streams as story variants, as well as techniques for aligning a story variant with related variants. To enable this work we have gathered three datasets of narrative variants: 4,662 news stories on the Ukrainian Crisis of 2013-14, with sources identified as ‘Pro-Western’, ‘Neutral’, or ‘Pro- Russian’; 2,500 news stories in Spanish and English on the Venezuelan crisis of 2014 with sources identified as ‘Pro-Opposition’, ‘Neutral’ or ‘Pro-Government’; and 3,546 folk tales drawn from different language groups that include 40 versions of several canonical folktales, e.g., Red Riding Hood, Cinderella, Beauty and the Beast, etc. The last dataset presents an interesting, controlled case of well-known narrative variants that have no particular strategic purpose, as so represents a useful baseline. We are testing our approach on these data, developing methods to first classify documents in information streams as variants of a specific story, as well as techniques for aligning a story with its variants. We present a system architecture which draws on off-the-shelf natural language processing (NLP) and machine learning (ML) components, and also present our initial measurements of a system baseline.

**Vivian Guetler**

Sociology and Anthropology  
West Virginia University

**Title:** Is Terrorism a Family Affair? Analyzing Pathways to Terrorism of Radicalized Individuals in the U.S.

**Abstract:** As terrorism continues to pose national security threats, pathways to radicalization and violent extremism available to alienated individuals vary. However, the extent that radicalized individuals will engage in violent or non-violent extremism remains to be researched. This study analyzes the influence of family and peer pathway to violent extremism of radicalized individuals across four ideologies – Islamist, far-right, far-left and single issue. Through sociological and psychological lens, I apply the social learning theory to analyze the family and peer influence. Data was collected and analyzed from the Profiles of Individual Radicalization in the United States (NC-START). Results show that radicalized individuals with radicalized family members are more likely to engage in violent extremism. Across ideologies, the Islamist group is more likely to engage in violence than the far-right, far-left, and single-issue ideologies. While the focus of researchers and practitioners is heavily on the Islamist group, the far-right group is also likely to engage in violent extremism. Findings are significant for the implementation of effective counterterrorism and counter violent extremism programs, with the focus on the influence of radicalized family members on recruitment and violent extremism. Key words: terrorism, radicalization, family and peer influence, ideologies

**Brant Horio**

Computational Social Science  
George Mason University

**Title:** Toward a Mechanistic Narrative of Social Media-Based Active Measures on Opinion Dynamics

**Abstract:** There is general consensus that foreign sources are influencing and interfering with the US political opinion landscape. One such interference manifests through active measures in social media, including disinformation campaigns and amplification of polarized messaging that targets emotional responses from targeted populations. The intent is less about changing beliefs and more of sowing distrust and undermining citizen confidence, making it difficult for neutral bystanders to discern the truth and easier for partisans to reject opposing viewpoints. This research explores a computational representation of social media-based active measures and their influence on opinion dynamics of a population using the 2016 US presidential election as context. We developed an agent-based opinion dynamics model using the MASON framework to simulate a stylized abstraction of the voting public and their interactions with an active measures agent layer that represents social media messaging as a function of time and opinion extremism. By calibrating the model to replicate qualitative, macro-level observations for our baseline scenario under influence from an active measures agent layer, we show that alternative outcomes exist when such measures are removed. We leverage the opinion dynamics model mechanics as a frame to describe the social implications of various active measure strategies. Strategies we explored relate to shifting consensus toward a desired extreme, gravitating the other extreme toward the center, and fracturing consensus within the middle of the opinion spectrum, as well as why each of these strategies together result in desired outcomes. Ultimately, our research seeks to describe through an opinion dynamics frame how active measures influence consensus, and in doing so, help shape counter-messaging strategy to mitigate the effects of social media-based active measures.

**Karl Johnson**

Joint Special Operations Master of the Arts  
National Defense University

**Title:** How the Military Prevents Failure: And Other Misapplications of Critical Thinking

**Abstract:** Failure is experienced at both the macro and micro levels. At the micro level, an analysis of existing psychological research is necessary to understand why failure creates a visceral reaction. At the organizational level, very little recent, academic study has been published. A thorough look into business practices gives us a hint of some more modern practices.

**Hannah Kleman**

Sociology

University of Maryland

**Title:** Revolution Makers and Democracy Builders? Coalition Building in Tunisia and Egypt Following the Arab Spring

**Abstract:** Coalition building approaches are widely considered to be an important aspect of social movement and revolutionary success. I propose that this theory may be applied in the post-Arab Spring democratization process in Tunisia and Egypt. My argument suggests that devotion to democracy and anticipation of coalitions formed among political parties after the election provides individuals with the necessary incentive to overcome ideological barriers that would otherwise inform their electoral support. My analysis will be based on the Comparative Panel Survey on the Dynamics of Change: Belief Formation and Political Engagement in Egypt, Tunisia, and Turkey. With this data, I will examine how ideological perspective and coalition-directed voting has occurred in the context of new democracies.

**Timothy Kniefel**

South and Central Asia Program  
National Defense University

**Title:** Taliban Reconciliation: If at First You Don't Succeed, Reconsider Your Assumptions

**Abstract:** Previous attempts to negotiate a settlement with the Taliban in Afghanistan have failed to produce a peaceful resolution to conflict. The latest regionally-focused conditions-based South Asia strategy will only garner lasting success if policy makers continue to pursue viable options for the reconciliation processes.

**Todd Lehmann**  
Political Science  
University of Michigan

**Title:** Coordination and Control in Wartime Coalitions

**Abstract:** The complex environment of the modern battlefield creates significant coordination challenges for armed groups. These coordination challenges can be particularly acute within coalitions, in which multiple armed groups either combine their forces or operate in parallel. Coordination failure within coalitions can lead to detrimental political and military outcomes, including failure to achieve objectives and increased combatant and civilian casualties. Why are some coalitions better than others at coordination during combat? This paper argues that military culture—the set of shared norms about how to fight a war—directly influences the ways in which military organizations coordinate their efforts. When coalitions with different cultures combine their efforts, they are less likely to be effective. Using an agent-based model, this paper investigates the dynamics of cultural emergence and evolution from the micro-level interactions of military agents playing a Stag Hunt game with bargaining in a hierarchical network. When agents interact, they must simultaneously decide whether they will coordinate their actions, and if so, how they will allocate the gains from coordination. The dynamics of the model demonstrate when coordination is emergent throughout organizations, and when it is either partially or non-emergent. I then extend the model to evaluate more centralized allocation processes, in which an arbitrating agent (representing a commanding officer) decides how the gains will be allocated. Using this model, I therefore demonstrate how variations in centralization and network structure lead to different cultural outcomes and coinciding differences in coordination outcomes.

**Michael Logan**

Criminology and Criminal Justice  
University of Nebraska Omaha

**Title:** Violent Ideological Leadership: The Influence of Leadership Style on Lethal and Non-Lethal Violence

**Abstract:** The majority of research on terrorist leadership has focused on two broad areas: the impact of decapitation and types of control or authority. Few studies have accounted for differences in leadership style – the mechanisms leaders use to influence their organizations – between violent ideological leaders. In this study, we elaborate on the Charismatic, Ideological, and Pragmatic leadership theory by specifying four variations of violent ideological leadership (promoter, purist, practical, and power-seeker). Using a sample of 108 violent ideological leaders, we employed Hierarchical Linear Modeling to examine differences in violent outcomes across leadership style. Our findings suggest that two violent ideological leadership styles, practical or power-seeking, were significantly related to lethal violence even after controlling for attack- and group-level characteristics. This suggests that violent ideological leaders who either lack vision or endorse their personal vision at the expense of collective goals are associated with higher levels of lethality. We conclude with implications related to leadership theory and terrorism, directions for future research, and policy implications.

## **Ray McGowan**

Systems Engineering

Johns Hopkins University

**Title:** Determining the Cognitive Characteristics to Support Network Engagement: An ICONS II Perspective.

**Abstract:** The objective of this paper is three-fold and centers around the analysis of the International Communication & Negotiation Simulations (ICONS) II experimentation data and identifying key cognitive traits needed to operate in an expanded maneuver environment. The Expanded Maneuver (EM) environment has resulted partially from the increased dimensionality of the domain space as the 20th century battlespace with its two domains (Air & Land) became the 21st century mission space with five domains (Air, Land, Sea, Space and Cyber) and the myriad ways human actors can exploit the complex system of systems that result from their interactions across these domains. The first objective was to use the Language Inquiry Word Count (LIWC) algorithm, to provide quantitative cognitive measures for Blue Teams engaged in expanded maneuver tasks and then link those quantitative metrics to cognitive tasks that are essential to military planning for an aspect of network engagement, influence operations. The second objective was to introduce a novel performance metric for Blue Teams involved in expanded maneuver tasks such as influence operations using the quantitative measures resulting from the LIWC analysis. The four variables that comprised the Blue Team performance metric, BTPerfMetric, were selected and evaluated using a systems engineering methodology called Multiple Objective Decision Analysis (MODA). Lastly, the third objective was to present lessons learned from the psychometric linguistic analysis of the ICONS II simulation. The most intriguing result of this study was that the BTPerfMetric was able to select the best performing team based on unpublished conclusions made by the ICONSnet observers. Although a small dataset was used, this result shows the promise that a performance metric could be created to determine how well a team is performing the cognitively demanding tasks required to support influence operations planning tasks needed to “Win in a Complex World.”

**Xiang Niu**  
Computer Science  
Rensselaer Polytechnic Institute

**Title:** Evolution and Control in the Global Risk Network

**Abstract:** Risks that threaten modern societies form an intricately interconnected network, so it is important to understand how risk activations in distinct domains influence each other. We study the global risks network defined by World Economic Forum experts [1]. Risks are modeled as Cascading Alternating Renewal Processes (CARP) with variable intensities driven by hidden values of exogenous and endogenous failure probabilities. We use maximum likelihood evaluation to find the optimal model parameters based on the expert assessments and the historical data set containing monthly status of each risk. This approach enables us to analyze risks that are particularly difficult to quantify, such as geo-political or social in addition to more quantitative risks such as economic, technological and natural. The foundation of our approach to risk modeling was presented in [2], the limits of predictability of our method in [3] and some initial results on risk evolution in [4].

In the poster, we present the newest results on model dynamics and discuss how to use the model to provide quantitative means for measuring interdependence and predict future materialization of risks in the network. We also describe in more detail how the network evolved recently by comparing steady state which would be reached if the risks were left unabated at different time points. Finally, we present novel results on analysis of model resilience and on optimal control of the global risk network needed to bring the system to the state in which all risks are inactive. Our findings elucidate the identity of risks most detrimental to system stability at various points in time. The model provides quantitative means for measuring the adverse effects of risk interdependence and the materialization of risks in the global risk network.

- [1] "The global risks report 12th Ed," World Economic Forum, 2017.
- [2] B. K. Szymanski, X. Lin, A. Asztalos, and S. Sreenivasan, "Failure dynamics of the global risk network," *Scientific Reports*, 5:10998, Jul. 2015.
- [3] X. Lin, A. Moussawi, G. Korniss, J. Z. Bakdash, and B. K. Szymanski, "Limits of Risk Predictability in a Cascading Alternating Renewal Process Model," *Scientific Reports*, 7(1):6699, Jul. 2017.
- [4] X. Niu, A. Moussawi, N. Derzsy, X. Lin, G. Korniss, and B. K. Szymanski, "Evolution of the Global Risk Network Mean-Field Stability Point," *International Workshop on Complex Networks and their Applications*, pp. 1124-1134, Nov. 2017.

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This work is supported by ARO grant W911NF-16-1-0524 and ARL NS CTA W911NF-09-2-0053 and was supported by DTRA grant HDTRA1-09-1-0049.

**Steven Rose**

National Defense University  
Joint Special Operations Master of the Arts

**Title:** Interagency at the Strategic Level: Breaking down differences in organizational cultures through education.

**Abstract:** This project focuses on the issues facing the interagency within the 21st century. Trending across a breadth of literature, personal experiences from over 25 personnel within the interagency community, and my personal experiences; I have come to the conclusion that organizational culture is the root of the problems the interagency process faces. Through educating employees and Soldiers alike within the top three organizations, a stronger incentive for collaboration in the future can be created. With these findings, the following recommendations should be taken into consideration for the creation of a new policy within the USG. First, create a common curriculum, championed by both the Foreign Service Institute and National Defense University, on the interworking of Policy and Strategy. The goal of this curriculum would be to create a common understanding of how DoD, DoS, and USAID operates and solves problems. This course would therefore become a requirement for all employees within DoS and USAID to take prior to becoming tenured in their respective organizations. Likewise, within the military this course would be a requirement within the PME model, most likely built into the various War Colleges and NDU itself. Secondly, the increased participation by DoS and USAID in military PME schools would create a larger network within each organization. This network is vital to Interagency cooperation, because at the end of the day the first time we work together should not be during an emergency. Lastly, an increase in positions of the USG exchange program would produce leaders within all three organizations that have a shared understanding in the operating procedures of the other. Working together inside each other's organizations combined with an emphasis on continuing operational education will create more rounded professionals within the interagency prepared for the complex environment they must prosecute in the 21st Century.

**Maria Snegovaya**  
Political Science  
Columbia University

**Title:** What Drives Putin's Anti-westernism?

**Abstract:** What drives the anti-Western foreign policy rhetoric of Russia's presidents? This research tests a number of different explanations for Russia's aggressive behavior on the world stage over the past two decades, through a content analysis of the Russian President's speeches with a particular focus on aggressive anti-western rhetoric. The length of the speeches, and the proportion of the "anti-western" ("aggressive") sentences devoted to the international affairs was analyzed. The major finding is that the Russian president's political agenda correlates significantly with the dynamics of oil prices. By contrast, most of the traditional explanations (NATO expansion, presidential ratings) do not seem to explain this relationship. I conclude that Russian leadership's behavior on the international stage can be to a significant extent interpreted as a function of the current oil prices, in line with the literature on petrostates behavior: countries with a substantive share of their GDP coming from oil exports tend to become more aggressive and engage in international conflicts when oil prices rise sharply.

**Wayne Thornton**  
Political Science  
Harvard University

**Title:** Explaining Transformative Policy Innovation

**Abstract:** My research addresses the question, “What are the causal factors that determine why and when bureaucratic organizations undertake transformative policy innovation, and what factors contribute to ultimate success?” A secondary question is, “What explains the dramatic variation in innovation outcomes observed between nations, between government agencies within nations, and even within agencies themselves?”

I propose a model of transformative policy innovation. I first explain what is meant by “transformative innovation” and locate this particular phenomenon in a taxonomy that categorizes all types of change. I then propose a two-level model of government policy innovation and demonstrate its plausibility by explaining historical cases of innovation in military doctrine. I utilize the logic of necessary and sufficient conditions—expressed mathematically using Boolean algebra—to explain why and how policy innovation occurs. The model highlights interactions between policy-making organizations and the larger network of players and decision-makers that contribute to government decision making. I identify two innovation mechanisms—(1) “push up,” which is driven by bureaucratic initiative; and (2) “pull up,” which arises from a political initiative.

The “push up” mechanism focuses on bureaucratic institutions, and requires a combination of all of the following factors:

- a) The bureaucracy’s structural capacities to generate novel ideas AND to act to advance them. These capacities tend to be mutually destructive, and depend on the degrees of heterogeneity, inter-connectedness, and concentration of authority. Most organizations emphasize either generating novel ideas or advancing them, without recognizing that balancing these qualities (even if each is imperfect) makes the organization better able to innovate.
- b) A shared conception of the institution’s role that focuses on a purpose grander than a particular mission or technology
- c) A proximate threat to the institution’s perceived role

The “pull up” mechanism focuses on the political leadership, and requires a combination of all of the following factors:

- a) The government’s structural capacities to inform the decision process with novel ideas AND to advance novel ideas.
- b) A proximate threat to the leadership’s political power

By modeling a government as a network (which includes bureaucracies and political leadership), I offer a new perspective on policy innovation (as well as on governmental decision-making in general). I treat all types of governments as an institutionalized decision-making process and model institutional actors as nodes in a network. Each node is characterized by the degree to which it generates novel ideas and acts to advance them. The model combines these measures using Boolean algebra, resulting in a highly non-linear probabilistic algorithm that generates composite measures of the propensity to make informed decisions. I demonstrate the plausibility of the model by explaining historical cases of transformative innovation in military doctrine.

## **Ari Weil**

International Relations  
Pomona College

**Title:** Terrorist Micro-Celebrity: Online Personal Branding and Jihadist Activity

**Abstract:** There has always been tremendous consumer demand for celebrity, but with new media, the manifestation of celebrity has changed dramatically. This is as true for terrorist celebrities as for more conventional celebrities: shifts in culture and technology have driven changes in how terrorists present themselves. Thus, just as young people are becoming micro-celebrities online today by treating followers as fans, producing content consistent with a personal brand, and engaging in strategic interaction with devotees, so too are terrorists.

The traditional terrorist celebrity, such as Carlos the Jackal or Osama Bin Laden, was old media-dependent, just like a mainstream celebrity. Terrorists also created a type of martyr-celebrity by making suicide bombers famous in their local communities. Today, with the advent of social media and increased demand for new celebrities, terrorists have begun engaging in micro-celebrity practices and building celebrity online.

Two contemporary case studies are analyzed: Anwar al-Awlaki of Al Qaeda and a group of the Islamic State's foreign fighters who maintained prominent social media profiles and planned attacks online. The case studies are examined through content analysis of social media postings, personal chat transcripts, and mainstream media coverage of the individuals.

Following mainstream trends, these terrorist internet celebrities have built personal brands that target specific communities. Awlaki targeted English-speaking Muslims living in the West and IS foreign fighters often target young people in the fighter's countries of origin. Their online personas are created to be relatable and engaging to those specific audiences. Mainstream celebrity trends have bled into terrorist behavior. By creating brands and managing them through micro-celebrity practices, terrorists have effectively weaponized online celebrity, using it for recruitment and planning.

The poster summarizes findings from the case studies and addresses the implications for U.S. counterterrorism policy.