

MINERVA RESEARCH SUMMARIES & RESOURCES



FALL 2013

2013 Minerva Research Summaries

(last updated September 5, 2013)

	PI	Project Title	Pg #
Minerva Chairs	S. Aaronson	Impact of World Trade Organization membership on conflict and governance	3
	R. Bunker	Dark Globalization and Emerging Forms of Warfare	4
	N. Cigar	Demography and Insurgencies: A Post-Heroic Era for Guerrilla Warfare?	6
	L. Gerdes	Dynamic Network Models of Salafist-Motivated Terrorism in SE Asia	8
	M. Lair	History of Culture & Warfare	10
	C. Lee	The Chinese Communist Party's Economic Transitions via Organizational Reform	12
	J. McCausland	Conventional Arms Control, Contemporary Deterrence, and Stability in South Asia	14
	M. McFate	Cultural Knowledge and National Security	16
	M. Muhajir	Ethno-cultural and Political Interactive Research in Tanzania	18
	J. Nagl	The American Way of Irregular War	19
	D. Natali	Regional Energy Security: A Source of Conflict or Cooperation?	21
	S. Sewall	Civilian Protection and Contemporary Expectations of War	24
	P. Wang	China in Africa: Presence, Perspectives, and Prospects	27
Ongoing Minerva Research	S. Ali	Strategic Response to Energy-related Security Threats	28
	P. Barclay	Status, Manipulating Group Threats, & Conflict within & bw Groups	30
	A. Basuchoudhary	The Evolution of Revolution	32
	L. Bettencourt	Energy and Environmental Drivers of Stress and Conflict in Multi-scale Models of Human Social Behavior	33
	C. Buckley	People, Power and Conflict: The Emergence of the Eurasian Migration System	35
	T.M. Cheung	The Evolving Relationship between Technology and National Security in China: Innovation, Defense Transformation, and China's Place in the Global Technology Order	37
	N. Choucri	Explorations in Cyber International Relations	39
	H. Ellis	Understanding and strengthening Somali communities in resettlement	42
	T. Fazal	Strategies of Violence, Tools of Peace, and Changes in War Termination	44
	F. Gavin	Climate Change and African Political Stability	46
	J. Hancock	Modeling Discourse and Social Dynamics in Authoritarian Regimes	48
	J.C. Jenkins	Deciphering Civil Conflict in the Middle East	51
	A. Kruglanski	Motivation, Ideology and the Social Process in Radicalization	54
	D. Mares	Military Transformation and the Rise of Brazil	57
	D. Matsumoto	Emotion and Intergroup Relations	59

Ongoing Minerva Research

D. Meyer	Quantifying Structural Transformation in China	61
P. Potter	Terrorist Alliances: Causes, Dynamics, and Consequences	63
L. Pratson	A Global Value Chain Analysis of Food Security and Food Staples for Major Energy-Exporting Nations in the Middle East and North Africa	65
L. Spector	Iraq's Wars with the U.S. from the Iraqi Perspective: State Security, Weapons of Mass Destruction, Civil-Military Relations, Ethnic Conflict and Political Communication in Ba'athist Iraq	67
J. Shapiro	Terrorism, Governance, and Development	70
E. Steinfeld	China's Emerging Capabilities in Energy Tech Innovation & Devlpmt	77
J. Tir	Adapting to Water Scarcity: River Treaties and Militarized Int'l Conflict	79
L. Villalón	Political Reform, Socio-Religious Change, and Stability in the Afr. Sahel	81
M. Woodward	Finding Allies for the War of Words: Mapping the Diffusion and Influence of Counter-Radical Muslim Discourse	83
J. Wright	Autocratic Stability During Regime Crises	85

New Minerva Awards

N. Barma	Public Service Provision as Peace-building: How do Autonomous Efforts Compare to Internationally Aided Interventions?	86
K. Carley	Multi-Source Assessment of State Stability	88
J. Dobson	The Human Geography of Resilience and Change: Land Rights and Stability in Central American Indigenous Societies	90
E. Gartzke	Deterring Complex Threats: The Effects of Asymmetry, Interdependence, and Multipolarity on International Strategy	92
M. Gelfand	The Strength of Social Norms Across Cultures: Implications for Intercultural Conflict and Cooperation	93
T. Gerber	Homeownership and Societal Stability: Assessing Causal Effects in Central Eurasia	94
E. Gilmore	Forecasting Civil Conflict under Different Climate Change Scenarios	96
L. Hirschfeld	Dynamics of Sacred Values and Social Responsibilities in Governance and Conflict Management: The Interplay between Leaders, Devoted Actor Networks, General Populations, and Time	97
S. Hitlin	Moral Schemas, Cultural Conflict, and Socio-Political Action	100
M. Lieberman	Neural Bases of Persuasion and Social Influence in the U.S. and the ME	102
B. Prins	Political Reach, State Fragility, and the Incidence of Maritime Piracy: Explaining Piracy and Pirate Organizations, 1993-2015	103
M. Rasmussen	Who Does Not Become a Terrorist, and Why? Towards an Empirically Grounded Understanding of Individual Motivation in Terrorism	105
J. Walsh	Natural Resources and Armed Conflict	106
P. Winston	METANORM: A multidisciplinary approach to the analysis and evaluation of norms and models of governance for cyberspace	107

Social Science Resources for Academics and Policymakers	109
--	-----

Impact of World Trade Organization membership on conflict and governance

Susan Ariel Aaronson, saaronso@gwu.edu
Minerva Research Professor, National War College (2012–2013)
Home institution: George Washington University

This study (soon published by the Cambridge University Press; chapters have been or are published in *International Studies Quarterly*, *Journal of World Trade*, and *World Trade Review*) examines how membership in the World Trade Organization (WTO) affects interstate and intrastate conflict, governance, corruption, democratic rights, labor rights and women's rights. We use quantitative and qualitative evidence to examine how membership in the WTO affects policymaker behavior over time.

On the WTO and governance

The WTO governs trade and doesn't explicitly address governance. Yet some scholars, policymakers, and the WTO Secretariat argue that improved governance is a spillover of membership in the WTO. They believe governance improvements occur during the accession process. In this article, we use both qualitative and quantitative tools to examine whether and when the WTO may improve governance. We hypothesize that if countries anchor during accession, we would see significant improvements in governance in nations that had completed negotiations to accede, as well as brand new members. If countries anchored during membership, we should see gradual improvements in the performance on our metrics for new and longstanding members.

We found before they accede, countries make major changes to their laws, regulations and behavior related to a wide range of trade and trade related policies from tax and competition policies to health and safety standards. They are coached and closely monitored by a working party and the WTO Secretariat.

However, our quantitative analysis revealed a more complex story. Our data analysis provides some support for policy anchoring during accession and greater support for policy anchoring as a function of membership over time. However, our findings are preliminary because we included few controls and had a limited number of cases. We also note that there is no direct path or road map to improved governance. Nations take time to anchor to the WTO and occasionally nations may drift. Finally, the WTO cannot directly compel improved governance in the trade or domestic spheres. Nonetheless, without direct intent, the WTO is having some effects on governance. Policymakers should weigh these side effects when they judge the record of the WTO over time.

On WTO membership and intrastate conflict:

Scholars and policymakers have long believed that the interdependence encouraged by trade relations encourages trust and peaceful relations. Although the WTO is built on the notion that trade stimulates peace, policymakers really don't know how more or less trade affects the human rights conditions of citizens living in zones of conflict. Policymakers often try to reduce trade in such zones in the hopes that sanctioning trade will reduce conflict. Yet, at other times, policymakers try to encourage trade in conflict zones. We show that policymakers have used several avenues under the WTO to discuss and address human rights in member states experiencing conflict or in post-conflict recovery. We then focus on how policymakers can achieve greater coherence among trade and human rights policies in conflict zones.

Dark Globalization and Emerging Forms of Warfare

Robert J. Bunker, docbunker.warlord@gmail.com

Minerva Research Professor, U.S. Army War College Strategic Studies Institute (2012–)

Home institution: Claremont Graduate University

I have spent the last year focusing on the unintended and deviant effects of globalization in the strategic environment and also within more specific areas such as the emergence and evolution of violent non-state actors, dark forms of spirituality, the rise of illicit economies, the ongoing ‘criminal insurgencies’ in Mexico, and new insurgency forms.

Problem (as proposed for SSI monograph): Determine future insurgency forms, strategic implications of these new forms, and provide practical U.S. defense policy recommendations to respond to them.

Motivation:

The basic motivation of the violent non-state actors (VNSA) engaging in insurgency is to facilitate change in state governance/become the new dominant political authority. This is typically pre-meditated in nature, however, de facto forms of insurgency also are developing.

Research Methodology:

Historical (qualitative) approach with an analysis of pre-existing terrorism (as an I&W function) and insurgency typologies by leaders in these fields of study (Including those future of insurgency projections articulated by Dr. Steve Metz, SSI, in 1993). Determining common typology themes and anomalies and then drawing upon my own subject matter expertise for analysis, interpretation, and future insurgency forms projections.

Interim Results:

The creation of a typology based on legacy and contemporary insurgency forms—to explain where we have been and where we are—prior to projecting the emergence of new insurgency forms, their strategic implications, and how to respond to them.

Anticipated Outcomes:

Legacy forms appear to be Separatist, Anarchist, Maoist/Peoples, Soviet/Cold War; Contemporary forms appear to be Radical Islamist, Liberal Democratic, Criminal (commercial variant), Plutocratic (commercial variant/issue is present non-violent manifestation/corruption of the international system only); Projected forms appear to be Blood Cultist (spiritual variant), Cyborg/Spiritual Machine (spiritual variant/but long term projection), and Chinese Authoritarianism (containment blowback potential). Some responses recommendations will be universal and some specific to an insurgency form (or theme within, say, ‘commercial insurgencies’).

Publications through Minerva Research:

- RJB and Chris Flaherty. *Body Cavity Bombers: The New Martyrs. Terrorism Research Center Book*. Bloomington: iUniverse Book. (1st primary author with Chris Flaherty; 9 contributing authors). 2013.
- Robert Bunker and John Sullivan. *Studies in Gangs and Cartels*. London: Routledge. August 2013.
- *Mexican Cartel Essays and Notes: Strategic, Operational, and Tactical. Small Wars Journal—El Centro Anthology*. Primary Author. Small Wars Foundation. Bloomington: iUniverse, Inc., 2013.
- *Cartel Car Bombings in Mexico*. Carlisle, PA: Strategic Studies Institute, U.S. Army War College. (1st author with John P. Sullivan). Published July 2013.

- “Mexican Cartel Tactical Note #19: Sniper Rifle Use in Mexico.” *Small Wars Journal*. (1st author with Jacob Westerberg). 16 July 2013.
- *The Mexican Cartels*. Special issue of *Trends in Organized Crime* (Springer). Guest Editor. (Refereed Journal). Vol 16, Iss. 2. June 2013.
- “Mexican Cartel Tactical Note #18: Cartel Caltrop Use in Texas” *Small Wars Journal*. (1st author with Khirin A. Bunker). May 2013.
- “Mexican Cartel Strategic Note No. 14: Narcocantante (narco-singer) Assassinated in Mission, Texas.” *Small Wars Journal*. (2nd author with John P. Sullivan). 1 May 2013.
- “Mexican Cartel Tactical Note #17: Indications & Warnings (I&W) for Increasing Small Caliber Mortar Deployment.” *Small Wars Journal*. (2nd author with David A. Kuhn). 17 February 2013.
- “Santa Muerte: Inspired and Ritualistic Killings.” *FBI Law Enforcement Bulletin*. February 2013 (Part I, II & III).
- Mexican Cartel Tactical Note #16: Grenade Attack in Pharr, Texas Bar Containing Off-Duty Law Enforcement Officers. *Small Wars Journal*. 28 January 2013.
- “Op-Ed: The Need for a ‘Half-Pivot’ to the Americas.” Strategic Studies Institute, U.S. Army War College, website. January 2013.
- “Force Protection and Suicide Bombers: The Necessity For Two Types of Canadian Military Red Teams.” *Canadian Military Journal*. Vol. 12, No. 4. 2012: 35-43.

In progress/ awaiting publication:

- “Landpower and Violent Non-State Actors.” *US Army War College Quarterly*. In Progress.
- *Global Criminal and Sovereign Free Economies and the Demise of the Western Democracies: Dark Renaissance*. Routledge Advances in International Political Economy Series. Co-editor with Pamela L. Bunker. Twelve contributing scholars participating. In progress.
- “Violent Non-State Actors and Dark Magico-Religious Activities”. Special issue of *Journal for the Study of Radicalism* (Michigan State University Press). Guest Editor. (Refereed Journal). In progress.
- *New Insurgency Forms: Strategic Implications for U.S. Defense Policy*. Carlisle, PA: Strategic Studies Institute, U.S. Army War College. In progress.
- “Dimensional Bubbles and Future Army Warfighting.” Modified version will come out in 2014 in a book project.
- *Narco Armor: Improvised Armored Fighting Vehicles in Mexico*. Leavenworth, KS: Foreign Military Studies Office, U.S. Army Command and Staff College. (1st editor with Byron Ramirez). Accepted/Awaiting publication.
- *The Emergence of Feral and Criminal Cities: U.S. Military Implications in a Time of Austerity*. Land Warfare Paper. Arlington, VA: Institute of Land Warfare, Association of the United States Army. Accepted/Awaiting publication.

Demography and Insurgencies: A Post-Heroic Era for Guerrilla Warfare?

Norman Cigar, quanti548@hotmail.com
Minerva Chair, Marine Corps University (2010–2013)

Research Problem:

Ever since Edward Luttwak developed the concept of "post-heroic warfare" to describe the modern-day reluctance of societies to accept heavy casualties in war as a result of declining family size, debates and studies have sought to determine its validity and implications for foreign policy and conventional warfighting. Attention has been devoted almost exclusively to conventional war. This study asks the question whether this demographic concept also applies to insurgencies – that is, whether insurgencies and the characteristic guerrilla warfare will occur only in societies with large families and become increasingly improbable if family size is reduced. My thesis was that insurgencies are likely to be sustained only by a society where there are sufficient children to ensure family continuity and socio-economic safety nets for parents, as well as providing a military pre-condition for this type of warfare, as insurgencies traditionally require substantial reservoirs of manpower over a protracted period to operate in a harsh operational environment and the ability to absorb high casualties (including in the civilian sector where much of the insurgents' combat support infrastructure is lodged).

Methodology:

The project correlated databases of family size and fertility rates with the occurrence of significant insurgencies in the 20th-21st centuries, both on a national and sub-national basis, relying on population data and on an analysis of views expressed by insurgent leaders, local media, and public opinion to gauge the psychological, cultural, socio-economic, and military variables relevant to demography and insurgent warfare. The focus was not only on the quantitative aspect but also on attitudes and beliefs. A case study of the recent Palestinian resistance provided the main test bed for these concepts with greater concrete detail, including as perceived by the actors themselves. In addition there are mini case studies of Al-Qaida (as a global religiously-motivated insurgency), Central America, Vietnam, and Yugoslavia to serve as a comparative perspective over different cultures in order to assess whether this phenomenon transcends a specific culture. In particular, the case of the former Yugoslavia is significant because of the diachronic phenomenon, contrasting the high guerrilla activity during World War II (when traditional fertility patterns still applied) and during the wars of the 1990s (by which time zero or negative population growth had been reached for most ethnic communities). The Yugoslav case allowed for an examination of the phenomenon in the same national arena and the impact of social, economic, and demographic change (and especially family size) in the intervening span of two generations.

Outcomes of Research:

The results indicated a high degree of correlation between family size and the potential for a sustained insurgency and suggested that societies with reduced birthrates are less conducive to insurgencies. While not denying the real grief felt by individuals, a society with large family size appears better able to sustain an insurgency not only operationally, but also in psychological and economic terms. This factor appears to be a necessary, even if not sufficient, factor in waging insurgencies. Insurgent leaderships as promoters of large families in relation to armed resistance emerged as an important factor, whether the former Argentinian rebel leader Mario Firmenich proclaiming that "our children are our rear guard ... our present family ideal is 3 children. It must be 5," or Usama Bin Ladin's justification to his first wife for him to marry additional wives in order to provide fighters for the jihad. The Palestinian case confirmed in detail the relationship between fertility and the ability to prosecute a protracted insurgency, highlighted by a conscious policy by resistance leaders, the local media, literature, public opinion, and concrete social policies to encourage what is already one of the highest birth rates in the world with the express intent of

replacing losses and –as one Palestinian source expressed it– “giving birth to sons ... so that we will have a sufficient number of men to liberate our stolen Palestine.” Similarly, despite its religious outlook, Al-Qaida has also been pragmatic in recognizing this phenomenon, allowing exemptions for those sons where no male siblings are present to support their parents and expressing amazement when parents allow an only son to join the jihad, as well as encouraging large families. Preliminary results from Central America and Vietnam confirm both the need for large families to absorb the losses from an insurgency and a greater readiness to commit when family size is large. The Yugoslav case highlighted the change between the situation during World War II (with traditional fertility patterns) and the 1990s, when most communities avoided establishing guerrilla movements, consciously voicing an awareness of the impact of the change in demographics, or, when scattered attempts were made, found these to be abysmal failures and abandoned them immediately. The only exception was that of the Albanians in Kosovo, where traditional fertility patterns had continued. The validity of the results thus appears to transcend specific cultural zones. The “tipping point” in family size may vary to some extent, depending on a specific society, but appears to be at slightly above replacement level.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The results of this study provide the basis to develop an additional tool for forecasting the likelihood and sustainability of an insurgency in a given society, and may facilitate the weighting of planning efforts as well as providing a reference for further studies on social and economic development policies that would promote social and demographic change that would affect the relationship between demography and guerrilla warfare.

Publication through Minerva research:

- 2014 *Al-Qaida and the Arab Spring: Reacting to Surprise and Adapting to Change* (accepted for publication: Hurst and Oxford University Press/USA)
- 2013 *Heading Toward a Nuclear Gulf? Saudi Thinking on Nuclear Weapons* (on press, USAF Counterproliferation Center, Maxwell AFB, Alabama)
- 2013 “The Arab Spring, Socio-Economic Dynamics, and Al-Qaida’s Strategy: The Missing Link?” *Journal of South Asian and Middle Eastern Studies*, Spring, xxxvi, 3, 1-23
- 2013 “Did Iraq Expect a Nuclear Desert Storm?” *War in History* (accepted)
- 2013 “Al-Qaida’s Strategic Decisionmaking: 9/11 and the ‘Trap’ Theory Revisited” (draft complete)
- 2012 *Libya’s Nuclear Disarmament: Lessons and Implications for Nuclear Proliferation*, Quantico, VA, Middle East Studies
- 2012 “Al-Qaida’s Theater Strategy: Waging a World War,” in *Al-Qaida After Ten Years of War: A Global Perspective of Successes, Failures, and Prospects*, Quantico, VA, Marine Corps University Press, 35-54
- 2011 *Al-Qaida, the Tribes, and the Government. Lessons and Prospects for Iraq’s Unstable Triangle*, Quantico, VA, Marine Corps University Press
- 2011 “Tribes, Society and the State in Saudi Arabia: Change and Continuity and the Implications for Security and Stability,” *The Maghreb Review*, 36: 3-4, 211-263
- 2011 *Saddam’s Nuclear Vision: An Atomic Shield and Sword for Conquest*, Quantico, VA, Marine Corps University Press

Dynamic Network Models of Salafist-Motivated Terrorism in Southeast Asia

Luke Gerdes, Luke.Gerdes@usma.edu
Minerva Fellow, U.S. Military Academy at West Point (2012–)

Knowledge dissemination among extremists

As part of this effort, we built an original dataset that examines the extent/timing/nature of agent-level participation in kidnapping-teams by members of the Abu Syyaf Group, which operates in-and-around the Southern Philippines. This data demonstrates that current data-collection methods, which focus their information-acquisition strategy at the organizational level rather than the individual level, produce questionable results that negatively bias the scholarly community's understanding of extremism. I also used this new dataset to measure the amount of specialized knowledge that senior members of ASG distribute to junior members of the organization, and then I built a simulation that allowed me to test whether or not this observed pattern was random or meaningful. Thus, in the most general terms, this analysis combined network analysis and simulation. At present, the paper that resulted from this project is under consideration by *Terrorism and Political Violence*, a peer-reviewed journal. If (and hopefully when) the paper is accepted, the data is also ready for public release.

Data transformation strategies for dark networks

I've designed an original algorithm that maintains probabilistic relationship-strengths while transforming data from two modes (e.g. agent x event) to one mode (agent x agent). This task is important b/c most standard network analysis measures only work on agent x agent data, and the transformation processes typically used in the study of dark networks obliterate any information on tie-strength. Thus, standard processes have significant potential to produce inaccurate results, and when applied to the study of extremist networks, these processes can lead analysts to draw incorrect conclusions about which actors are most important to the structure and function of the network. At present, this inquiry is about 85 percent complete. I've built test networks. I've transformed them using both the standard approaches to data transformation and my approach. I've measured centrality in each of the resulting networks. I'm in the process of conducting statistical evaluations of the extent of differences between these networks. I anticipate that the paper will be completed and submitted for consideration (likely to *Connections*) by the end of February. Also, this topic has recently been accepted for presentation at the 2013 annual meeting of the International Network for Social Network Analysis.

Assessing the role of Asian extremist ideologies in attacks on domestic U.S. military installations

I've begun a detailed case-based inquiry that assesses the extent and nature of connections between Asian-based extremist groups, including al-Qaida and AQAP, and the individuals who have conducted plots and attacks against military installations and military personnel located within the United States. The projected output is a monograph-length narrative. This project is the least mature of the three, and is only about 20 to 25 percent complete. I anticipate it will be finished by the end of the calendar year, and I believe that it may be well-suited to publication through one of the monograph series published by the U.S. Army War College.

Moving forward: In the next year, I plan to address the following research concerns:

An extension of the Philippines data. This may allow us to test the predictive capacity of open-source data on extremism: How well do open-source accounts predict the location of agents' death/capture? This assessment may aid in narrowing the geographic scope of searches targeting at specific extremists.

Moreover, if the data is expanded to include ASG's other operations beyond kidnapping, it may allow us to measure the organization's formal structure.

Warlord networks. The organizational characteristics of warlord networks are poorly understood. Existing social/historical theory argues that a single individual, the Warlord, is uniquely central to the function of warlord groups, but this assumption has not been rigorously tested. No one actually knows how information flows through these networks. Alongside Dr. Charles Thomas (D/History), I plan to use truth and reconciliation commission documents in order to build two-mode networks of agents and events. In turn, these networks will be transformed to infer agent x agent structural patterns w/in warlord groups. Due to issues of access and data availability, the initial iteration of the project will focus on warlord groups in Sierra Leone and Liberia, but we hope to extend the project to Asian organizations, e.g. those operating in Burma and the Southern Philippines, in subsequent research years.

Assessments of Jihadists in Indonesia. We plan to look at the extent to which family relationships and known friendship ties overlap w/ the operational networks of Indonesian Jihadists. The project is dependent on data from the International Center for Political Violence and Terrorism Research in Singapore. Unfortunately, the organization has proved an imperfect research partner, and has been slow to deliver on promised cooperation. If this project comes to fruition, it will make use of network methods to conduct formal comparisons.

Sharable data resources to be generated:

See “*Dynamic Network Models of Salafist-Motivated Terrorism in Southeast Asia*” on page 118.

History of Culture & Warfare

Meredith Lair, lair@usna.edu

Minerva Research Professor, US Naval Academy (2013–)

Home institution: George Mason University

Research Problem:

The Naval Academy's Minerva Research Fellowship is concerned with the impact of culture upon war, historically speaking, a topic very much intertwined with the impact of war upon culture. My research bridges the two, examining cultural forces like consumerism within the context of warfare in order to understand not just how warfare facilitates the consumption of products and services, not to mention the intensification of consumerism itself, but also how consumerism eases the discomfort associated with deployment while facilitating the public's support for war.

More particularly, my current book project will examine the role Vietnam veterans played in creating the conditions necessary for public support of the Global War on Terror and the embrace of a military culture that has permanently upended Americans' centuries-old concern about standing armies. Tentatively titled *The [In]Visible Soldier: Vietnam Veteran Activism and the Militarization of America*, the book will examine Vietnam veterans' quest for political recognition and compensation by publicly projecting their private suffering. This process sensitized the public to veterans' social ills to such an extent that the United States now has a two-tiered social safety net—one for civilians, and another for soldiers, veterans, and the families who send them off to war. At the same time, veterans helped to reshape the narrative of the Vietnam War itself: what was once a cautionary tale about the overreach of American power has become the ennobling "Lost Cause" of the twentieth century.

Methodology:

This book will have three parts. First, "The Homecoming" is a critical exploration of the immediate experience of the soldiers' return from Vietnam. How did the public receive veterans when they returned? Were veterans spat upon, literally or figuratively, as conventional wisdom holds? Or did they enjoy levels of support commensurate with that of soldiers returning from earlier wars? Second, "From Citizen Soldier to Professional Veteran" will examine Vietnam veterans' activism, to end the war in its waning days but also for social recognition and government benefits in the 1970s and '80s. Third, "You Are Not Forgotten" will examine the role of the Vietnam War's dark tourism in shaping and reshaping public perceptions of Vietnam veterans and the Vietnam War itself. The idea that Vietnam veterans were abandoned (forgotten) by their government and countrymen inspired veterans around the country to create small museums dedicated to preserving their stories and highlighting their suffering. These facilities played an important role in establishing veterans as public figures and historical authorities within their communities.

Research for this project will also unfold in three parts. First, I will examine published works on Vietnam veterans' transition back to life in the United States, including studies of the 1960s/70s "GI Movement" and a robust, self-help, prescriptive literature that emerged in the mid-1970s. This literature was ostensibly designed to promote veterans' healing, but its also encouraged them to take political action. Second, I will scour oral histories in the Library of Congress' Veterans History Project and the Vietnam Center and Archive at Texas Tech University for discussions of veterans' homecoming and readjustment experiences. Third, I will make site visits to three privately owned regional museums: the Forgotten Warriors Museum in Cape May, New Jersey; the Museum of the Forgotten Warriors in Marysville, California; and the National Veterans Art Museum in Chicago, whose collection is primarily focused on

the art of Vietnam veterans as it relates to their military service. During these visits, I will document the collections and interview curators about the genesis of the museums and their evolution over time.

Anticipated Outcomes of Research:

My Minerva Research Fellowship will result in a few deliverables, some short-term, others long-term. I am working on a conference paper for an international conference on "The Camera and the Cold War" (Guatemala City, 2014) that will extend earlier research into US soldiers' reliance on photography to document and filter their wartime experiences in Vietnam. This conference paper will then be packaged for publication as an article. I am also developing a course for midshipmen at the Naval Academy, to be taught in spring 2014, on the history of veterans since the Civil War. Part of the mission of the Naval Academy's Minerva Chair program is to facilitate collaboration with Naval Academy faculty, so I am also hoping to develop an edited volume of original essays on war and culture. Lastly, the Minerva Research Fellowship will be essential to publication of my second book in the next three years.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

While most Minerva research is concerned with non-US cultures and how the United States might better understand them in order to project power abroad, my research is focused inward, on American culture itself, particularly the relationship between the military and civil society. In the years to come, veterans will comprise a significant percentage of the US population, so understanding their needs, their impact on public opinion and national identity, and how American military personnel are perceived around the world is vital to constructing effective policies related both to veterans affairs and national defense.

The Chinese Communist Party's Economic Transitions via Organizational Reform

Charlotte Lee, clee@hamilton.edu
Minerva Chair, US Air Force Academy (2012 —)
Home institution: Hamilton College

Research Question

How does a ruling party maintain the relevance of its political organizations in the midst of a transition to a global market economy? My project considers organizational changes taking place within contemporary China's ruling communist party to understand how the party has adapted to economic and social reforms while maintaining its hold on political authority. Specifically, this project seeks to account for the party's renewed emphasis on an understudied but core set of party organizations: a national network of party-managed training schools, also known as "party schools."

Methodology:

I employ a mixed methods approach that combines findings from fieldwork, analysis of survey data, and content analysis of documentary sources.

My case study of China's party school system draws on field visits that I conducted from the central to grassroots levels, in coastal and inland provinces, including over 200 interviews with party and government officials (from 2005 to 2011).

In addition to qualitative fieldwork, I draw on nationally representative survey data to determine patterns in the career paths of Chinese officials and test whether attending a training class at a party school constitutes a channel for selection to higher office. To control for selection bias, I employ a matching method on survey data to analyze a national sample of individuals on an administrative and/or political career track. I also present corroborating results drawn from a separate, original dataset of the career histories of Central Party School trainees.

To map changes in party school training content over time and across schools, I compiled an original dataset comprising over 100 syllabi from central and local party schools. Content analysis of these syllabi reveals a gradual de-emphasis on orthodox party theory and a heightened focus on modern management skills across training programs.

Initial Results:

First, I have found that party schools enable party authorities to exert control over the knowledge, skills, and careers of central and local officials. These schools are sites for screening talent and identifying bureaucrats with promotion potential.

This control coexists with important organizational reforms. In recent decades, this school system has undergone market-based reforms. These have generated new incentives for schools to update training content and become more entrepreneurial. In the search for revenue and status, party schools now compete and collaborate with domestic and international actors. These findings have several implications for understanding the building of party and state capacity in reforming China. They uncover the party's continued control over China's critical policymaking class as well as how the party has invested in updating the skills of this critical group. Importantly, findings illuminate how market mechanisms now motivate political organizations of China's ruling party, which in turn contribute to China's adaptiveness and global rise.

Anticipated Outcomes of Research:

This project draws attention to dynamic, organization-level changes taking place in China's complex political structure. It points to the cumulative effect of decades of incremental change on organizations often overlooked but critical for the overall resilience of the CCP.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

By understanding the organizations which shape generations of Chinese leadership, who are in turn the key decisionmakers for Chinese defense policy, this research project serves to highlight new areas of research for understanding China.

Research activities planned for AY 2013-2014 (if renewal planned):

- Continue revisions to book manuscript and submit prospectus to university presses
- Revise journal-length manuscripts on 1) adaptive capacity in the Chinese Communist Party and 2) reforms in the training and education of political elites in China
- Begin research on "indigenous innovation" in China through a case study of its hybrid rice program

Sharable data resources to be generated:

See "*The Chinese Communist Party's Economic Transitions via Organizational Reform*" on page 120.

- Chinese Communist Party party school training syllabi, 1983-2011
- Chinese Communist Party Central Party School alumni career histories, 2001 and 1995 classes

Conventional Arms Control, Contemporary Deterrence, and Stability in South Asia

Jeffrey D. McCausland, mccauslj@comcast.net

Minerva Chair, US Army War College Strategic Studies Institute (2010—)

Research Thrust #1:

What is the current role for conventional arms control as a means to maintain European security? Can the ongoing crisis surrounding the Treaty on Conventional Armed Forces in Europe (CFE) be solved to the satisfaction of all signatories? Could its resolution present opportunities to deal with the question of tactical nuclear weapons in Europe?

Methodology:

My research for this project will include the following efforts:

- Ongoing literature review.
- Close contact with the Offices of Under Secretary of State for Arms Control and Under Secretary of Defense for Policy.
- Meetings with security experts and MOD/MFA officials in both London and Berlin.
- Future lecture and discussions at the George C. Marshall Center, Germany, Geneva Center, Royal United Services Institute, State Dept, CSIS, Brookings, etc.
- Possible presentation to the North Atlantic Council (NAC), NATO, Brussels, Belgium.

Initial Results:

I have completed an initial draft that I am continuing to refine.

Anticipated Outcomes of Research:

I plan to complete a monograph length paper that will be published by the Strategic Studies Institute, US Army War College.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

I have been asked to continue to inform both the office of the Undersecretary of State for Arms Control as well as the Director for Conventional Arms Control in the Office of the Undersecretary of Defense for Policy.

Research Thrust #2:

What is the role of “deterrence” as an element of 21st century American national security strategy? Does strategic thinking/analysis from the Cold War still apply? How is “deterrence” affected by emerging challenges such as terrorism and cyber threats? How do strategic analysts in other major countries view contemporary thinking on “deterrence”?

Methodology:

My research for this project will include the following efforts:

- Initial and ongoing literature review.
- Ongoing discussions with experts in the field at major academic institutions and research institutes in the United States and abroad.
- Invited to serve as a visiting scholar at the Australian National University for continued interviews and research on the question of deterrence and rebalancing of American forces to Asia.

Initial Results:

Completed chapter on extended deterrence in Asia and US strategy for book entitled, *US-Alliance Strategy and the Geopolitics of Southeast Asia*, sponsored by Australian National University.

Anticipated Outcomes of Research:

Series of lectures on deterrence and the impact of the rebalancing of American forces to the Pacific as well as emerging challenges such as terrorism and cyber-warfare.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Deterrence remains a major aspect of American national security strategy. As the United States faces emerging threats such as cyber-warfare and terrorism it is important to consider how deterrence can contribute in future. This will also be critical due to the ongoing rebalancing of American military power to Asia, the emergence of China as a global power, and the continuing threat posed by North Korea.

Research Thrust #3:

What is the role of nuclear weapons in South Asian stability? How does the acquisition of “tactical nuclear weapons” by Pakistan affect stability in South Asia particularly during crises?

Methodology:

My research for this project will include the following efforts:

- Initial and ongoing literature review.
- Participate in Track 2 discussions on Pakistani nuclear program with senior Pakistanis hosted by DOE.
- Briefings and discussions with members of the inter-agency as well as leading experts at academic institutions, research institutes, etc.

Initial Results:

Completion of initial paper that has been circulated to experts for review.

Anticipated Outcomes of Research:

Final paper to be provided to the inter-agency and potentially for publication. I have also been asked by the Department of Energy to assist in the planning of two future Track 2 seminars on this topic.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The impending departure of American forces from Afghanistan at the end of 2014 will potentially cause increased stress on stability in South Asia. The growth of the Pakistan nuclear arsenal and their decision to develop/deploy tactical nuclear weapons will also have a significant impact on deterrence in the region, crisis stability, and proliferation. These are issues are all critical to American national security.

Cultural Knowledge and National Security

Montgomery McFate, montgomery.mcfate@usnwc.edu
Minerva Chair, Naval War College (2011—)

Project #1 (*in progress*)

My manuscript *Military Anthropology* explores the nexus – both historic and current – of sociocultural knowledge and the military enterprise. The basic research question is: what can we learn from the life experience and intellectual legacies of a number of social scientists who contributed directly to military operations? How can we apply those lessons to current strategic and operational issues? This book tracks the Joint Professional Military Education (JPME) curriculum, and each chapter is grouped around a particular concept such as, military leadership, information operations, strategic objectives, and so on. I have thus far completed five chapters, with additional chapters planned on irregular warfare, insurgency, counterinsurgency and intelligence.

Project #2 (*complete*)

Human Terrain System Lessons Learned is an edited book that illuminates some of the actual research experiences of social scientists who conducted research in Iraq and Afghanistan for the US and ISAF forces. In addition to co-editing the book and co-authoring the introduction, I also contributed a chapter for the book, “Mind the Gap: Bridging the Academic/Military Divide”.

Methodologies:

The methodology for Project #1 is primary historical and archival. The methodology for Project #2 was field research with deployed military units in Iraq and Afghanistan; personal experience in program management; and historical/archival.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The impact of Project #1 is improved understanding about the successes and failures of the Army’s Human Terrain System (which the author helped to establish), which has been to date the largest single investment the US government has made in the social sciences. The experiences of the author and of the individual social scientists who served in Iraq and Afghanistan with US military units illuminate a number of issues that are of current, on-going concern and that should be considered in the future for similar military social science programs at the operation level, such as integration with supported units, team dynamics, bureaucratic structure, etc.

Project #2 when complete will provide a compendium of essays on a related theme (culture and military operations) that was designed with JPME in mind and that could in theory be assigned in any staff college or war college course, and which would meet the OPMEP guidance for including ‘culture’ in the JPME curriculum.

Minerva research publications:

Unveiling the Human Terrain System (with Janice H. Laurence) in *Social Science Goes to War: the Human Terrain System in Iraq and Afghanistan*, eds. Montgomery McFate and Janice Laurence, Oxford: Oxford University Press, 2014 (under contract) (45 pages double spaced)

Mind the Gap: Bridging the Military/Academic Divide in *Social Science Goes to War: the Human Terrain System in Iraq and Afghanistan*, eds. Montgomery McFate and Janice Laurence, Oxford: Oxford University Press, 2014 (under contract) (95 pages double spaced)

Social Science Goes to War: the Human Terrain System in Iraq and Afghanistan, eds. Montgomery McFate and Janice Laurence, Oxford: Oxford University Press, 2014 (under contract)

What Do Commanders Really Want to Know? US Army Human Terrain System Lessons Learned from Iraq and Afghanistan (with Robert Holliday and Britt Damon), in *The Handbook of Military Psychology*, ed. Janice Laurence and Michael Matthews. Oxford: Oxford University Press, 2012, pp. 92-113.

Reflections on the First Four Years of the Human Terrain System (with Steve Fondacaro), *PRISM Journal*, vol. 2, no. 4, National Defense University, September 2011, pp. 63-82.

Ethno-cultural and Political Interactive Research in Tanzania

Makame Muhajir, Makame.Muhajir@usma.edu
Minerva Chair, U.S. Military Academy at West Point (2012-2013)

This research project began in June 2012. The overall objectives of this research project aims at evaluating population topologies and their characteristics in the two selected major Tanzanian cities of Zanzibar and Dar es Salaam and then study the characteristics of a sampled Tanzanian diaspora community and its assimilation trajectories in Seattle, U.S. The major reason for this comparative approach is to improve the in-depth analysis of these two Tanzanian cities' demographic and cultural inter-relations, and then to show their differing community influences in Seattle's cultural environment through fieldwork research. However, this summer 2012 fieldwork to Tanzania, by me and Kristine Ringler, my research associate, was postponed, among other reasons, to refrain from the on-going debate on constitutional reform in Tanzania that simultaneously took place at that time, with planning for the just conducted 2012-population census in the country.

The on-going project activities are revised from the original plan with one purpose: to pursue this research in a secondary manner without losing its original focus based on the available literature, population data, and media analysis of the prevailing political, religious and ethno-cultural environments in Tanzania. Through online survey of public resources and their outlined demographic trajectories, the recorded public opinion for July-September 2012 have been outlined with their population topologies and media resource analysis mapped for the project. Similarly, the project's seminar components running from this fall 2012 and spring 2013 began in significant spirit. The project is part of the larger Minerva's *Social, Spatial and Cultural Topologies of African Villages* Project at USMA. The overall research goal is to contribute to on-going contemporary debate on national ethno-cultural and political priorities, favoring no particular religious or ethnic composition, while answering the need for demographic data gathering for planning and other national security purposes.

Papers

1. "Wiped from the Map of the World: Zanzibar and Critical Geopolitics" (With Prof. Garth Myers), under review, *Geopolitics*, November 2012.
2. "Nationalization in Practice: Comparative Research in Ethnicity, Religion, and Society in Post-colonial Tanzania", in completion, for *2013 AAG Conference* presentation and for submission to *Parameters*, April 2013.
3. "Collaborative Planning Rhetoric and Political Reality in Zanzibar, Tanzania" (in preparation) to *Planning Perspective*, spring 2013 submission.

Book Chapter

1. *The Afterlife of the Lanchester Plan: Zanzibar as the Garden City of Tomorrow*, in Liora Bigon, editor, "Diffusion of Urban Ideas: Garden Cities and Colonial Planning Cultures in Africa and Palestine" A Joint Book Chapter by Makame Muhajir and Garth Myers, Manchester University Press, September 2012.

The American Way of Irregular War

John Nagl

Minerva Research Professor, U.S. Naval Academy (2012-2013)

Current position: Headmaster, The Haverford School

Research Question: How can we reconcile American strategic culture and limited war?

A “way of war” refers to how countries, leaders, and military officers, particularly its most elite members, think about and conduct war. It has a determinative influence on the processes of planning, budgeting, and doctrinal development – in short, the entire conceptual apparatus underpinning a national military strategy. American political and military leaders came to understand war as distinct from diplomacy and other forms of bargaining instead of being a more violent form of negotiation, as in the Clausewitzian tradition.

However, not all wars are susceptible to the understanding preferred by the American political-military elite. This collaborative study addresses one of the most enduring problems of modern American military history: the place of small or irregular wars in the American military tradition. Large-scale conventional warfare focuses on destroying by any and all available means the enemy’s will or ability to resist, including attacks on civilian populations or the economic and social infrastructure that supports them. Small or irregular or limited wars (or “strange wars,” as Stephen Rosen once described them) are more diffuse and non-specific, and are less amenable to the traditional American way of war.

If history is a guide, the American military must embrace this tradition in an effort to prepare for the wars of the present and of the future.

Research on this topic will be included in the edited volume *The American Way of Irregular War*, 2014 (anticipated); its table of contents will be as follows:

<i>Chapter</i>	<i>Topic</i>	<i>Author</i>	<i>Institution</i>
Ch. 1	Introduction	John Nagl, Marcus Jones	US Naval Academy
Ch. 2	Prelude to America	John Hall	University of Wisconsin
Ch. 3	Revolutionary War	C.C. Felker	US Naval Academy
Ch. 4	Indian Wars	Sam Watson	US Military Academy
Ch. 5	Civil War/ Reconstruction	Wayne Hsieh	US Naval Academy
Ch. 6	Philippines	Mark Belson	US Naval Academy
Ch. 7	Banana Wars	Frank Hoffman	National Defense University
Ch. 8	Mao	Miles Yu	US Naval Academy
Ch. 9	Vietnam	John Nagl	US Naval Academy
Ch. 10	Post – Vietnam	Conrad Crane	US Army War College
Ch. 11	El Salvador	Kalev Sepp	Naval Postgraduate School
Ch. 12	Iraq	Peter Mansoor	Ohio State University
Ch. 13	Afghanistan	Carter Malkasian	State Department
Ch. 14	Conclusion	John Nagl, Marcus Jones	US Naval Academy

Minerva research publications:

- *The American Way of Irregular War*, with Marcus Jones. 2014.
- “Culture and War” (Chapter for edited book by Montgomery McFate and Janice Laurence), with Wayne Hsieh. 2014.
- “NATO Learns Counterinsurgency in Afghanistan” (Chapter for edited book by Gale Mattox). 2014.

Other writings and publications during Minerva term:

- [“Coin is Not Dead”](#), *Small Wars Journal*, February 6, 2012.
- [“In the Aftermath: Ten Years of War and Change.”](#) *USO On Patrol*, February 8, 2012.
- [“Does Military Service Still Matter for the Presidency?”](#) *The Washington Post*, May 25, 2012.
- [“The Age of Unsatisfying Wars”](#), *The New York Times*, June 6, 2012.
- [Review](#) of Hew Strachan, *The Changing Character of War. Parameters*, Summer 2012.
- [Foreword](#) to Alain Cohen, *Galula* (Westport, CT: Praeger, August 2012).
- Review of Josh Welle, *In the Shadow of Greatness. Proceedings*, September 2012.
- [“Not Losing in Afghanistan”](#), *The Washington Post*, October 19, 2012.
- With Matt Irvine. [“A Long War in the Shadows”](#). *Armed Forces Journal*, October 2012.
- [“U.S. Is Not Losing in Afghanistan”](#), *Dallas Morning News*, October 26, 2012.
- Review of Tom Ricks, [“The Generals,”](#) *USNI Proceedings*, November 8, 2012.
- Review of Max Boot, “Invisible Armies”, *Wall Street Journal*, January 21, 2013
- [“In Era of Small Wars, US Army Must Embrace Training Missions”](#), *World Politics Review*, February 5, 2013.
- [“What America Learned in Iraq”](#), *The New York Times*, March 19, 2013.
- Foreword to Carter Malkasian, *War Comes to Garmser* (Oxford: Oxford University Press, 2013).

Regional Energy Security: A Source of Conflict or Cooperation?

Denise Natali, denise.natali@ndu.edu

Minerva Chair, Institute for National Strategic Studies, National Defense University

The purpose of this research project is to examine the role of hydrocarbons in encouraging conflict and cooperation between and within states. It seeks to better understand the nexus between energy and politics at the domestic, regional and international levels, focusing on the extent to which states and non-state actors attempt to use energy resources to leverage their political interests, nationalist agendas, and regional relations. The analysis will compare energy sector development in “new” hydrocarbons state and regions; the Kurdistan Region of post-Saddam Iraq, the East Mediterranean Basin, and the Caspian Basin, and the ways in which hydrocarbons discoveries, exploitation and production have encouraged new forms of negotiation and tensions within and between states over revenues, resources, and boundaries. Rather than assume that the economic logic of the market will supersede political constraints, or that political rivalries are so firmly entrenched that they cannot be penetrated by energy-driven wealth and development, this project will determine the conditions under which hydrocarbons can help mitigate or exacerbate existing rivalries, and the implications for U.S. energy and regional security policy moving forward.

Research Problem:

Studies have cited different variants of the “resource curse” to support or dispute the claim that hydrocarbon resources have deleterious effects on political systems. Other analyses over-determine the influence of energy resources by linking the presence of large hydrocarbons reserves to ‘peace pipelines’ and ‘win-win’ scenarios for producing and consuming states. In these scenarios, the economic logic of the market is assumed to circumvent political constraints, leading to positive outcomes that involve negotiated settlements, expanded and diversified energy supplies, and new alliance structures based on shared economic interests. Yet the link between the presence of energy resources and political outcomes remains unclear. Just as energy wealth can be conducive to cooperation between state and non-state actors it can also stir or aggravate existing tensions over control of revenues, land and resources. The role of hydrocarbons in shaping political relations and outcomes becomes more complicated when examining “new” hydrocarbons states and regions – territories and populations that previously did not rely on energy resources as a source of national wealth, but since making significant discoveries and exploitation, have become new players in the regional energy markets. How can these generally small and isolated regions exploit and leverage their energy wealth, what are the opportunities and constraints, and what are the implications for regional relations, domestic politics, and regional and international energy markets?

Methodology:

This project will examine these issues through comparative case study analysis. Each detailed case (Iraq, East Mediterranean Basin, and Caspian Basin) will assess the economy, regime type, domestic political challenges and regional relations of each “new” hydrocarbons state or region before significant energy resources were discovered and exploited. It will then assess the nature and level of hydrocarbons resources, how state elites attempt to leverage their new energy resources (operationalized by the policies, energy development plans, and political discourses, and the actions and reactions of domestic and regional stakeholders to these developments and trends over time. Particular attention will be given to the nature of new energy states; geography, actual or estimated energy reserves, energy revenues as a percentage of GNP, and regime type. Attention also will be given to key junctures in the nature of the state during and after energy exploitation and production, including shifts in global energy markets and regional geopolitical trends. Part of this research will be comprised of a series of regional energy politics and energy security conferences sponsored at NDU that bring in practitioners, policy-makers and experts

from the region to discuss and debate these issues so that that comparisons can be made and potential solutions identified.

Initial Results:

Initial findings indicate that 1) political history and regime type matters in determining potential for cooperative agreements. New energy states that are emerging from post-authoritarian pasts and transitioning to democracy will be constrained by existing power and resource sharing tensions and unlikely to engage in or institutionalize revenue-sharing and decentralized hydrocarbons laws and agreements. These tensions will not necessarily lessen with the prospects of shared energy wealth unless key political decisions of power, revenue and resource sharing are clarified first. Also, where institutional capacities are weak and power distribution is contested, federal or con-federal systems in energy states can create new contestations over resources and revenues between state and society, and across borders. As former authoritarian regimes attempt to democratize (or are pressed by societies to engage in political opening) while developing their hydrocarbons wealth, new sources of conflict will likely emerge at the domestic and regional levels, impeding energy sector development potential.

2) Where boundaries of water and land are disputed, where state authority is contested, and where the regional balance of power has been challenged, new sources of instability and conflict are likely to arise or become exacerbated if one actor exploits energy in disputed territories, 3) where energy potential and its development is perceived to alter the balance of power within states or across regions, energy can become a source of tension and its development potential will likely be frustrated, and 4) the role of third party actors such as International Oil Companies (IOCs) and National Oil Companies (NOCs) can undermine the potential for dispute resolution between states over claims to disputed resources and boundaries, particularly when they seek to exploit energy resources in disputed areas. Small states can also seek to use IOCs to leverage their energy resources regionally and globally, advance their national interests and leverage domestic and regional actors.

Anticipated Outcomes of Research:

In addition to my own ongoing research, I plan to conduct two conferences each year that bring together regional and energy experts to address key issues and questions on this topic: What are the opportunities and challenges for energy sector development, what is the impact on domestic political and regional relations, and what are the implications for U.S. energy security and defense policies in the region? From each conference I will generate an event report that will be disseminated to the U.S. government, policy-making community. Finally, I will publish these research findings in policy-oriented journals and a final report, as well as make them available through external briefings. My end product is a book manuscript, planned for completion in 2014-2015.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

This analysis has implications for U.S. energy security, foreign and defense policies. The interplay of exploiting hydrocarbons potential, regime transition, and territorial and power disputes not only exacerbates existing tensions within and between states that can disrupt markets and energy supplies, but creates new conflicts that can further undermine regional stability. By examining these issues and relationships in detail, this project will identify emergent threats and actionable solutions to regional stability in key energy-rich and volatile regions and their impact on strategic decision-making.

Publications through this Minerva research:

- “Pipeline Politics in Iraq”, *Pipeline and Gas Journal Fall 2013 (forthcoming)*.

- “Kurdistan Region of Iraq: Stabilizer or Spoiler?” 2013, *Georgetown Journal of International Affairs*, Vol. 14, No. 271-79.
- Articles in *al-Monitor* on energy sector conflict in Iraq and the impact on regional relations.
- INSS Event Reports disseminated to USG (OSD) to include:
 - INSS Event Report, “Energy Politics and Future Prospects in Iraq” (July, 2011);
 - INSS Event Report, “Can Federalism Work in Iraq?” (October 21, 2011);
 - INSS Event Report, “Energy Trends and Political Challenges in the Gulf States” (January 2012);
 - “Wild Cards in a Post Assad Syria” for policy roundtable on “Aftershocks of the Arab Spring” (January 2012);
 - INSS Trip Report: “Middle East and North Africa Energy 2012: Investing for the Future in Turbulent Times”, Chatham House, London (February 2012);
 - INSS Trip Report, “Oil Politics in Iraq and the Region”, report on Track II Middle East Security and Cooperation Conference, Prague, Czech Republic (March 2012);
 - INSS Event Report: “Iraq’s Energy Ambitions and Regional Relations” (April, 2012);
 - INSS Event Report: “The East Mediterranean Basin: A Third Energy Corridor?” (July 2012);
 - INSS Trip Report, “Regional Politics, Security issues, and Energy Prospects in the East Mediterranean Basin and Iraq”, report on Track II Middle East Security and Cooperation Conference in Prague, Czech Republic. (September 2012);
 - INSS Event Report, “Turkey as a Regional Energy Hub: Opportunities and Challenges Ahead” (Nov. 2012);
 - INSS Trip Report. “Politics, Petroleum and Power Struggles in the Kurdistan Region of Iraq” (May 2013);
 - INSS Event Report: “The East Mediterranean Basin: A Third Energy Corridor?” (July 2012).

Civilian Protection and Contemporary Expectations of War

Sarah Sewall

Minerva Chair, U.S. Naval War College (2012)

Home institution: Harvard Kennedy School

Nominee, Under Secretary of State for Civilian Security, Democracy, and Human Rights

My Minerva research and writing grapples contemporary expectations of war as they pertain to civilian protection. I've focused on reviewing recent US military operations and evaluating them from a legal, normative, and operational perspective. I've also sought to understand how and why international, and humanitarian, perspectives on the US use of force so often diverge from those of the US armed forces.

Of my recent publications, only the Philippines case was based solely on prior research. The three book chapters, cited below, reflect continued Minerva research.

My methodology included a literature review, with reliance upon both primary and secondary sources. I have been drawing principally on legal writings and recent US operational history, facilitated by terrific library support at the Naval War College. But much of my research is based on interviews, mostly by phone but also targets of opportunity visiting the NWC and while I have traveled. Importantly, I used the findings from the two conferences I organized this year (one in DC and one at the NWC, see below) to expand and update my Mass Atrocity Response Operations (MARO) and Responsibility to Protect doctrine (R2P) research.

Below I've listed in greater detail my writing and research activities.

- "Dimensions of Civilian Protection," chapter for the *Handbook of Global Security Policy*, edited by Mary Kaldor, forthcoming in 2013, to be published by Wiley-Blackwell. Explains "Civilian Protection" within the context of international security, differentiating among reducing civilian harm during combat operations, tactical civilian protection (Poc) in UN peacekeeping operations, and MARO/R2P operations to protect civilians as the strategic objective.
- "Pushing the Limits of Law," in *Law and War*, edited by Austin Sarat as part of the Amherst College Law series, forthcoming in 2013, to be published by Stanford University Press. Argues that humanitarian efforts to heighten international standards for the laws of armed conflict may be counterproductive, unintentionally undermining the future viability of the LOAC regime.
- "Operationalizing the Responsibility to Protect," in *The International Responsibility to Protect*, edited by Jennifer Welsh (forthcoming, under consideration by Oxford University Press). Reviews challenges and prognosis for military responses pursuant to R2P, draws on Libya conference research.
- "Operation Enduring Freedom-Philippines: Civilian Harm and the Indirect Approach," with Larry Lewis and MG (Ret) Geoffrey Lambert, in *Prism* 3, No. 3 (June 2012). Summarizes the successes and challenges of US Foreign Internal Defense efforts in the Philippines.

The *Global Security Handbook* entry on "Civilian Protection" is of particular interest. To the best of our knowledge it is the first time a serious compendium of international security issues has included the topic. I hope my contribution will be a seminal piece in conceptualizing three dimensions of civilian protection in the 21st century. Another chapter explores the distinctions between preventing and responding to mass atrocities and examines USG and other entities' progress in preparing for military response. The final chapter cautions humanitarians to exercise caution as they use law to pressure law-abiding countries to increase civilian protection due to the potential that such an approach will topple the broader Law of Armed Conflict (LOAC) edifice.

Activities:

- Organized a Minerva Chair Conference in April 2012, partnering with the Office of the Under Secretary of Defense for Policy, and the Center for Complex Operations at National Defense University. The one-day workshop involved senior USG military and political officials in a classified discussion of how U.S. policy makers understood the language of UNSCR 1973 and, more broadly, the civilian protection mandate for military operations in Libya. This was a precursor to the June conference.
- Organized a Minerva Chair Conference from June 20-21, 2012. The conference was cosponsored by the Office of the Secretary of Defense and the National Defense University, with support from the Mass Atrocity Response Operations (MARO) project at the Harvard Kennedy School. This conference brought international practitioners and analysts to the NWC to develop an integrated assessment of Operation Odyssey Dawn and Operation Unified Protector. The goal of the two-day event was to understand how the political guidance for “the use of all necessary measures to protect civilians and civilian populated areas under threat of attack” was translated into military plans, operations, and endstates, and to analyze the key issues that arose during military operations. Participants included senior military and political leaders, military officials involved at the operational and tactical level, and the U.S. and international evaluation and learning communities.

The “Quick Look” Report for this second conference on “Learning from Air Operations in Libya: Operationalizing the “Civilian Protection” Mandate” is included below:

On June 20 and 21, 2012, the Naval War College hosted a meeting of senior political and military leaders of the 2011 Libya intervention in order to analyze how the United Nations Security Council (UNSC) Resolution’s “civilian protection” mandate was translated into military operations and to evaluate how the USG and international community learns from military operations. This unprecedented learning effort engaged the civilian and military communities in an integrated examination of an unfamiliar military mandate.

Conference speakers included SACEUR Admiral James G. Stavridis, former USD(P) Michele Flournoy, OUP Commander Canadian LTG Charles Bouchard, Ambassador (Ret) John Herbst, former EUCOM J3 LTG (Ret) “Punch” Moulton, and other leaders of the operations. Supporting the dual conference objectives, participants included individuals involved in executing the operational and tactical levels of Operation Odyssey Dawn (OOD) and Operation Unified Protector (OUP) as well as members of national and international military evaluation and learning organizations.

U.S. participants emphasized the Obama Administration’s distinction between political and military objectives in Libya. The United States sought the removal of Libyan leader Muammar Gaddafi as a matter of policy (and through an integrated strategy), while the military intervention – pursuant to UNSC Resolution 1973 – was authorized to protect civilians. Military leaders confirmed the importance of this distinction. Nonetheless, participants agreed that the concept of using military force to protect civilians was not well defined and could be understood differently by diverse actors. In particular, it was argued that the absence of a requirement that the civilians be under “imminent” threat as well as the preamble’s reference to the general notion of a responsibility to protect may have broadened the mandate beyond tactical protection.

The flexibility of the mandate was both a benefit and a challenge for operators. For NATO operations, the NAC approved the ROE and set general guidance. Military commanders translated the political guidance into more specific military objectives, which changed over time. The military consciously sought to incorporate non-kinetic actions into its lines of operations.

Military participants further described the evolution of military thinking within the alliance that allowed the expansion of targets in support of an evolving interpretation of the civilian protection mandate. The military assumption was that civilians would communicate if the mandate guidance was exceeded. Some conference participants questioned the practical meaning of a distinction between civilian protection and the goal of regime change, particularly as interpretation of the mandate broadened over time.

The conference included highlights from several completed and ongoing military efforts to evaluate OOD/OUP. The presentations illustrated a wide difference of focus and scope among military analytic efforts and a paucity of formal civilian analytic efforts. Speakers affirmed that existing USG processes for learning do not provide an integrated political-military evaluation of military operations at all levels. There was broad agreement on the need for such an integrated learning capability to enhance decision-making and operational execution of those decisions.

Among the many points stressed by presenters:

- Collateral damage remained a core concern and key constraint throughout operations, although NATO's ability to respond to discuss the issue is hampered by the fact that coalition states retain release authority on information related to national operations;
- It is difficult to evaluate the effectiveness of both kinetic and non-kinetic targeting with regard to achieving a civilian protection mandate. Traditional military analysis tends to focus on the degradation of the enemy's ability to impose civilian harm rather than the frequency or impact of actions that caused civilian harm;
- While the NTC was an important factor on the ground, the NATO coalition did not directly coordinate its air campaign in support of rebel forces;
- OUP illustrated key deficiencies that have been well documented in official lessons learned documents (e.g. intelligence collection and sharing, targeting expertise, key capabilities), but OUP also represented a step forward in terms of the alliance's ability to operate without the United States orchestrating most aspects of the operation;
- Communication and cultural understanding is essential to effectively maintain and direct a coalition operation;
- The U.S. was fortunate that a major exercise had beefed up regional planning capabilities as the crisis unfolded and the U.S. needs to work out methods for handling operations that cross COCOM seams;
- NATO members need more PGMs to effectively conduct future operations, particularly because ethical (vice solely legal) concerns figure prominently in NATO operations;
- Every OUP coalition partner played an important role, albeit not always a military role.

China in Africa: Presence, Perspectives, and Prospects

Philip Fei-Ling Wang, fei-ling.wang@inta.gatech.edu
Minerva Chair, U.S. Air Force Academy (2012-2013)
Home institution: Georgia Institute of Technology

Research Question:

What is the current state of China's presence in Africa? How has the Chinese presence and been perceived by the Africans? Is Beijing acquiring influence and power proportional to its economic activities in Africa? Is the Chinese presence in African constituting a challenge to the West and to the United States?

Methodology:

We set out to analyze China's presence in Africa with an emphasis on how that has been perceived by the Africans, based on the findings from surveys and field research conducted in eight African countries (Botswana, Ghana, Kenya, Madagascar, Namibia, Tanzania, South Africa, and Zimbabwe) and interviews of scholars and practitioners from other African countries as well as Chinese and Americans in Africa.

Initial Results:

We have outlined the diverse, complicated, and evolving African perceptions about China's explosive presence in general and the booming Chinese business activities in particular that now range from love to suspicion. Our findings about how China is perceived in Africa suggest that Beijing has acquired substantial goodwill in Africa yet is developing deep issues and facing uncertain challenges and growing obstacles.

Strategic Response to Energy-related Security Threats

Saleem Ali, University of Vermont, saleem.ali@uvm.edu
Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

Dependence on fossil fuels and a changing global climate are increasingly seen as security problems. The proposed research is designed to examine changes in US national security strategy relating to energy as the threat environment has grown more complex. This research will answer the question: how effectively has DoD adapted to the threats posed by energy-related security threats? What strategic assumptions within DoD strategy are evolving in response to climate change and carbon fuel scarcity? What is learned from this project will inform additional questions: How might the US military change in response to future shifts in the strategic environment? How might foreign militaries adapt in the face of energy-related security threats? Where are the key areas of inertia within DoD organization?

In recent years, significant new national security threats have emerged to challenge policymakers. Among these are threats that relate to carbon fuels: global terrorism, global climate change, and the challenges of warfighting in a high-cost fuel context. We define these as significant energy-related security threats and propose to examine how DoD has adapted strategic assumptions to address these new challenges.

A growing movement within the U.S. military is addressing the strategic and operational threats posed by the dependence of the military on carbon fuels. In fact, an entire section in DoD 2010 Quadrennial Defense Review is devoted to “Crafting a Strategic Approach to Climate and Energy”, describing the issue in this manner: “Climate change and energy are two key issues that will play a significant role in shaping the future security environment. Although they produce distinct types of challenges, climate change, energy security, and economic stability are inextricably linked.” (QDR p. 84)

What changes in strategic assumptions are reflected in this new emphasis on climate change and energy security? What decisions led to this new emphasis and how has this been operationalized?

Proposed Methods:

This research proposes an innovative new approach to studying changes in security strategy. The traditional approach analyzes documents and official language, as well as interviewing personnel. This technique provides rich insights into the organizational norms and assumptions that shape policy decisions, but does not produce quantitative analysis. We propose to use a hybrid approach, coupling qualitative analysis of decision statements from the linguistic and semantic level with a quantitative review and process connection to budget allocations. By pairing decision statement analysis with budget changes for programs related to energy security, this research will be more useful and provide greater insight into the strategy and planning processes at DoD as well as how those processes interact with OMB and the larger interagency environment.

Anticipated Outcome:

This research will produce a comprehensive analytic narrative of how DoD as an organization responds to change; specifically, to the emergence of significant energy-related security threats in the 21st century. More broadly, this analysis will assess the processes by which change spreads through DoD, the effectiveness of DoD in responding to new challenges, and the flexibility with which it adapts. This

research will also provide a template for assessing how foreign national security institutions may respond to the same energy-related challenges confronting DoD.

Impact on DoD capabilities or broader implications for national defense:

This research will provide a critical assessment of how DoD organizational learning capacity in response to unprecedented new challenges; in this case, energy-related threats. It is not enough to change strategy: a modern military must evaluate how the process of change occurs within such a large and complex organization as DoD. By carefully scrutinizing the process of adaptation, this research will provide key insights into DoD organizational capacity as well as creating a framework through which to assess how foreign militaries are pivoting to address climate change and carbon fuel scarcity.

Status, Manipulating Group Threats, & Conflict within & between Groups

Pat Barclay, University of Guelph, barclayp@uoguelph.edu
and Stephen Benard, Indiana University, sbenard@indiana.edu
Government Program Officer: Amber Story, National Science Foundation

Research Problem:

Human groups face a tension between within-group competition (investing resources in competing for rank within groups) and between-group competition (investing resources in helping one's group compete with other groups). When faced with external threats, individuals in groups tend to refrain from within-group competition for dominance in order to invest personal resources in promoting group welfare. We investigate whether individuals exploit this tendency by exaggerating the risk of external threats to the group. Those who exaggerate threats benefit in two ways: a) they share in increased group productivity and b) they can more easily maintain a dominant position within their group, by influencing others to divert resources from within-group competition to between-group competition. Given that dominant individuals by definition have greater access to resources and have the most to lose from changes in the status hierarchy, we expect that high-ranking group members invest proportionally more in manipulating group threats than low-ranking members. In an initial study, we found that people are especially willing to pay to manipulate apparent threats when they hold a high-ranking position in the group, and that this manipulation is cost-effective at eliciting cooperation and suppressing competition over within-group dominance. Our project investigated the underlying mechanism and how it varies across settings and assumptions (e.g. democracies vs. dictatorships; hostile outgroups vs. asocial threats).

Methodology:

Across all studies, participants took part in an experimental public goods task, which included a private incentive to withhold money and a collective incentive to give, as in standard "public goods games" (e.g. Ledyard, 1995). The setting differed from standard public goods experiments in three ways. First, the group included high and low ranking positions. High-ranking positions offered greater resources, and could be won and lost through resource-based competition. Second, the group faced a fluctuating risk of costly "extinction" each round. Third, individuals could invest resources not only in contributing to the group but also in manipulating the apparent (not real) risk of extinction. We tested whether high-ranking members invest proportionally more than low ranking members in exaggerating the risk of extinction.

Our initial study used the methods described above. The follow-up research includes experiments that add additional conditions to investigate this outcome. In particular: (1) study 2 manipulated whether participants compete for rank or if rank is instead assigned randomly, to test whether rank itself or competition for rank drives the effect; (2) study 3 varied the level of power available to the dominant individual; (3) study 4 varied participants' capacity to *detect* manipulation; (4) study 5 manipulated whether subordinate individuals can supplant the dominant individually, or whether they must form coalitions with other subordinates; (5) study 6 compared whether the dominant position is attained democratically or through dominance contests; (6) study 7 compared cooperation and threat-manipulation when the nature of the threat is presented as social versus asocial (e.g. outgroups versus natural disasters).

Initial Results:

We find (with multiple replications) that high-ranking individuals invest proportionally more in manipulating threats to their group than low-ranking individuals. In study 2, we find that (a) this effect holds even when individuals do not compete for rank within the group, but (b) the magnitude of the effect is greater when individuals compete for rank (vs. when rank is randomly assigned). In study 3, we find that (a) the effect is robust to whether the dominant position in the group is relatively high or low in

power, and (b) high-power dominants invest more in helping their groups, but (c) take more than their fair share of the public good. In study 4, we find that (a) when individuals can detect manipulation, they are more skeptical of the veracity of threats, but (b) they nevertheless continue to contribute to their groups, even when skeptical. Perhaps as a result, (c) information about the veracity of manipulation initially depresses manipulation, but the magnitude of manipulation increases over time. In study 6, we find (a) that democratic, compared to dominance-based, competition for high rank increases cooperative behavior, but (b) increases manipulation of the apparent threat level. In study 7, we find that (a) social threats, compared to asocial threats, increase cooperation and (b) do not increase manipulation of apparent threats.

Anticipated Outcomes of Research:

We have completed data collection and the research is in varying stages of the publication process.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The research has implications for understanding interactions between leaders and citizens, avoiding the costs and perils of inappropriately high or low vigilance, and for reducing corruption, abuses of power, manipulation of citizens by leaders, and apathy regarding threats to national security. The results may be of particular use in understanding weak or emerging democracies, in which leaders may be used to dominance-based (rather than democratic) contests for leadership.

Publications through Minerva research:

Barclay, Pat, and Stephen Benard. (*forthcoming*). “Who Cries Wolf, and When? Manipulation of Perceived Threats to Preserve Rank in Cooperative Groups.” *PLOS ONE* xx:xx-xx.

Sharable data resources to be generated:

Data for three studies will be available on the PLOS ONE website when the paper mentioned above is published; data for other studies will be available at the journal websites where they are published.

The Evolution of Revolution

Atin Basuchoudhary, Virginia Military Institute, basuchoudharya@vmi.edu

Laura Razzolini, Virginia Commonwealth University

Government Program Officer: Amber Story, National Science Foundation

Research Problem:

We analyze the process that drives cooperation amongst rebels based on the premise that rebels are trying to satisfy a demand for revolution present in the country. Catering to this demand is costly and involves choosing among different tactics as inputs to produce the final output of political change. We assume that available tactics can be grouped into two types of actions: civil war or terrorist insurgency. Additionally, success involving either tactic is driven by the level of coordination between rebels. Consequently, our analysis focuses on whether cooperation among rebels is resistant to behavioral mutations that encourage splintering among rebel groups. Whether rebel groups splinter or not will drive how much of a particular tactic is used to foment revolution. We suggest that policies that target rebel tactics may be ineffective in preventing splintering in rebel groups and therefore the resultant violence. A strategic approach that targets the dynamics of the evolution of tactical choice is recommended.

Methodology:

We use evolutionary game theory to study within group dynamics and provide a framework for analyzing the extent to which certain tactics like terrorism are more likely to be used relative to full-fledged rebellion. We divide rebels into certain categories of cultural traits. Rebels therefore may come from three types of cultures – Cooperator, Defector, or Tit for Tat. Cooperators have traits that make them want to cooperate with others while defectors don't. TFT types cooperate only if there is a credible threat of future punishment for not cooperating. We then search for evolutionary stable equilibria and the dynamics of this evolutionary process in a population with a distribution of these cultural traits.

Results:

Our model shows how the initial distribution of cultural traits among rebel groups may lead to splintering in rebel groups. We show how this process works as a function of the time horizon of rebel groups and how exogenous policy changes that target this time horizon may make splintering more or less likely. Our paper closes a gap in the literature on conflict by developing a model that captures the dynamic pathways for rebel group cohesion. For example, violent suppression of rebellions, insofar as they impact the patience of rebels, is likely to lead to the splintering of rebel groups and more competition among them. This competition among rebel groups to supply rebellion will lead to a higher quantity of rebellion supplied at lower value. We interpret this as an increase in violence.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Our work will inform grand strategy considerations, e.g. in the context of conflict contagion in Africa, and also provide practical guidelines to strategic field officers on the course of policy implementations. If a particular tactical action reduces rebel groups' desire to wait for a particular reward then they might splinter, not only increasing the risk of attacks but the cost of intelligence gathering to prevent further attacks. However, a tactical action that does not impact the rebel's time horizon may make it easier to defeat the enemy by making splinter cells less likely. Thus our model provides a framework for judging what sort of actions will make rebel group splintering more or less likely.

Publication:

Basuchoudhary Atin, Siemers Troy, Allen Samuel, "Civilization and the Evolution of Short Sighted Agents," *Virginia Economic Journal*, p. 11, vol. 15, (2010).

Energy and Environmental Drivers of Stress and Conflict in Multi-scale Models of Human Social Behavior

Luis M. A. Bettencourt, Santa Fe Institute/ Los Alamos, bettencourt@santafe.edu
Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

How do human societies use energy? How sensitive are human social dynamics to disruptions in energy supply? How may such disruptions be affected by environmental change? Our project is aimed at answering these questions based on a firm basis of new empirical observations all over the world and by formulating new mathematical models and theory that synthesize scientific knowledge and enable the formulation of better response policies.

Methodology:

The problem of understanding the link between human social behavior and energy supply across scales is a pervasive concern of many disciplines, from anthropology to economics, and from physics to engineering. To make progress we use new approaches, based on ideas of complex adaptive systems, that incorporate and further ideas from many disciplines, test them empirically and formulate mathematical models and theory.

Energy is a general input to all human socioeconomic activities but its importance increases as nations urbanize and economies grow and become more complex. As this happens, energy consumption per capita typically rises, energy supply gets centralized, and a host of new technologies and tight management integrations become necessary. While such changes have happened with fossil fuel technologies in now developed nations, energy technologies are fast diversifying and the means to achieve large scale energy supply in developing nations – as well as its associated vulnerabilities – needs to be understood in a more general set of scenarios.

To tackle these issues we have initially in this project proceeded in three different parallel tracks. First, we have started to collect data on urban violence (homicides) in many nations of the world and carefully derive its statistics [1]. The aim is to relate change in such statistics, across time and places, to environmental and energy related drivers. Second, as part of our broader effort to model cities quantitatively (partially supported by this project, but ongoing for the last 10 years) we have now built new mathematical theory that establishes the connection – based on the study of thousands of cities worldwide – between spatial aspects of cities, their infrastructure, the structure of their social networks and energy supply [2]. These new insights provide a general framework for the study of the connection between energy and environmental factors and human socioeconomic behavior at the scale of cities. Thirdly, we have created a new dataset on all energy technology patents published worldwide since 1975, in order to study national and regional trends in the drivers of innovation across different technologies and time [3].

Currently we are working to integrate these themes into a single model of statistical human behavior in cities across scales, from the disaggregated level of individuals and neighborhoods to cities and nations. We are also acquiring data on energy use in cities at the building level and are using 3D building imagery to produce city wide, building-by-building, models of energy use, driven by external factors, such as the local weather. We expect that the integration of these more detailed perspectives, together with models of epidemic social behavior modulated by energy and environmental change will give us the basis of the construction of better policies and interventions, based on ideas from control theory.

Initial Results:

We can summarize the most important results of this initial of the project as follows:

1. New measures and models for the determinants of the rate of innovation in energy technologies.
2. A new interdisciplinary mathematical theory for the relationship between social networks, infrastructure and energy use in cities.
3. Establishment of the general statistics of urban violence (homicides) in Latin American cities and the baseline for the quantitative study of urban violence and its environmental drivers.

Anticipated Outcomes of Research:

We anticipate generating an empirically based, quantitative understanding of the link between energy and environmental change and human social behavior in cities. We also anticipate that such knowledge would help design policies that prevent large scale crises from developing, inspired by ideas from control theory in engineering.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

A better understanding of the links between energy and environmental change and human social behavior, particularly in cities, is a necessary condition for anticipating stress and crises. The current project aims at understanding this link in much greater empirical and quantitative detail and to build new mathematical models that could help design early policies and interventions that prevent large-scale crises from developing.

Publications through this Minerva research:

- L M A Bettencourt, J E Trancik, J Kaur, Determinants of the Pace of Global Innovation in Energy Technologies. To appear in *PLoS One* (2013).
- L M A Bettencourt, The Origins of Scaling in Cities, *Science* 340, 1438 (2013).
- A. Gomez-Lievano H. Youn, LMA Bettencourt. The Statistics of Urban Scaling and Their Connection to Zipf's Law. *PLoS ONE* 7(7): e40393. (2012).

People, Power and Conflict: The Emergence of the Eurasian Migration System

Cynthia Buckley, University of Illinois, buckleyc@illinois.edu
Beth Mitchneck, University of Arizona; **Blair Ruble**, Woodrow Wilson Center
Government Program Officer: Jack Meszaros, National Science Foundation

Research Problem:

The emergence of the Russian as a major recipient of registered and unregistered labor migration challenges assumptions concerning the inherently liberal nature of migrant destination states. It also raises important issues concerning regional interdependence and socio-political stability. Our project seeks to improve our understanding of both the scale and trends of population movements within the Eurasian migration system and their implication for Russian influence in the region.

Methodology:

We employ a mixed methodological approach to the emergence of the Eurasian migration system including a detailed assessment of regional and national policies on labor migration and registration practices, a thorough review of press reports concerning migration, and detailed indirect demographic estimation of migration flows into the Russian Federation. These background data are supplemented with expert interviews and ethnographic work in three cities: Yekaterinburg (a city attempting to attract labor migrants), Krasnodar (a border city known for anti-migrant attitudes and policies), and Nizhny Novgorod (a formerly closed city struggling to develop a clear approach to labor migration). In the fall of 2011 we are fielding a survey of labor migrants in each of these three cities, using respondent driven sampling procedures to collect data on migration processes, labor conditions, human security, and remittances. It is the first multi-site survey of its kind in the Russian Federation. In the final stage of the study we will develop detailed national case studies of Ukraine, Tajikistan, Georgia and Vietnam, highlighting how remittances and labor out migration are incorporated into national development strategies and gathering expert opinions on the perceived importance of access to the Russian labor market. These three stages of research will contribute to a comprehensive assessment of human and international security concerns for regions sending migrants to the Russian Federation, and on the relationship between migration, remittance reliance, and political influence.

Initial Results:

Our initial findings have generated the following evidence based policy insights:

- Official estimates of migration into the Russian Federation dramatically underestimate the number of labor migrants working within the Federation. Indirect estimation approaches indicate between 8 and 13 million labor migrants currently within the Russian Federation, the majority from the countries of the former Soviet Union. These figures are similar to estimates of unregistered migrants in the United States, a county with more than twice the population of the Russian Federation.
- Public opinion surveys and mass media reports tend to cast migrants as a threat to public health, public order and cultural identity within the Russian Federation. Empirical evidence does not support these alleged connections.
- In-migration into the Russian Federation may open positive opportunities for the generation of cultural capital, but this potential is likely to vary across regions.
- Migration policy within the Russian Federation is fraught with contradictions, reflecting variations between national and local interests, and often conflicting views of economic need and desires of cultural protection.

- While remittance flows out of the Russian Federation are substantial, there is scant evidence within major sending regions to support remittances as an effective means of development.

Anticipated Outcomes of Research:

Theoretically, this research will challenge previous assumptions concerning the liberal nature of migration destination states. Research to date points to a relatively weak response to human rights violations against migrants into the Russian Federation and in specific instances, a clear willingness to link issues of labor market access and migration to geo-political developments within Eurasia (for example, relations with Georgia, U.S. airbase access in Kyrgyzstan, and U.S. relations with Tajikistan).

Methodologically, by triangulating case studies of sending and receiving regions with extensive secondary data analyses and detailed individual level information from labor migrants, we will highlight the importance of using a multi-level approach to the study of labor migration.

Our analyses will document the extent to which sending regions (particularly those in Central Asia and the Caucasus) depend upon the Russian labor market as an escape valve for unemployment and source of remittances, as well as the extent to which the Russian Federation has utilized their position as the core destination within the Eurasian migration system to maintain regional influence across Eurasia.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Generally, this research underlines the importance of including studies of labor migration and labor market access into assessments of international influence and patterns of dependence. Specifically, our results expand and inform processes of U.S. engagement within the strategically critical regions of the southern Caucasus and Central Asia, by highlighting their persistent dependence upon the Russian Federation in the post-Soviet period.

Publications through Minerva research:

- Buckley, Cynthia, Erin Hofmann and Yuka Minagawa. 2011. "Does Nativity Matter? Correlates of Immigrant Health by Generation in the Russian Federation," *Demographic Research*, 24 (32): 801-832.
- Buckley, Cynthia. 2011. "Migration Policy in Russia: Is Muddling through a Negative Option?" forthcoming (in Russian) in *Public Administration in the 21st Century*. V. Nikonov, Editor. Moscow State University.
- Ruble, Blair. 2011 "Adding Human Diversity to Urban Political Economy Analysis: The Case of Russia" in Kristin Good, Phil Triadafilopoulos, and Luc Turgeon, editors, *Segmented Cities? How Urban Contexts Shape Ethnic and Nationalist Politics*. University of British Columbia Press forthcoming
- Buckley, Cynthia and Erin Hofmann. 2011 "Remittances and Family Economic Stability in Tajikistan," *under review*
- Erin Hofmann and Cynthia Buckley. 2011 "Global Changes and Gendered Responses: The Feminization of Migration from Georgia," *under review*
- Mitchneck, Beth, Erin Hofmann and Julia Carboni, "Policy Streams and Immigration to Russia: Competing Interests at the Federal and Local" *paper in preparation*
- Buckley, Cynthia and Elizabeth Malinkin, "Fitting In or Setting the Standard: Migrants and Idealized Norm Adherence in the Russian Federation" *paper in preparation*

Sharable data resources to be generated:

See "*Eurasian Migration*" on page 110.

The Evolving Relationship between Technology and National Security in China: Innovation, Defense Transformation, and China's Place in the Global Technology Order

Tai Ming Cheung, University of California - San Diego, tcheung@ucsd.edu
Deputy Director **Kevin Pollpeter**, University of California - San Diego, kpollpeter@ucsd.edu
Government Program Officer: Micheline Strand, U.S. Army Research Office
<http://igcc.ucsd.edu/research/technology-and-security/innovation-and-technology-in-china/>

Research Summary:

This project examines China's drive to become a world-class technological power, especially in the defense and dual-use sectors, and understanding the implications for the United States and the rest of the world. A central research question is what are the key sources of innovation and barriers that will shape China's technological development trajectory? The project looks at a diverse number of areas from the roles and relationship between the state and market, China's place in the global technology order, governance regimes and incentive mechanisms, the different elements of the innovation eco-system, and the inter-relationship of the civilian and defense economies.

Methodology:

This project is organized into six research topics: 1) annual assessments of the reform and modernization of critical sectors in China's defense and dual-use science, technology, and industrial (STI) base; 2) comparing China's approach to technology development, defense industrialization and forging of a dual-use base with peer competitors and latecomers; 3) analysis of the political economy of China's defense science and technology (S&T) and technological rise; 4) China's technological development and implications for U.S. and international technology trade policies; 5) the nature of the structures, processes and leaderships of the Chinese civilian and defense S&T systems; and 6) historical influences on contemporary Chinese grand strategic thinking on S&T.

Initial Results:

A selection of some of the most interesting insights:

1. Identifying and explaining the role of little known leadership entities guiding the development of major strategic S&T projects;
2. Uncovering the profound impact of the 1999 U.S. bombing of the Chinese Embassy in Belgrade on China's strategic and defense STI programs;
3. Mapping out China's strategy and eco-system for advanced technological and industrial imitation.
4. Development of a rigorous inter-disciplinary framework for defining and understanding innovation, especially defense innovation
5. Development of an analytical framework to compare innovation capabilities in high-tech industries in China and the United States and testing it through a survey of the integrated circuit design sector.
6. Developing a sophisticated framework for understanding China's defense research, development, and acquisition system and examining this through a series of case studies.
7. We have continued populating a **relational database** on Chinese S&R actors and programs. To date we have collected information on more than 1,300 S&T organizations, 476 Chinese corporations, 2,754 people, 35 major S&T projects, 30 S&T conferences, 150 publications and 540 universities.

Anticipated Outcomes of Research:

This research project is intended to better understand the drivers, challenges, and approaches that China faces in its intensifying efforts to become a global science and technology champion, especially in the defense realm. A key anticipated outcome is to establish a new field of study in Chinese security and technology that has not previously existed, which brings together other disciplines and emphasizes the importance of mainstream social science methodological approaches. In order to achieve this outcome, the project is producing the foundational research that is required and attracting and training a new generation of scholars and policy analysts to cooperate in this area.

Potential Impact on DoD Capabilities and Broader Implications for National Defense

The impact of this project for DOD capabilities and U.S. national defense interests are two-fold: 1) it will provide rigorous analysis and new data on one of the most important long-term challenges to U.S. national security, which is China's military technological rise; 2) the project will cultivate a new generation of scholars and policy analysts knowledgeable on Chinese security and technology issues. In an era of economic and fiscal constraints, having greater understanding to China's technological development will help policy makers make more effective use of limited resources.

Recent Publications through this Minerva Research:

- Cheung, Tai Ming (ed.). *China's Emergence as a Defense Technology Power*. (London: Routledge, 2013).
- Cheung, Tai Ming. (ed.) *Forging China's Military Might: A New Framework for Assessing Science, Technology, and the Role of Innovation* (Baltimore, MD: John Hopkins University Press forthcoming).
- Cheung, Tai Ming. (ed.) *Structure, Process, and Leadership of the Chinese Science and Technology System*. Under review by Cornell University Press.
- Cheung, Tai Ming and Bates Gill, "Trade Versus Security: How Countries Balance Technology Transfers with China," (*Journal of East Asian Studies* 13, no. 3, Sept.-Dec. 2013).
- Gill, Bates. "Future of China-EU-USA Relations", (for the Europe-China Research and Academic Network (ECRAN) Publications Series).
- Lindsay, Jon and Derek Reveron (eds.). *China and Cybersecurity: Political, Economic, and Strategic Dimensions*. Under review by Oxford University Press.
- Naughton, Barry. "The Political Economy of Innovation in China." Submitted and under review by Oxford University Press.

Sharable Data Resources to be Generated:

See "*Chinese S&T – Relationships, Technology Development, and Translated Documents*" on page 111.

Data relating to the Chinese security political economy, technological development and the implications for technology trade policies, and organizational structures, processes and leadership will be available to the broader scholarly community via a quantitative relational database. Additionally, translated Chinese newspapers and journals will be available via another searchable database and we will continue to publish new analyses through our weekly bulletin.

Explorations in Cyber International Relations

Principal Investigator: **Nazli Choucri**, Massachusetts Institute of Technology, nhoucri@mit.edu

Co-PI: **Venkatesh Narayanamurti**, Harvard Kennedy School

Government Program Officer: Erin Fitzgerald, Office of the Secretary of Defense

http://belfercenter.ksg.harvard.edu/project/67/explorations_in_cyber_international_relations.html

<http://ecir.mit.edu>

Research Summary:

In international relations, the traditional approaches to theory and research, practice, and policy were derived from experiences in the 19th and 20th centuries. But cyberspace, shaped by human ingenuity, is a venue for social interaction, an environment for social communication, and an enabler of new mechanisms for power and leverage. In short, cyberspace creates new conditions—problems and opportunities—for which there are no clear precedents in human history. As an example of these new conditions, this is the first time in human history that advances in information and communications are potentially accessible to the entire population of the world. Already we recognize new patterns of conflict and contention, and concepts such as cyberwar, cybersecurity, and cyberattack are in circulation, buttressed by considerable evidence of cyber espionage and cybercrime.

The research problem is this: distinct features of cyberspace—such as time, scope, space, permeation, ubiquity, participation and attribution—challenge traditional modes of inquiry in international relations and create limits to their utility. ECIR is an interdisciplinary research project between MIT and Harvard University which explores various facets of cyber international relations, including its implications for power and politics, conflict and competition, and violence and war.

We view our primary mission is to increase the capacity of the nation to address the policy challenges of the cyber domain. Towards that end our principal outcomes are: to influence today’s policy makers with the best thinking about issues and opportunities, and to train tomorrow’s policy makers to be effective in understanding choice and consequence in cyber matters.

To achieve that, the ECIR vision is to create an integrated knowledge domain of international relations in the cyber age, that is (a) multidisciplinary, theory-driven, technically and empirically; (b) clarifies threats and opportunities in cyberspace for national security, welfare, and influence; (c) provides analytical tools for understanding and managing transformation and change; and (d) attracts and educates generations of researchers, scholars, and analysts for international relations in the new cyber age.

Methodology:

We draw upon a diverse set of methods, theories, and tools—from social sciences, international studies, policy and risk analysis, communication studies, economics, computer science, and law—to explore the utility of existing methods and to develop new techniques needed for this project. In so doing, we anchored our research design in “6-D” research clusters and their interconnections.

- *Domain Representation – Integrating Empirically Cyberspace and International Relations*: to account for cyber-features and international interactions
- *Data Development and Empirical Analysis*: to generate evidence, metrics, and descriptors of actors, attributes, actions and impacts
- *Dynamic Modeling, Simulation, and Policy Analysis*: to provide tools for contingency analysis and support policy.

- *Cross-school designations* of Harvard faculty and research fellows and MIT affiliates to stimulate collaborative cross-domain investigations and discoveries from fields of law, management, engineering, international relations, national security, and homeland security.
- *Development of cyber policy courseware*, curriculae, cyber exercise scripting, and course delivery
- *Shape the public discourse on cyber matters*, and increase the nation's awareness of these issues, by writing in widely read popular journals, newspapers, blogs and other media.

In addition, we have extended some existing methodologies and developed a set of new ECIR methods. These are: (1) *the alignment strategy* based on rules for integrating cyberspace and international relations; (2) the development of the “*control point analysis*” method to identify actors, actions, and outcomes at critical influence points; (3) extensions of *resilient mechanism design* (i.e., reverse game theory); (4) automated applications of *alternative algorithms* for taxonomy generation to determine constructs of cybersecurity in diverse bodies of knowledge (5) *system dynamics* simulations of policy choices for managing threats to undersea cables, a global infrastructure critical for cyberspace; (6) multi-method inquiries into conflict, (7) domain structure matrix for *joint representation* of cyberspace and international relations; (8) field work on *private authority* in cyber management and governance, and (9) damages of malware and markets for *malware*.

Initial Results:

Initial results include: (a) Constructed empirically based *alignment strategy* to jointly define cyberspace and international relations, anchored in the layers of the Internet and the levels of international relations; (b) Demonstrated the value of *control point analysis* with strategic and policy relevance focusing on the Internet and the broader cyber context, but also useful in large scale global technological systems; (c) Provided comparative *empirical patterns* of how different actors (countries like China, and firms, like Google) control the Internet; (d) Developed and applied automated knowledge generation tools to extract ontology and concept relationships; (e) Generated empirical evidence about the salience of *private authority* in management of cyberspace; (f) Created and delivered robust cyber courseware and exercises in three past and one future course on cyber policy and management; (g) achieved frequent publication in widely read popular journals and newspapers; (h) generated new awareness of salience of cyber conflict for the national security discipline; and (i) created new insight to issues of law and regulation as potential control points in domestic and international domain.

Anticipated Outcomes of Research:

Our goal is to frame an integrated field of “real” and cyber international relations that include research and through training of today's leaders and tomorrow's, and to increase the capacity to respond to the complex challenges of policy and management in the cyber domain.

The expected results include the following: capabilities for projecting systemic effects of international behavior in cyberspace; protocols and tools for cyber and real world analysis that enable better warning and alerts; enhanced knowledge of threat actors' capabilities, intentions, and motivations; protocols for negotiating agreements on cyberspace and identification of those issues more conducive to such agreements; suggested normative approaches and collaborative mechanisms for cyber defense; robust principles for Internet governance; models of cyber conflict escalation and de-escalation as a basis for limited (customized) deterrence strategies; and the integration of soft power approaches into cyber defense; to influence today's policy makers with the best thinking about issues and opportunities, and to train tomorrow's policy makers to be effective in understanding choice and consequence in cyber matters.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The project seeks to provide specific methods for (a) constructing robust understanding of emergent global dynamics surrounding the Internet and overall cyberspace; (b) anticipating, tracking, and clarifying threats and opportunities in cyberspace for national security, welfare, and influence; (c) providing analytical tools for understanding and managing worldwide cyber transformation and change; (d) constructing methods with ready “hands on” use; (e) providing foundations for 21st C. international relations; (f) supporting analyses for U.S. Grand Strategy; and (g) educating a new generation of researchers, scholars, and analysts for 21st C. realities.

Sharable data resources to be generated:

See “*Cyber International Relations*” on page 112 for further details on the following resources:

- Cyber System for Sustainable Development.
- Cybersecurity Wiki
- ECIR Data Dashboard
- Cybersecurity Model Curriculum
- Cyber Politics in International Relations MIT multidisciplinary course curriculum

Publications through this Minerva research:

Books: Choucri, Nazli. 2012. *Cyberpolitics in International Relations*. Cambridge, MA: MIT Press. Two other Books-in-progress – See Publications List at <http://ecir.mit.edu>.

Articles: (60), other Publications (44), podcasts/transcripts (3), op-eds (23) and Solicited Book: See Publications List at <http://ecir.mit.edu>.

Understanding and strengthening Somali communities in resettlement

B. Heidi Ellis, Harvard Medical School/Boston Children's Hospital, heidi.ellis@childrens.harvard.edu

John Horgan, University of Massachusetts Lowell

Government Program Officer: Ivy Estabrooke, Office of Naval Research

Research Problem:

As refugees continue to resettle in communities around the world, understanding what factors promote or prevent violent extremism among refugees will be critical to policy and programs targeting national security. Somalis have been one of the largest refugee groups to arrive in the U.S. every year over the past decade (ORR, 2010). In 2010, 14 Somali-American youth from Minneapolis were indicted for supporting Al-Shabaab (FBI, 2010); in total, more than 24 Somali youth were suspected of having joined the terrorist organization (Elliot, 2009). The risk that Somali youth who join Al-Shabaab could return to the U.S. as trained terrorists with the aim of carrying out a "jihad" against American civilians is a major national security concern. While recruitment of Somali youth into a terrorist organization is new and particularly threatening to U.S. security, it fits a larger pattern of 'home-grown' terrorism present in Europe (Sageman, 2008). 'Home-grown' terrorism refers to citizens or residents of non-Muslim countries becoming radicalized, or adopting increasingly extreme views regarding Islam and religious justifications for violence, culminating in the willingness to support, use or facilitate fear or violence in order to effect societal change (Precht, 2007). The empirical identification of early risk markers for communities becoming more open to violent extremism is urgently needed. Prospective longitudinal data on attitudes towards violent extremism within key communities, however, is virtually absent from the field, in part due to the significant challenges of assessing sensitive information within communities that may be distrustful and difficult to enter into.

Methodology:

A central innovation of our work is that it builds on a decade-long partnership between our research group, led by Dr. Ellis, and the Somali community. It is premised on the idea that the Somali community has a central stake in both preventing violent extremism among its youth and also in identifying and countering such ideology should early warning signs be identified.

Our goal is to establish a theoretical, evidence-based framework to inform the prevention of violent extremism among refugees. Building on social control theory (Hirsch and Stark, 1969; Sampson and Laub, 1993) and our preliminary data with Somali youth, our central hypothesis is that structural disadvantage factors and weakened social bonds/social identity contribute to risk for radicalization. Our research builds on past research by conducting a longitudinal mixed-methods study of Somali young adults and examining how changes in structural disadvantage and social bonds/social identity lead to changes in openness to the use of violence in support of a political cause over the course of one year. Participants for the study are being recruited from three communities: Boston, MA, Minneapolis, MN, and Toronto, Canada (n = 300, 100/per community). Each participant will complete two standardized interviews separated by 1 year. A subsample of 36 youth will also participate in in-depth qualitative interviews further exploring perspectives on adversity, social bonds, social identity and attitudes towards radicalization and terrorism.

Initial Results:

To date, we have launched the study in three communities (Boston MA, Lewiston ME and Minneapolis MN), completed approximately 193 interviews and established our community leadership team in all study sites. A review of the first 77 participants suggests that we are a) successfully recruiting a diverse representation of young Somalis, with a broad range of educational, religious, and acculturative

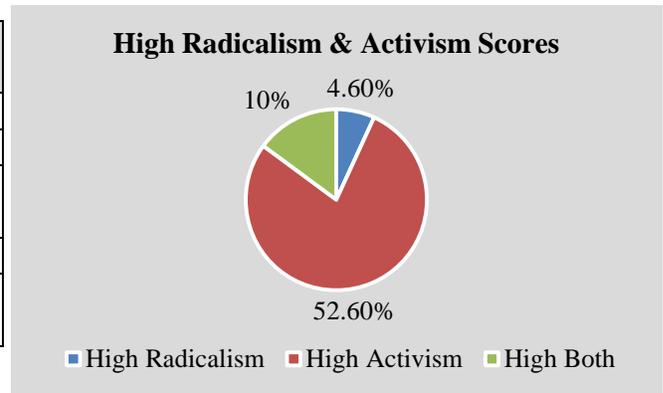
backgrounds and that b) the instruments in the protocol are eliciting varied responses and functioning as expected. Below we present some of the key findings related to our data.

ARIS: Activism and Radicalism Intention Subscales

Range	0-7 (5 or higher is 'high')
High activism intentions	65% of sample
High radicalism intentions	17% of sample

ARIS: Importance of different communities

Item	% scoring 5 or higher
Somalia	85.7
Tribe/clan	38.2
Religious community	85.5
United States	92.1
On-line community	48.1



Anticipated Outcomes of Research:

We expect our study to provide empirical evidence of specific *modifiable* indicators related to changes in openness to violent extremism. Empirical validation of a model that can be used to explain the mechanisms that lead youth to be more or less vulnerable to potential recruitment into terrorist organizations would provide concrete, data-driven and evidence-led direction for prevention and intervention. Identifying modifiable factors, such as weakened social bonds, represents a true scientific breakthrough; rather than seeking to *profile* individuals at risk, such information could instead serve to signal early warning signs within a broader community. The ultimate scientific breakthrough in the context of counterterrorism efforts is that this project seeks to shift our focus from issues that are essentially resistant to change to factors that can be modified for a measurable, meaningful impact in terms of prevention.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The 2011 National Security Strategy places significant emphasis on the importance of recognizing the diversity of race, region, faith and culture in our country and how strategic alliances need to place *communities* at the forefront of a smart and effective counter-terrorism toolbox. Our research goals are consistent with national security efforts to pursue comprehensive engagement by building meaningful alliances with our greatest assets in preventing the development of terrorism.

Strategies of Violence, Tools of Peace, and Changes in War Termination

Tanisha Fazal, Columbia University, tmf2001@columbia.edu

V. Page Fortna, Columbia University

Government Program Officer: Jacqueline Meszaros, National Science Foundation

Research Problem:

Although research in international relations has generated extensive knowledge about the onset and termination of war, the study of how the conduct and termination of war have changed over time has been neglected. As a result, the field is poorly positioned to understand critical recent changes, for example: military victory has become less common, formal peace treaties have become less common in interstate war but more common in civil war, military and political outcomes of war have diverged, and clauses of war guilt are much more common today. These changes may do more to hinder than to help the long-term prospects for peace. It is critical for our national security to understand how and why these changes have occurred.

Methodology:

We derive and test hypotheses linking strategies and conditions such as guerrilla warfare, international intervention, peacekeeping, and laws regulating the conduct of war to the process and outcomes of war termination. This research is based on an unusually comprehensive dataset that spans two centuries with extensive and comparable measures for both interstate and civil wars. The War Initiation and Termination (WIT) Data Set covers interstate wars over the past two centuries and is complete. Construction of the Civil War Initiation and Termination Data Set (C-WIT), which covers civil wars over the same period, is ongoing. These data sets will be among the major products of our project.

Results:

We have made significant progress to date in constructing the foundational research product of this grant: a complete data set of civil wars covering the 19th and 20th centuries. In May 2009, we conducted a successful workshop that included scholars from around the world to help come to a definition of civil wars. We used the results of this workshop to revise our definition of civil wars. Since then, we have focused our efforts on coding over 300 civil wars as identified by the Correlates of War Project. As of this writing, we have completed first-round coding for all 308 civil wars in our data set. We are currently engaged in second-round coding for the purposes of checking and establishing inter-coder reliability. Given limited resources, our strategy for second-round coding is to randomize this portion of the project. To date, we have completed second-round coding for nearly 100 civil wars. We have also begun the process of identifying discrepancies between first- and second-round coders.

The civil war data collection effort has already yielded some surprising results. For example, government declarations of war against rebel groups are much more frequent than we expected. It remains to be seen whether these declarations translate into greater compliance with the laws of war when fighting rebel groups. We have also added a set of variables that will allow us to code the use of terrorism (even if it was not yet called that for some of the time period examined here) in a way that distinguishes among rebel groups. This will allow for extensions of Fortna's work on the causes and effects (and effectiveness) of terrorism over a longer time period than is now possible (good data on terrorism extends back only a few decades at most).

The interstate war data collection effort has generated findings consistent with the hypotheses laid out in our original grant proposal. Specifically, Fazal finds that, as the law of war governing warfare (*jus in bello*) has proliferated in the international system, belligerents in interstate war are increasingly less likely

to conclude formal peace treaties. Moreover (and consistent with the general argument), states that violate *jus in bello* appear to be especially unwilling to conclude formal peace treaties at the close of war. These findings suggest an important series of unintended consequences stemming from the attempt to place restrictions on belligerent conduct during wartime. The policy implications, however, will remain unknown until the analysis of the opposite trend in civil war -- that is, the increased use of peace treaties - is complete.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The shift in the use of peace treaties and amnesty in interstate and civil war, as well as the relationship between military and political outcomes of war, have long-term and profound implications for the very purpose and meaning of war, as well as for the stability of the international system. But they also have shorter-term and more concrete policy implications, particularly for the United States as the world's overwhelming military power. For example, given its military superiority, the US is likely to win its military engagements, but if military victories have become less likely to translate into political ones, US interests may not be as well served by its military might as they were in the past. That said, both the rise of insurgency as compared to other types of warfare in civil conflict and the demise of peace treaties in interstate war mean that the US military is increasingly likely to be called upon to address protracted and recurrent conflicts, presenting another set of challenges for the US military.

Publications through this Minerva research:

Publications await completion of data collection, however preliminary data inform a number of working papers and manuscripts, including:

- Fazal, Tanisha M., “The Demise of Peace Treaties in Interstate War.” *International Organization*. Accepted, 2013.
- Fazal, Tanisha M., *Wars of Law: The Strategic Use of the Law of Armed Conflict*. Book manuscript.
- Fortna, V. Page, “Where Have all the Victories Gone? War Outcomes in Historical Perspective.” Columbia University.
- Fortna, V. Page, “Is ‘Peacekeeping Winning the War on War?’ A Response to Goldstein” Submitted for review to *Perspectives on Politics*.
- Fortna, V. Page, “Do Terrorists Win? The Use of Terrorism and Civil War Outcomes 1989-2009”, *International Organization*. Submitted, 2012.

Sharable data resources to be generated:

See “*War Initiation and Termination*” on page 114 for details.

- War Initiation and Termination (WIT) data set
- Civil War Initiation and Termination (C-WIT) data set

Climate Change and African Political Stability

Francis J. Gavin, University of Texas at Austin

Climate vulnerability: **Joshua Busby**, University of Texas at Austin
Clionadh Raleigh, University of Sussex
Climate-conflict: **Cullen Hendrix**, University of Denver
Idean Salehyan, University of North Texas
Constitutional design and conflict management:
Alan Kuperman, University of Texas at Austin
Governance: **Ashley Moran**, University of Texas at Austin
Disaster response: **Jennifer Bussell**, University of Texas at Austin
Urban resilience: **Robert Wilson**, University of Texas at Austin
International aid: **Catherine Weaver**, University of Texas at Austin
Mike Findley, University of Texas at Austin
Michael Tierney, College of William and Mary
J. Timmons Roberts, Brown University

CCAPS Senior Program Manager: Ashley Moran, amoran@austin.utexas.edu
Government Program Officer: *Micheline Strand, Army Research Office*
<http://www.strausscenter.org/ccaps>

Research Problem:

The Climate Change and African Political Stability Program (CCAPS) analyzes how climate change, conflict, governance, and aid intersect to impact African and international security. The program works in three main areas to address the following questions:

- *Climate change and conflict:* Where and how does climate change pose threats to stability in Africa? What is the spatial and temporal relationship between climate change vulnerability and patterns of conflict? Where, when, and how could climate-related events disrupt Africa's security and development?
- *Governance:* What is the role of government institutions in mitigating or aggravating the effects of climate change on political stability in Africa? How could political institutions buffer against conflict and other impacts of climate shocks? What is the capacity of African countries to respond to disasters?
- *International aid:* How effective are foreign aid interventions in helping African countries adapt to climate change? How can aid be effectively coordinated and implemented to contribute to crisis prevention and adaptation and reduce the need for global assistance?

Methodology:

The program conducts quantitative analysis, GIS mapping, case studies, and field interviews to identify where and how climate change could pose threats to state stability, to define strategies for building accountable and effective governance, and to assess global development aid responses in Africa.

Initial Results:

The program has advanced tools for assessing climate security vulnerability in Africa by developing a new model mapping subnational vulnerability to climate change, developing a new regional climate projection model for Africa, conducting real-time conflict tracking continent-wide in Africa, and developing a new framework for identifying and predicting varying types of complex emergencies. Program case studies are conducting new comparative research on the impact of constitutional design, democracy assistance, urban resilience, and disaster preparedness on building government capacity to respond to climate-related and other stressors in Africa. The program released online mapping platforms

that enable researchers and policymakers to visualize program data on climate change vulnerability, conflict, governance, and aid, providing the most comprehensive view yet of climate change and security in Africa.

Anticipated Outcomes of Research:

The program’s research aims to give policymakers—as well as strategic, theater-strategic, and operational level military officers and their civilian counterparts—data and tools to address the security consequences of climate change.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

CCAPS aims to provide the Department of Defense and the wider U.S. Government with practical guidance on how to mitigate and respond to the security consequences of climate change in Africa. First, by identifying how climate change could trigger natural or man-made disasters and undermine state stability, program research could enable policymakers to act early, when the costs of taking decisive action are lower. Second, the program is identifying the strategies most likely to build state capacity and forestall state collapse; where state collapse has already occurred, the program identifies strategies to reduce violence, provide humanitarian aid, and foster political stability and good governance. Third, the program is evaluating the capacity of bilateral and multilateral efforts to reduce African countries’ vulnerability to climate change. If domestic institutions and international aid efforts are more effective, the result should be fewer crises and, as a result, fewer calls for the U.S. military to take on the burdens of disaster response, peacemaking, peacekeeping, and post-conflict reconstruction.

Publications through this Minerva research:

CCAPS publications identifying chronically insecure regions, climate-conflict trends, and strategies for national and international response, as well as the program’s data codebooks, user guides, and course modules, are available on the CCAPS website at www.strausscenter.org/ccaps/publications.

Sharable data resources to be generated:

See “*Mapping Climate Change and African Political Stability*” on page 115.

- Searchable, downloadable online databases:
 - *Social Conflict in Africa Database (SCAD)* includes georeferenced data from 1990 to 2011 on protests, riots, strikes, coups, communal violence, and other types of social unrest. www.strausscenter.org/scad.html
 - *Armed Conflict Location and Event Dataset (ACLED)* tracks the actions of opposition groups, governments, and militias across Africa, with data from 1997 to 2013. www.strausscenter.org/acled.html
 - *Malawi Geocoded and Climate Aid Dataset* includes data on all active development aid projects in Malawi, from all donors in all sectors from 1990 to present. www.strausscenter.org/aid.html

Modeling Discourse and Social Dynamics in Authoritarian Regimes

Jeff Hancock (Cornell University),

David Beaver and James Pennebaker (University of Texas, Austin),

Art Graesser (University of Memphis)

Project Point of Contact: dib@mail.utexas.edu or a-graesser@memphis.edu

Government Program Officer: Amber Story, National Science Foundation

<http://is.gd/minerva>

Research Summary:

The major goal of the project is to discover how natural language discourse reflects social dynamics in English, Arabic, Chinese, and other languages. We develop computational models in our analyses of a large and diverse collection of documents from these languages and associated cultures (such as political speeches, letters, emails, chat, tweets). Our expectation is that these computer analyses of language/discourse can predict socially significant states, such as leadership, status, familiarity of group members, personality, social cohesion, deception, and social disequilibrium. This research is expected not only to advance the social sciences but also to address key national security questions that require the processing of large amounts of textual communication.

Research Problem:

The central question is how language/discourse patterns are diagnostic of socially significant states and whether such patterns can predict such states ahead of time. The patterns are manifested in words, sentence syntax, semantics, speech act categories, cohesion, and discourse genre (e.g., narrative, informational text). Our project has uncovered interesting patterns for diverse samples of documents in different languages and cultures, but this summary will focus on the recent political crises in the Middle East and North Africa. We have conducted computer analyses on political speeches and tweets in both Arabic and English translations. The computer systems have included the *Linguistic Inquiry and Word Count* (LIWC, Pennebaker, Booth, & Francis, 2007), *Coh-Metrix* (Graesser & McNamara, 2011; Graesser, McNamara, & Kulikowich, 2011), speech act classifiers (Shala, Rus, & Graesser, 2010), a presupposition detector currently in development, and a host of other automated tools developed by researchers in the social sciences and computational linguistics in Texas, Cornell, and Memphis.

Methodology:

Our methodologies involve semi-automated document analysis, combined with experimental techniques. The main group of documents being analyzed in the project include 89 political speeches of leaders of 7 Arabic speaking countries: Mubarak (Egypt), Gaddafi (Libya), Ben Ali (Tunisia), Saleh (Yemen), Basharal-Assad (Syria), King Mohammed VI (Morocco), and King Abdullah II (Jordan). We are focusing on the speeches within a month or so before or after December, 2010, which is designated as the date when the crisis reached a peak of international attention. Tweets are also available, both in Arabic and English translations. The documents in English have been run with Coh-Metrix and LIWC, whereas cohesion analyses are being conducted on Arabic. These speeches that occur near the December crises are being compared to speeches earlier in the leaders' reigns, which are between 6 and 42 years. We are also performing more fine-grained analyses of the speeches over time before and after the downfall of the leaders, or major episodes of social discord. Are there language/discourse patterns that can diagnostically predict social disequilibrium in a country? It should be noted that z-score norms have been computed on a number of measures and principal components of CohMetrix (Graesser, McNamara, & Kulikowich, 2011) and LIWC, based on 37,520 texts that are representative of what a typical adult English speaker would have been exposed to.

Initial Results:

One set of analyses on Arabic speaking leaders was an attempt to confirm some findings from our analyses of the speeches of Mao Zedong of China. The language/discourse patterns were very different in historically good times (China's economy was good) versus bad times (war and civil strife). When times were good, Mao's speeches showed Coh-Metrix z-scores with relatively high narrativity (stories), low cohesion, and simple syntax; LIWC principal components showed high conversational interaction and narrative presence, with fewer negative emotions. When times were bad, the z-scores of Mao were entirely the opposite (in z-score signs). We therefore analyzed the texts of the Arabic leaders of the December 2010 crises to see whether their scores matched the profile of bad times. Except for cohesion, the profile of mean z-scores matched the predictions of bad times: narrativity (-.52), cohesion (-.16), syntactic simplicity (-.71), conversational interaction (-.48), narrative presence (-.34), and negative emotions (.21). This was a very encouraging confirmation of the findings for Mao. When there is war and civil strife, there tends to be a deviation from speeches with stories, conversation, simple syntax, and a more positive emotional slant. However, to further substantiate this more rigorously we are currently analyzing previous speeches of these leaders at relatively good historical times.

We recently completed documentation and verificational studies for the first complete French version of LIWC (Piolet, Booth, Chung, Davids & Pennebaker, 2011). We have also completed the Chinese LIWC, as well as the Russian LIWC (Kailer & Chung, 2011), and the Arabic LIWC (Hayeri, Chung, Booth, & Pennebaker, 2010).

We have further developed a program that tracks natural language in small online working groups in the classroom or laboratory and assesses the group dynamics. While it usually impossible to access the online chats of high value terrorist groups, the findings here can be useful to better understand emerging leadership and the group dynamics of extremist groups that post online and that may or may not engage in violent behaviors. Experimental subjects participated in two counterbalanced 20-minute tasks for which they had to collectively generate a meaningful solution to a complex visual task. Preliminary results showed that groups that were matched on personality had different language and communication patterns than groups with randomly assigned members. Specifically, we found that similarly matched groups used more first person plural pronouns (e.g., we, us, our) than did non-matched groups. Secondly, we found that the linguistic profile for each of the personality dimensions was expressed more strongly when communicating with members with more similar personality profiles than with randomly assigned group members. These results point to implicit processes in creating a sense of in-groupness, and the ability of function word analysis to detect them. The results are promising since until recently, it has been almost impossible to efficiently record, monitor, and assess ongoing communication patterns in order to identify emerging leadership and group dynamics.

Anticipated Outcomes of Research:

We are developing diagnostic detectors of social disequilibrium in a culture based on the political speeches of the leaders. Trouble would be detected when the speeches deviate from an oral linguistic style with a positive emotional stance. A quantitative metric is being developed to produce a single metric of social disequilibrium (0 to 1) from the Coh-Metrix and LIWC indices. Such an index can track political leaders over time and possibly predict crisis points.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

If the style of the speeches of political leaders, and the types of language used in social media, are both diagnostic signals of social disequilibrium, then our metrics could be used to detect critical periods of

change in regions of conflict, and to identify critical changes in online groups that have been identified to be of strategic interest.

Publications through Minerva research:

(Selected publications: full list available in annual reports on request.)

- Beaver, D., and D. Velleman (2011), The communicative significance of primary and secondary accent. *Lingua*, doi:10.1016/j.lingua.2011.04.004.
- Graesser, A.C., & McNamara, D.S. (2011). Computational analyses of multilevel discourse comprehension. *Topics in Cognitive Science*, 3, 371-398.
- Graesser, A.C., McNamara, D.S., & Kulikowich, J. (2011). Coh-Metrix: Providing multilevel analyses of text characteristics. *Educational Researcher*, 40, 223-234.
- Hancock, J.T., Beaver, D.I., Chung, C.K., Frazee, J., Pennebaker, J.W., Graesser, A., & Cai, Z. (2010). Social language processing: A framework for analyzing the communication of terrorists and authoritarian regimes. *Behavioral Sciences of Terrorism and Political Aggression*, 2, 108-132.
- Ireland, M. E., Slatcher, R. B., Eastwick, P. W., Scissors, L. E., Finkel, E. J., & Pennebaker, J. W., Language style matching predicts relationship formation and stability, *Psychological Science*, (2010). Accepted,
- Pennebaker, J.W., *The secret life of pronouns: What our words say about us*, (2011). Bloomsbury Publishers.
- Shala, L., Rus, V., & Graesser, A. C. (2010). Automated speech act classification in Arabic. *Subjetividad y Procesos Cognitivos*, 14, 284-292.

Deciphering Civil Conflict in the Middle East

J. Craig Jenkins, jenkins.12@osu.edu

Ola Ahlqvist, Hassan Aly, and Zhenchao Qian

Ohio State University

Government Program Officer: Frederick Kronz, National Science Foundation

<http://merp.osu.edu>

Research Problem:

This research advances a new conceptual framework for understanding civil conflict and political instability in the Middle East region by focusing on transnational processes. In particular, it examines the development of the rentier economy, the growth of international migration, and the enlargement of international social networks which form the context for civil protest, terrorism and guerrilla warfare in the Middle East over the two decades since the 1990-91 Gulf War. Our key question is whether these transnational trends have contributed to or diminished political conflict and instability.

Specific questions team members are addressing include:

- How are new forms of rentier dependence based on international tourism, worker remittances, international aid and assistance and foreign direct investment related to the traditional oil/mineral rentierism? What are the effects of new and old rentierism on governance, civil conflict, and social development in the region? (Aly, Jenkins, Meyer, Costello, Price)
- What are the trends in international migration, both political and economic? How have these affected transnational social networks and civil conflict and political instability? How can we best map these migrations geographically and represent the uncertainty of our estimates? (Ahlqvist, Vanhorn, Stearmer, Fontanella, Rush)
- What influences the expansion and influence of networks of NGOs and local organizations which are active in both intra-state and international activism? (Meyer, Stearmer, Rizzo, Price)
- What role do social media outlets play in stimulating protest activity and other forms of social activism in the Middle East? Specifically, what possibilities does Twitter and other social media offer to understand the organization and mobilization of the recent “Arab spring” and other popular protests? (Ahlqvist, Jenkins, Stearmer, Costello, Rush)

Methodology and Anticipated Results:

Our research is in its third year. It builds on research from earlier funding which found that state controls in authoritarian states typically generate long duration responses in terms of violent resistance and underground organizing. Often seen as a product of Middle East culture, this response to state controls and repression seems to be typical of authoritarian regimes and recently democratizing regimes (e.g. Turkey), which facilitates long duration conflict cycles characterized by protracted conflicts, intensive violence and relatively weak civic institutions and participation. Participation in political actions of any type is centered in informal friendship networks and little with personal resources and the types of community engagements that drive participation in established democracies. Because each extension of this earlier has a distinctive methodology, we discuss these alongside our initial findings.

- 1) **Bread or Dignity: Determinants of the Arab Spring Protests:** Why did the Arab spring protests develop with the scale and intensity in some countries while others remained relatively pacific? A wide range of ideas have been advanced ranging from the youth bulge and unemployment to the growth of new media, governmental corruption and the stifling of political rights to the ability of oil rich monarchies to coopt dissent. Using a cross-national pooled time-

series analysis (random effects with 1 year lag) of the count of protests in the 18 Arab states between 2006 and 2011 coded from Reuters International Newswire, we find evidence of both “bread” (economic grievances) and “justice” (political grievances). In addition to the strong diffusion of protests in Egypt, the growing youth bulge and stagnant economic growth stimulated these protests along with governmental corruption and cell phones per capita. Protests were more likely in more open regimes with greater political rights but also responded to repressive policing. Economic grievances associated with the youth bulge and unemployment were also magnified by state repression and corruption, suggesting that a compound of economic and political grievances coupled with political opportunities were behind these protests. The economic share mineral rents and monarchial structures were not relevant to these protests.

- 2) The Middle East remains distinctive globally for the predominance of strong rentier states where state ownership of mineral resources and significant foreign aid create states that depend significantly on international transactions to generate state revenues. We refer to this as “direct rentierism” because the state has strong control over the extraction of revenues. About half of the 22 states in the Middle East/North Africa region qualify as strong rentier states using the threshold of 30 percent of more dependence on foreign revenue sources. At the same time, “new” forms of rentier income which we label “indirect” because they provide less centralized state control have become more important to the region. In another third of Middle East states, worker remittances and international tourism now make up a quarter or more of the economy. We are currently using panel analysis of a global dataset (1970-2008) to examine the effects of these different forms of rentier dependence on civil conflict and political violence as a way of answering the question “why is the Middle East so violent?”

In a dissertation entitled 'Political Violence and International Rentierism' (soon to be defended by Matt Costello), a global level analysis for 1971-2008 finds that it is important to sort out different types of rentier dependence. International economic aid & assistance and worker remittances both contribute positively to terrorism and guerrilla attacks. Natural resource rents and military aid both have an inverted U-effect, with low to intermediate levels reducing attacks while medium to high levels (above roughly 28 percent of GDP) contribute positively to both forms of violence. International tourist revenues reduce terror attacks and this is net of controls for economic growth, suggesting that international tourism creates a more complex societal context that discourages political violence.

- 3) **Migration and transnational networks:** First, we have been developing a database on Kurdish conflict that shows that geolocations and intensities of Kurdish nationalist events in several Middle East countries, especially Iraq, Iran, Syria and Turkey. We are currently mapping with geocodes the locations of some 2000 + conflict events tied to the Kurdish cause. In future work, we will examine factors that influence these events using geospatial statistical models.

A dissertation underway examines international migration and radicalization in the Kurdish diaspora in Germany, Britain and Sweden. 'Diaspora Populations, Nationalism and Radicalization' finds that integration policies in the receiving country promote a reactive nationalism and autonomous immigrant organization that more likely to lead to radicalization where laissez faire policies encourage a less reactive persistence of national identity and political militancy.

- 4) **NGO growth and women's networks in Egypt and Turkey.** Charting these networks over time, we find considerable growth in the number of NGOs and local organizations that seem to foreshadow the recent protests associated with the “Arab spring.” Women’s networks have also grown in Turkey but the rate of growth has been lower. Our next step will be to see if the growth of these networks is associated with political participation and democratization in Turkey and whether the transnationalization of these networks has spread to other countries in the region.
- 5) **Social media indicators for political mobilization.** As a pilot test for studying social media methodology, we organized a workshop which took as its mission to: a) construct a literature review of empirical studies of social media, networking and political activism; and b) examine the effects of “Tweets” on interpersonal networking and political activism in a recent Ohio ballot initiative. Preliminary results suggest that social media networking is relevant to political activism but causality remains unclear. (i.e. Do the social media networks exist first, leading to activism?) We anticipate expanding this methodology to a Middle East context once we develop better methodology for drawing conclusions from the effects of social media networking.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

U.S. foreign policy has long assumed that strong rentier states are the best at providing a stable basis for international relations in the Middle East, which has of course been put into question by the “Arab spring.” Our research on rentier states should provide new insights into the political stability of these states, especially their vulnerability to civil protest and violence.

Our research on Kurdish cybernetworks suggests that this is a fragmented and factionalized movement. Our future work should clarify their connection to the geographic pattern of Kurdish violence.

Despite the conservative gender norms and practices that characterize most Middle East states, the recent growth of women’s networks suggests that issues related to gender and opening up opportunities for women will grow in importance in the politics of the region.

Publications through Minerva research:

- Hassan Aly and Mark Strazicich, "Did the Global Financial Crisis and Recession Impact Economic Growth in North Africa?", *Perspectives on Global Development and Technology*, vol. 4, (2012).
- Meyer, K; Barker, E; Ebaugh, HR; Juergensmeyer, M, "Religion in Global Perspective: SSSR Presidential Panel", *Journal for the Scientific Study of Religion* P. 240, Vol. 50: , (2011).
- Ola Ahlqvist, "On the (Limited) Difference between Feature and Geometric Semantic Similarity Models", *Lecture Notes in Computer Science*, P. 124, vol. 6631, (2011).
- Anne Price. PhD Dissertation. “Constraints and Opportunities: The Shaping of Attitudes Toward Women’s Employment in the Middle East.” June 2011.
- Jenkins, J. Craig, Katherine Meyer, Matthew Costello and Hassan Aly, "International Rentierism in the Middle East and North Africa, 1971-2008.", *International Area Studies Review*, vol. 14, (2011).

Sharable data resources to be generated:

See “*Deciphering Civil Conflict in the Middle East*” on page 119.

Motivation, Ideology and the Social Process in Radicalization

Arie W Kruglanski, University of Maryland, kruglanski@gmail.com

Michele Gelfand, University of Maryland; **Scott Atran**, Centre National de Recherche Scientifique and ARTIS; **Claudio Cioffi Revilla**, George Washington University; **Andrzej Nowak**, University of Warsaw
Government Program Officer: Harold Hawkins, Office of Naval Research
<http://umdminerva.org/>

Research Summary:

The objective of the present project is to gain understanding into the process of radicalization that is threatening to progress to violent extremism. We are aiming to carry out research in five sites identified as places at risk of radicalization, namely Morocco, Egypt, the Philippines, Indonesia & Sri Lanka. Our team is multidisciplinary including as it does psychologists, anthropologists, computational scientists and policy experts. The research project involves three major thrusts: (1) field research in the sites identified above, (2) computational modeling of radicalization and (3) derivation of suggestions for best practices on the level of policy. So far, we have obtained authorization and funding to carry out research in Morocco and have obtained initial findings from this site. We are presently engaged in the final negotiations for government approvals and IRB authorizations in the remaining four sites of our project.

Research Problem:

It is increasingly apparent that though “kinetic”/operational measures are indispensable in the global war on terror, they are tactical rather than strategic and they cannot comprise the entire solution to the problem. Like the mythical hydra that grows new heads in place of those that were chopped off so to Al Qaeda and its affiliates seem to spring new branches even if AQ core isn’t what it used to be. But we have AQIM, AQAP, AQ in Iraq, Boko Haram in Nigeria, jihadists in Syria and the Sinai peninsula, Islamist extremists in Indonesia, Malaysia, the Philippines, Thailand, China, as well as in Central Asia.

The wave of radicalization isn’t over and, if anything may be swelling. What makes it so appealing to so many? How can it be counteracted? To answer these questions, we need to understand what is the nature of radicalization as a social, cultural, and psychological process. We define radicalization as movement toward the advocacy of/engagement in activities that run counter to widely accepted norms and values, for example against the prohibition of killing uninvolved civilians. Not all those who hold radical attitudes necessarily engage in terrorism. But all who engage in terrorism are likely to hold radical attitudes, that is, attitudes that justify terrorism. In these terms, terrorism can be seen as the extreme end of radicalization.

Our project, therefore, is based on the premise that a viable program to combat violent extremism is to discover ways to prevent radicalization, and to reverse it where it has stricken root already, that is to promote effective deradicalization. This is what we aim to study in this project, and extract policy implications from our findings.

Methodology:

Methodologically, our research combines bottom up and top down approaches. Based on our prior work and theory we have developed a tentative conceptual model of radicalization and deradicalization processes. Our data collection will be only partially constrained by our model. Instead, we will look at the kind of issues that emerge out of a given local context -- for example in Egypt, Sri Lanka, or Indonesia -- and examine their relation to our model, modifying the model in their light if this seems indicated. We will employ several data collection techniques in the field, including surveys, experimental studies, structured interviews, and consensus building techniques. Additionally, we will be carrying out

computational simulations that could lead to emergent insights; these too would contribute to a further development of our model.

Initial Results:

Under a previous ARO MURI we began collecting data among participants in the Moroccan Arab Spring movement in two neighborhoods previously associated with bombings and other terrorist activities (Sidi Moumen, Casablanca and Jemaa Mezuak, Tetuan). Under the current Minerva we performed a second round of interviews and surveys related to evolving conceptions of Islam and democracy in the context of post-Arab Spring Developments. A key finding is that whereas informants tend to express belief that Islam and democracy are strongly convergent, in fact a variety of measures suggest that they are non-overlapping and even divergent. For example, strongly religious folk, especially those with low levels of education, express willingness to delay and even indefinitely postpone elections as long as progress towards implementation of their idea of the Arab Spring and implementation of Sharia is being made. Moreover, toleration of minorities, an independent judiciary, and other notions routinely associated with conceptions of democracy in the West are not routinely associated with conceptions of democracy among the Arab Springers in our study. We also have evidence that, in this round (spring 2013) versus the last (winter 2012), people believe that the Arab Spring has less to do with Democracy than with preserving the Monarchy, and that Egypt, and especially Iran, are less acceptable as role models (Turkey remains the preferred role model, with little change in support for the USA).

Anticipated Outcomes of Research:

Anticipated outcomes of this research include research findings attesting to the factors that promote and those that inhibit radicalization tendencies. Based on our prior conceptual and empirical work, we are particularly interested in evidence concerning the effects on radicalization of significance quest based on perceived trampling of individuals' sacred values. Rigorous empirical demonstration of the ideological basis of radicalization in the interest of boosting individuals' sense of self-significance will make a significant contribution to the social science based understanding of radicalization and will have significant policy implications as concerns programs aimed at countering violent extremism.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Radicalization that turns into violent extremism poses a clear and present danger to national defense, whether anti American radicalization occurred in US territory or in faraway lands (as the 9/11/01) and the Boston, Marathon attack (4/15/13) clearly demonstrate. Understanding the conditions that prompt and prevent radicalization is a first step toward devising measures, programs and policies for countering and reversing radicalization that are of first rate significance for national defense. The anticipated findings are likely to prove useful to understanding and—from an actionable perspective—systematically counteracting terrorist organizations' recruitment efforts and diverting the emotional and cognitive reasoning of potential recruits away from terrorism. In summary, the proposed work is likely to yield profound understanding of structural and psychological elements of terrorist networks of practical relevance to a broad range of national defense stakeholders.

Publications through this Minerva research:

- Atran, S. (2013). Black and White and Red All Over: How the Hyperkinetic Media is Breeding a New Generation of Terrorists, *Foreign Policy*, April; http://www.foreignpolicy.com/articles/2013/04/22/black_and_white_and_red_all_over_boston_bombing_terrorists_media
- Atran, S. (in press). Martyrdom's would-be myth buster. *Behavioral and Brain Sciences*.

- Cioffi-Revilla, C. (in preparation). A Theory of Individual Radicalization. To be submitted to *Political Psychology*.
- Ginges, J. & Atran, S. (2013). Sacred values and cultural conflict. In Gelfand, M. J., Chiu, C. Y., & Hong, Y. Y. (Eds.), *Advances in Culture and Psychology* (Vol. 4, pp. 273-301). New York: Oxford University Press.
- Kruglanski, A.W., Gelfand, M.J., Belanger, J. Gunaratna, R. & Hettiarachchi, M. (in press). Deradicalizing the Liberation Tigers of Tamil Eelam (LTTE): Some Preliminary Findings. Chapter in A. Silke (Ed.) *Prisons, Terrorism and Extremism: Critical Issues in Management, Radicalisation and Reform*. London: Routledge.
- Kruglanski, A.W., Belanger, J.J., Gelfand, M., Gunaratna, R., Hettiarachchi, M., Reinares, F., Orehek, E., Sasota, J. & Sharvit, K. (in press). Terrorism: A (Self) Love Story Re-directing the Significance Quest Can End Violence. *American Psychologist*.
- Sheikh, H, Ginges, J., & Atran, S. (in press). Sacred values in intergroup conflict: Resistance to social influence, temporal discounting, and exit strategies. *Annals of the New York Academy of Sciences*.

Military Transformation and the Rise of Brazil

David R. Mares, University of California, San Diego, dmares@ucsd.edu

Harold Trinkunas, Naval Postgraduate School

Anne Clunan, Naval Postgraduate School

Project Manager: Ana Minvielle, aminvielle@ucsd.edu

Government Program Officer: Micheline Strand, Army Research Office

Research Summary:

We are interested in the intersection of technological innovation and emerging powers. From a social science perspective, it is the application of science and technology innovations in particular social, political, organizational and economic settings that allows some “potential” powers to develop a greater ability to impact the international system, and thereby rise in the hierarchy of states. Technology can be thought of broadly as the application of ideas to develop real-world capabilities. In the present day, scientific innovation is closely tied to technological development, and both science and technology have fundamental impacts on societies, economies, and state capabilities, including military capabilities. However, not all technologies translate into influence and power at the international level for all states at the same time. Our goal is to examine the conditions under which states are able to benefit from the interaction of science, technology, and military innovation to emerge as important powers in the international system. We take as a given that scientific breakthroughs may produce far reaching changes, but want to examine the nature of the changes that matter for international politics and their impact on a state’s ability to project soft and hard power in the international sphere.

Methodology:

We use innovative social science to determine what domestic political, social, economic and organizational configurations support research, development and implementation of key technologies (nuclear and ballistic missile technology, remote sensing/precision strike/unmanned vehicles, nanotechnology, cyberwarfare, and biological/genetic) in potential powers that may provide states with greater influence in the international system. Research is oriented around four integrated projects that will provide insights into the nature, activities and long-term development prospects for military transformation in emerging states. Each project has its own relevant literature, will utilize distinct methodological approaches and has overlapping data requirements. “New Currencies of International Power” examines systemic dynamics that create opportunities for exerting influence at the international level. “Scientific and Technological Development and its Impact on Military Transformation” investigates how the national security definitions of dual use technologies affect cooperation between the scientific community and the military. “Military Transformation and Emergence as a Great Power” examines the importance of a scientific-technological-military network of sufficient connectivity and density to be capable of producing the desired output, the development of the political will or intentions to incorporate transformative military capabilities into a state’s approach to foreign policy, and identification of how elites construct the concept of “national interest.” The last project, “The Impact of the Science-Technology-Military Complex on International Behavior” analyzes how the specific nature of the science-technology-military complex, the process by which it is integrated into state capabilities, and its influence on state intentions affect the determination of whether the rising power adopts system-enhancing or system-disrupting behaviors internationally.

The research team is diverse in discipline and methodology and includes three important scholars who have hitherto not worked on Brazil but whose cutting edge scholarship on other countries (China, Russia and the US) and interest in extending their work to the Brazilian case augurs well for generating new insights.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Brazil is one of the few countries to have mastered the complete nuclear fuel cycle, it is able to export significant nuclear technologies, yet it is also critical of the international nuclear nonproliferation regime., Brazil in the future will become a significant source of defense-related and dual use technologies, yet is generally resistant to the highly restrictive export control regimes advocated by the US. This makes it important to understand whether Brazil's growing capabilities will lead it to do more to reshape international regimes to match its current preferences, or whether its achievement of major power status will lead it to adopt policy preferences closer to those of the US in an effort to restrict new additions to the major powers club.

Sharable data resources to be generated:

20 question Facebook survey regarding attitudes about potential Brazilian foreign policy in crisis situations. This is an experiment on the nature of the democratic peace and its basis in regime type. It aims to explain citizens' willingness to use force to resolve international disputes by testing for the effects of regime type (democracy / not democracy), dispute type (nuclear, territorial and resource), and UN approval on the willingness to use force.

ONGOING RESEARCH

Emotion and Intergroup Relations

David Matsumoto, San Francisco State University, dm@sfsu.edu

Mark G. Frank, Co-PI, University at Buffalo, State University of New York

Hyisung Hwang, Co-PI, San Francisco State University

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research

Research Summary:

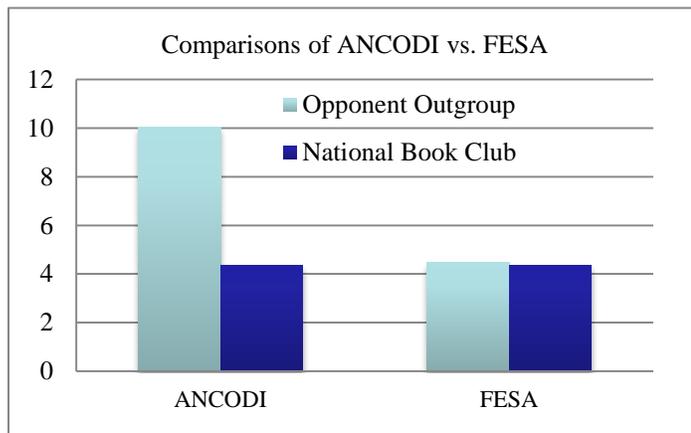
The goal of this five-year project is to examine the role of intergroup emotions, and specifically anger, contempt, and disgust, in facilitating the build up to aggression and violence. We test a theory of the role of specific emotions in the motivation of groups that transform angry or fearful groups into organizations of violence and hostility. We focus on the role of anger, contempt, and disgust in this transformation, and in the escalation toward violence. In the first two years of this project, we tested these ideas in two studies examining the role of emotion in leading to and justifying hostile acts in ideologically-based groups through an analysis of historical archives of world leaders and leaders of ideologically-based groups justifying acts of war and hostility against other nation states or groups. Both studies demonstrated that leaders of groups that eventually committed acts of aggression expressed more anger, contempt and disgust when talking about their opponent outgroups than did leaders of groups that eventually engaged in acts of resistance. In years 3 and 4, we conducted three laboratory studies in which we examined whether the elicitation of anger, contempt and disgust in members of political groups causally increased thoughts, feelings, or behaviors related to hostile or aggressive acts.

Methodology:

In all three laboratory studies, we recruited members of political groups that had a group opposed to its cause. We elicited a combination of either anger-contempt-disgust (ANCODI) or fear-sadness (as a comparison), and examined the resulting changes in hostile cognitions (Study 3), hostile language (Study 4), and hostile behavior (Study5) in relation to the opponent outgroup or a neutral outgroup.

Initial Results:

The results from all three studies demonstrated that ANCODI produced more hostile cognitions, language, and behavior against the opponent outgroups than did other negative emotions. These results extend the studies from years 1 and 2 by showing a causative link to the building blocks of hostile thoughts, feelings, or actions. See the figure for an example of one of the findings.



Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Monitoring the expression of emotions by members of political groups may provide a methodology to narrow down huge amounts of raw intelligence into a smaller, more manageable amounts of data for further analysis. Such monitoring can also be applied to identified sources of intelligence to provide probability profiles of aggression.

Publications through this Minerva research:

- Matsumoto, D., Hwang, H. C., & Frank, M. G. (2013). Emotions expressed by leaders in videos predict political aggression. *Behavioral Sciences of Terrorism and Political Aggression*, DOI:10.1080/19434472.2013.769116.
- Matsumoto, D., Hwang, H. C., & Frank, M. G. (2013). Emotional language and political aggression. *Journal of Language and Social Psychology*. Published online 7 February 2013, DOI: 10.1177/0261927X12474654.
- Matsumoto, D., Hwang, H. S., & Frank, M. G. (2012). Emotions expressed in speeches by leaders of ideologically motivated groups predict aggression. *Behavioral Sciences of Terrorism and Political Aggression*. Published online 28 August 2012, DOI: 10.1080/19434472.2012.716449.
- Matsumoto, D. & Hwang, H. C. (2012). The language of political aggression. *Journal of Language and Social Psychology*. Published online 8 October 2012, DOI: 10.1177/0261927X12460666.
- Matsumoto, D., Hwang, H. S., & Frank, M. G. (2012). The role of emotions in predicting violence. *Federal Bureau of Investigation Law Enforcement Bulletin, January*, 1-11. Quantico, VA: Federal Bureau of Investigation.
- Matsumoto, D. (in press). The role of emotion in escalating violent non-state actors to hostility. In A. Speckhard, L. Kuznar, T. Rieger, and L. Fernstermacher (eds.), *Protecting the homeland from international and domestic terrorism threats: Current multi-disciplinary perspectives on root causes, the role of ideology, and programs for counter-radicalization and disengagement*. Washington, DC: Joint Staff J3, Strategic Command Global Innovation and Strategy Center, and the Office of the Secretary of Defense Department of Development Research and Engineering.

Quantifying Structural Transformation in China

David Meyer, University of California, San Diego, dmeyer@math.ucsd.edu

Victor Shih, University of California, San Diego

Government Program Officer: John Lavery, Army Research Office

Research Problem:

The procedures for leadership transitions in China seem to be increasingly institutionalized, but they are still far from transparent. We propose to exploit several features of the Communist Party of China (CPC) system to develop novel quantitative analysis methods for CPC leadership dynamics. In particular, the hierarchical nature of the CPC is reflected in the ranking of the political elite so, for example, the several hundred Central Committee (CC) members and alternates are ranked, although starting with the 9th National Party Congress in 1969, only the ranks for the Politburo Standing Committee and the alternate members have been announced. Our first goal is to develop methods to quantify changes in (partially) ranked data that apply to the dynamics of the CC.

Conflict among the political elite in China is believed to be factional, where factional ties are social relations of mutual obligation, *guanxi*, primarily observable as a consequence of common birthplace, school, or work, *i.e.*, specific types of homophily. As correlations between factional strength and political rank have already been observed, our second goal is to develop novel quantitative methods to measure changes in such (multi-mode) social networks. These will support construction of more precise models for political change in China, and thus better insight into/anticipation of regime in/stability.

Furthermore, to record and organize the data for the ongoing Minerva project *The Study of Innovation and Technology in China* we have constructed and are populating a relational database with individuals, research institutes, corporations, government funding programs, *etc.*, together with a multitude of relationships among them. Doing so motivates a conceptualization and formalization of China's (or any country's) national innovation system as a collection of entities of multiple types with multiple kinds of relations among them, which need not be only dyadic. We call this formalization a "thick network", and our third goal is to develop quantitative measures of change in these more realistic networks as well. Ultimately these methods will allow analysis of the likely rate of innovation and development within various science and technology sectors.

Methodology:

Any metric on the space of permutations can be extended to give a (Hausdorff) distance between subsets of permutations. Defining these to contain permutations consistent with a partial ranking means we can construct a metric on partial rankings. The key is to choose the metric on permutations in a way that captures the relevant information when a permutation is a ranking. We do this by composing an l^p norm with a "rank transform function" chosen to emphasize changes at the top of the ranking, and to control the effect of the size of the set being ranked.

Our approach for networks, and for "thick networks" will be similar: Each can be identified as a metric space in its own right; then the Gromov-Hausdorff metric defines a distance between pairs of networks. The difficulty here, as with metrics on partial rankings, will be to make choices that lead to an effectively computable distance. An alternative construction, which may lead to simpler computations, is the "cut distance", although this will need to be generalized for our purposes.

Initial Results:

We have developed and compared metrics for partially ranked data. To do this, we constructed a family of metrics on complete rankings that allowed us to adjust the relative importance of changes in rankings (e.g., 2 changing to 1 is often more important than 102 changing to 101). These metrics extend by a general construction to metrics on partial rankings; the dependence on the size N of the full set of ranked items is controlled by adjustment of relative importance of changes at different ranks, and can be chosen so that N does not dominate the metric on partial rankings. We found efficiently computable formulas for these metrics and wrote computer code to calculate the distance between partial rankings using any of this family of metrics. Using extensive data collected and compiled from multiple Chinese and English language sources, we applied our rankings metrics to the most complete listing of members of the CC (and alternatives) from the first National Party Congress to the most current. The dataset to which we applied our ranking metrics is, to our knowledge, the most complete listing of members of the CC. To further test the strength of our ranking metrics we also applied our metrics to multiple datasets, including the weekly NCAA Division I men's basketball and football rankings, world professional men's and women's tennis rankings, and U.S. and U.K. rankings for boys' and girls' baby names.

We also worked on a telecommunications network project that will set the stage for our upcoming efforts on quantifying changes in networks. Using data provided by France Telecom Orange for Côte d'Ivoire we showed that the community structure of the cell tower to cell tower call volume network, as computed by (almost) maximizing modularity, is strongly associated with geographically localized language communities. To demonstrate this we devised a new method for compensating for spatial autocorrelation in categorical data.

Anticipated Outcomes of Research:

We expect to develop methods for quantifying changes in (partially) ranked data, in network data, and in "thick network" data. These will apply to the analysis of the Chinese leadership and National Innovation System, but they will also be generally applicable to a broad range of structured social science data.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

The strengths of China's economy and military, both supported by scientific and technological capabilities on trajectories to becoming world-class, make understanding Chinese leadership and innovation capabilities crucial for US national defense planning.

Publications through this Minerva research:

O. Bucicovschi, R. Douglass, D. A. Meyer, M. Ram, D. Rideout and D. Song, "Analyzing social divisions using cell phone data", UCSD preprint (2013). – awarded Best Scientific Prize in the Data for Development (D4D) competition at NetMob 2013, MIT, Cambridge, MA (May 1-3, 2013).

Terrorist Alliances: Causes, Dynamics, and Consequences

Philip Potter, University of Michigan, pbkp@umich.edu

Erica Chenoweth, University of Denver; **Michael Horowitz**, University of Pennsylvania
Government Program Officer: Ivy Estabrooke, Office of Naval Research

Research Problem:

Recent scholarship challenges the image of the individual terrorist as a “lone wolf,” suggesting few terrorists truly exist in isolation. The same is true of terrorist groups. Examples from around the world suggest that alliances between terrorist groups represent the rule much more than the exception. Such alliances can enhance the capabilities of the linked groups. When and how do terrorist groups ally with one another, states, and other non-state actors?

Unfortunately, answering that question is difficult because there is no comprehensive, time series data on terrorist alliances, and little systematic academic work addressing their causes and consequences. But understanding these alliances is vitally important for those interested in US security and counter-terrorism strategy. Intelligence organizations around the world already attempt, at the micro-level, to networks of terrorists within groups like Al Qaeda. We believe that a clearer understanding of the relationship between organizations will also yield significant benefits for those interested in reducing the capacity of these groups to inflict harm.

Methodology:

We began our dataset construction by generating a list of all terrorist groups known to exist from 1945-present. We are now in the process of identifying and coding the attributes of the relationships among these organizations including 1) the onset of collaboration; 2) the type of collaboration (material, training, ideological/inspirational, or intelligence); and 3) the termination of collaboration. We will then merge that into data on the activities of terrorist groups to understand the consequences of terrorist alliances for group behavior.

We have adopted a three-tiered data-collection strategy. First, we turn to content analysis of publically available media and scholarly sources to document the validity of these alliances described by prior research and identify alliances missed by prior data collection efforts. Relying primarily on encyclopedia, open source news reports, and declassified intelligence documents, we will also gather all available information on the genesis and decline of these relationships so that we can add the time series element to the data, which is entirely absent from existing studies but is crucial for any work that hopes to make causal inferences. Second, because linkages between many groups are difficult to identify and track over time, we will poll terrorism experts and generate a reliability score for each alliance relationship we identify. Third, we will conduct interviews with experts who have particular expertise in certain groups and regions.

In a parallel process, we are using use the same sources to develop brief case studies of each collaborative relationship. These case studies will both include what is known about the nature of the alliance and document the evidence that we have uncovered. The result will be a degree of transparency that is unusual in social science datasets. Qualitative analysis will further establish the motivations behind terrorist alliances, the processes that give rise to them, and the direction of the causal arrows in terms of the relationship between alliance and capability.

Implications for National Defense:

Our research speaks to issues of key concern to the defense community. First, given the demonstrated role of these networks in the spread of deadly terrorist tactics, understanding how these networks develop is critical for knowing how to disrupt them. For example, one issue of concern today is the spread of advanced improvised explosive device technologies from Iraq to Afghanistan and beyond. This research will help us to better understand how to prevent groups from forming alliances with more committed groups, helping the US government control the capability and lethality of both groups. Second, our project will be able to track changes in the behavior of alliance networks over time, such as the addition or subtraction of other groups, recruitment patterns, the selection of certain tactics, and the effects of government response on the composition of the networks. Third, and finally, our project will be the first to systematically study the disruption and breakdown of terrorist alliances.

Minerva Funded Research Products:

1. Michael Horowitz and Philip Potter “Allying to Kill: Terrorist Intergroup Cooperation and the Consequences for Lethality” *Journal of Conflict Resolution*, Forthcoming (with Michael Horowitz). Available at: <http://jcr.sagepub.com/content/early/2013/01/02/0022002712468726.abstract>
2. Philip Potter “Terrorism In China: Growing Threats with Global Implications” *Strategic Studies Quarterly*, Forthcoming.
3. Max Abrahms and Philip Potter “Understanding Indiscriminate Violence: Leadership Deficits and the Resort to Terrorism by Militant Groups” Revise and Resubmit, *International Organization*.
4. Michael Horowitz, Evan Perkoski, and Philip Potter “The Life-Cycle of Terrorist Tactics: Learning from the Case of Hijacking.” *Working Paper*.

Anticipated Research Products:

1. A data set, which we will make publicly available.
2. An interactive website containing the dataset, animations of relationship formation over time, a resource bibliography, and profiles on each terrorist group alliance.
3. Additional refereed articles explaining the rise and decline of terrorist group alliances based on our analysis of the data and case studies. These articles will include:
 - A paper on the founding of terrorist alliances, based on our new dataset.
 - A methodological paper on the design of the study of terrorist alliances.
 - A paper on factors that influence the end of terrorist alliances. This paper should be of particular interest to the Department of Defense since it will explore strategies that states have used to disrupt relationships between groups and the success and failures of those various strategies
 - An additional paper on the consequences of terrorist alliances. This paper will build on existing work by the co-principle investigators and study how these alliances lead to the diffusion of terrorist attacks and influence the lethality of terrorist groups.
 - A book bringing together the papers described above and including in-depth case studies and network maps of the terrorist alliance universe.

Sharable data resources to be generated:

See “*Terrorist Alliance*” on page 121.

A Global Value Chain Analysis of Food Security and Food Staples for Major Energy-Exporting Nations in the Middle East and North Africa

Lincoln Pratson, Duke University, lincoln.pratson@duke.edu
and Gary Gereffi, Duke University
<http://sites.duke.edu/minerva>

Government Program Officer: Micheline Strand, Army Research Office

Research Summary:

Civil unrest in the Middle East and North Africa (MENA) has periodically affected oil and gas exports from the region, helping to drive global surges in fuel prices, and in turn food prices. If future food price spikes last too long, they could exacerbate social unrest in MENA that leads to regional conflict and widespread malnutrition/starvation.

Methodology:

Our goal is to identify the energy-exporting countries in the Middle East and North Africa (MENA) whose grain imports are at most risk to insecurity. These grains form a major source of the caloric needs for the peoples in this region and include rice, wheat and corn. We are identifying and quantifying the supply chains for these staples to determine their structure, size and scope, the players involved in them, and the drivers governing their operation, including market forces, environmental change, internal politics, and external geopolitics with other nations. The analysis includes the development of a database that is integrated with GIS so that spatial information on the supply chains can be mapped and analyzed geographically. The data and supply chain models will be used in scenario analyses to identify specific risks to the supply chains and suggest prioritized defensive and/or proactive strategies to deal with problems arising from food shortages in MENA. If successful, our approach should provide a framework for conducting similar security analyses involving trade in commodities elsewhere in the world.

Initial Results:

- Assembled an extensive, multiyear database of attributes for each MENA country pertinent to the region's food and energy security (see Tables 1-5 in attachment).
- Database has been integrated into ArcGIS and a number of maps of the MENA regions have been generated, including country specific maps for Syria, Egypt, Saudi Arabia, Iran, United Arab Emirates (UAE) and Qatar (Tables 4 & 5 in attachment).
- The maps are viewable in an interactive web application, which along with the database and other project information is available to MINERVA Researchers via secure login to the Project URL, sites.duke.edu/minerva.
- Exploration of existing and new schemes for ranking the food and energy security of MENA countries indicates that while neither country-centric nor trade data can be used of and by themselves to indicate the risk of a country's food/energy insecurity, a combination of the two types of data may; this hybrid approach is currently being analyzed.
- Models of the wheat value chain have been developed for Saudi Arabia, Egypt, UAE and Iran.
- Detailed food security policy timelines have been developed for Saudi Arabia, Egypt, and UAE.
- A draft report is available on the wheat value chain for five strategic MENA countries (Saudi Arabia, Egypt, UAE, Iran and Syria) that illustrates the different components of the global value chain framework that we will be elaborating in greater detail in Year 2 of this study.
- A first-version model has been developed for optimizing the transport of commodities from supply points to demand centers along available infrastructure (roads, rails, pipelines, etc.) in countries experiencing commodity shortages due to natural disasters and/or geopolitical conflict.

Anticipated Outcomes of Research:

- A ranking for the food security of MENA countries in terms of socioeconomic factors and available information on the structure of the supply chains for major grain imports to the MENA region;
- Detailed models of the global value chains (GVCs) for the three most important grains imported by three MENA countries whose food security is identified as being at significant risk;
- Identification of points of risk within the GVCs for the key grain imports to these countries and strategic options for managing these risks.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Through an in depth understanding of the GVCs for food staples in major energy-exporting nations in the Middle East, we will develop models not only of risks to these supply chains, but where the threats exist within the supply chains, how the supply chains might be disrupted, and what the ramifications of those disruptions might be for other nations, from those dependent on the hobbled country's energy exports to those that supply the country with food staples. Such information will aid DoD decision-making and policy efforts directed towards identifying and anticipating zones of unrest, instability and conflict, as well as allocating resources for defense efforts and humanitarian aid.

Sharable data resources to be generated:

See "*Assembled Datasets for MENA Food and Energy Global Value Chains*" on page 123.

Iraq's Wars with the U.S. from the Iraqi Perspective: State Security, Weapons of Mass Destruction, Civil-Military Relations, Ethnic Conflict and Political Communication in Ba'athist Iraq

Leonard Spector, Monterey Institute for Policy Studies, lspector@miis.edu

Ibrahim al-Marashi, California State University San Marcos

Amy Smithson, Ray Zilinskas, Egle Murauskaite, Center for Nonproliferation Studies, Monterey Institute of Int'l Studies

Government Program Officer: Micheline Strand, Army Research Office

The purpose of the research is to gain insight into the Ba'athist Iraqi security network and Middle Eastern security structures as a whole, including WMD proliferation.

Methodology:

Drawing on original Iraqi documents (from the Conflict Records Research Center (CRRC) database) to produce an analysis from the internal perspective of the Iraqi leadership comparing underlying frameworks: fear; enticement and intimidation (*targhib* and *tarhib*); patronage; decision-making at the time of war; constructivism; and structuralism and the connection to decisions made on WMD programs. There are almost no existing analyses of internal events in Iraqi society or of Iraq's security organizations 1990-2003. Other sources have only attempted to second-guess the underlying motivations behind some of these pivotal events. The release of the documents through CRRC adds an entirely new dimension not only to the study of the First and Second Gulf Wars but also to the understanding of contemporary Middle East history.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Iraq today is at a crossroads, as its complex political, religious, social structures, suppressed for so many years in a "Saddam-centric" society, have now re-emerged in a near-vacuum of authority. This project is a key to understanding the past and future of the Iraqi political ethos and drawing lessons for other countries in the region, including Syria. Understanding the thinking and political strategies driving Iraqi leadership behavior throughout the armed conflicts from 1980s to 2003, and the decision-making with regard to WMD inspections, will contribute to effective, sustainable peace-building in the Middle East region.

Summaries of select studies: (contact authors for details)

Ugly Truths: Saddam Hussein and Other Insiders on Iraq's Covert Bioweapons Program

Lead: Amy Smithson (Occasional Paper 17, James Martin Center for Nonproliferation Studies, March 2013, http://cns.miis.edu/opapers/pdfs/130403_op17_ugly_truths.pdf.)

Although the inspections of the United Nations Special Commission (UNSCOM), which operated from April 1991 to October 1998, unmasked Iraq's biological weapons (BW) program and revealed a considerable amount of detail about its planning, organization, and execution, various factors about the program remain unclear. These gaps in information persisted through the activities and reporting of both the United Nations Monitoring, Verification, and Inspections Commission, which existed from December

1999 until the outbreak of the second Gulf War in March 2003, and the Iraq Survey Group, which reported on the remnants of Iraq's weapons of mass destruction capabilities after the 2003 Gulf War. To deepen understanding about Iraq's BW program, the staff of the James Martin Center for Nonproliferation Studies turned to the records of the Conflict Records Research Center (CRRC) database.

The documents thus far available from the CRRC database offer enticing and informative glimpses into the views of Iraq's hierarchy regarding germ weaponry and the actions authorized to keep this most secret of Iraq's unconventional weapons programs under wraps. Along the way, the documents forever strip bare a few of the cover stories the Iraqis spun to try to insulate their leader from any assertion that he was not involved in the nasty business of biological weapons. In two ways, the Iraqis tried to set Saddam Hussein's powerful son-in-law, Lt. Gen. Hussein Kamal Hassan up as the patsy for Iraq's bioweapons program—asserting that he orchestrated the program without the knowledge of his superiors and that he was responsible for cloaking the program from everyone. The tapes of Saddam and his cronies irrefutably show that Saddam knew all about his germ weapons program and even gave specific, scorched-earth commands when Kamal asked him how this arsenal should be used during the 1991 Gulf War. Rather than turn to one type of biowarfare agent and one type of delivery system, he wanted all agents and all methods of delivery thrown into battle. Furthermore, on several occasions, the tapes record Saddam's extended discussions with his senior staff about how to use various ploys to fool UNSCOM inspectors about the bioweapons program.

Offering a sad window into the machinations of Saddam's lieutenants, Amin's confessional letter to Saddam on the heels of Kamal's defection palpates with the fearful atmosphere surrounding Saddam, where top officials and ordinary Iraqis knew they could fall prey to Saddam's henchmen. A second letter, Aziz's draft litany of complaints to the United Nations, captures Saddam's chief spinner rolling out one justification after another in a determined attempt to portray Iraq as the victim of unjust persecution, and not a state that tried every means possible to acquire weapons of mass destruction and then hid the essential components of those weapons programs from UNSCOM so that they could be resurrected after the departure of the inspectors. Thus, with a relatively small number of documents related to Iraq's bioweapons activities, the CRRC database reveals some of the ugly reality of what really transpired within that weapons program.

Saddam's Targeting of Civilians during Iran-Iraq War: Extraordinary Measure or Business as Usual?

Lead: Ms. Egle Murauskaite

This article is an attempt to understand the drivers behind Saddam Hussein's decisions to target civilians during the Iran-Iraq War (1980-1988). Comparing the intensity of urban targeting and consequent casualties throughout the course of war, the study asks whether they are linked to Iraqi performance on the battlefield, type and intensity of parallel Iranian campaigns, or international attention to the matter. It explores Saddam's relation to international norms on the treatment of noncombatants, as well as any potential impact the international community may have had over his conduct of war. Analysis is based on the archive of tapes of Saddam Hussein's conversations with his advisors at the Conflict Records Research Center, and public records from his 2004 interrogation sessions, as well as media reports and communiqués from the period of the Iran-Iraq War.

The available evidence suggests that Saddam saw missiles as interchangeable with aerial bombardment, and the effects they produced or the circumstances of their employment do not indicate that missiles were treated as a distinct category of weapons in Baghdad. Indeed, their role in the Iran-Iraq War was effectively dwarfed by that of the Iraqi air force. In terms of attacks on residential areas, the study indicates that the brief periods of their absence constituted exceptions in the standard practice during the Iran-Iraq War, not the other way around. Finally, the study concludes that concerns about international opinion appear to have had the power to moderate Saddam's conduct of the war during an episode of particular Iraqi vulnerability, but policy-makers in major-power capitals were largely unaware of the leverage they possessed, at least at that moment, and did not make a conscious effort to employ it.

Regime Resilience and Counter-Insurgency in Ba'athist Iraq and Syria: How Saddam Hussein's Government Persevered against Internal Threats and the Al-Asad Regime's Parallel Strategies

Lead: Ibrahim al-Marashi

While each country has its own unique history, Ba'athist Iraq and Ba'athist Syria developed similar strategies for maintaining regime security, including a security architecture that consisted of a sprawling network of competing intelligence agencies, and military and para-military forces. For both states, the strategies proved effective in creating regimes resilient to internal and external threats. Military coups, internal uprisings, and disasters on the battlefield failed to unseat the government of Saddam Hussein in Iraq and, to date, that of the Al-Asads in Syria, creating regimes that spanned decades. In-group patronage is also a consistent feature of both states, and the beneficiaries of in-group patronage within the security apparatus have supported the regimes to the end rather than abandoning them. Finally, these regimes have shown themselves willing to unleash their security organs, employing high levels of violence against their own population to quell internal threats. This paper examines what captured Iraqi state documents can reveal about regime dynamics in Syria, and seeks to answer questions about how the Damascus government has so far survived an internal uprising that has spanned two years without a successful coup attempt or rebel assault on the capital.

Saddam Hussein's Chemical Warfare Program: New Insights from Captured Records

Dr. Raymond Zilinskas, Director Chemical and Biological Nonproliferation Program, James Martin Center for Nonproliferation Studies (Publication late 2013)

This study details the background to Iraq's chemical warfare (CW) program, including the Saddam Hussein regime's view of the Geneva Protocol banning the use of chemical weapons and adherence to its provisions; the rationale behind Saddam's decision to acquire a CW program; the CW program's objectives and aims; and its major accomplishments over time. Second, the study examines Iraq's tactical and strategic use of chemical weapons during the 1980-1988 Iran-Iraq War and the Saddam's use of chemical weapons against perceived internal enemies, mainly Kurds. The study then analyzes Iraq-U.S. relations during the Iran-Iraq War and U.S. reaction to Iraq's acquisition and use of chemical weapons. In particular, the study seeks to clarify whether the U.S. government wholeheartedly condemned Iraq's use of chemical weapons and also whether it might have assisted Iraq's acquisition or use of these weapons. The paper also examines a set of specific research questions, including Saddam's planning for use of the advanced nerve agent VX; whether the Iraqi CW program engaged in human experimentation, and the lessons the regime learned from its use of CW.

Terrorism, Governance, and Development

Jacob Shapiro, Princeton University, jns@princeton.edu

Eli Berman, University of California at San Diego; Jason Lyall, Yale University;

Joseph Felter, David Laitin, and Jeremy Weinstein, Stanford University

Project Manager: Kristen Seith, kseith@princeton.edu

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research
<http://esoc.princeton.edu>

Research Problem:

The Minerva TGD Team's goal is to enhance the understanding of how to implement governance and development policies to more efficiently (re)build social and economic order in conflict and post-conflict areas. We use new data from a range of locations to extend and test current theories and provide empirically-based findings to inform policy decisions about terrorism, governance, and development.

Methodology:

Our empirical approach is based on using game-theoretic models to generate refined predictions about specific interactions (e.g. aid and violence) that can be tested with careful attention to causal identification. Although this approach has been successful in analyzing non-violent social systems, only a small handful of researchers are bringing this powerful approach to the study of conflict. One major obstacle to employing this approach is that the highly-aggregated measures of terrorism and insurgency captured in most *existing* data do not permit researchers to quantitatively study the impact of sub-national factors, which leaves scholars open to a host of ecological-inference problems. Therefore, we gather high quality research data from conflicts around the world and new fieldwork.

Initial Results:

- Governments (and their allies) who incur civilian casualties in their operations will face more attacks. Rebels face a symmetric reaction (causing casualties makes it harder for them to operate) in some regions but not all.
 - Afghanistan (NBER WP16152), Iraq (*American Journal of Political Science*)
 - Findings briefed to GEN McChrystal and CJCS (March 2010)
- Poor economic conditions can be negatively correlated with violence and support for militancy.
 - Regions with high unemployment have less insurgent violence: Afghanistan, Iraq, and the Philippines (*Journal of Conflict Resolution*)
 - The poor are more negative towards militant organizations, likely because they suffer more from the externalities of militant violence: Pakistan (*American Journal of Political Science*)
- Small-scale reconstruction projects are violence reducing, large-scale ones are not. ○ Iraq (*Journal of Political Economy*), Vietnam (Working Paper)
 - Findings briefed to GEN Petraeus (November 2010) and USAID (various dates)
- The design of development programs is critical. (*American Economic Review Papers & Proceedings*)
- ICT-based election monitoring displaces corruption. (Working paper, revise and resubmit to *AER*)
- TGD publications have been cited in key policy documents including the May 2011 NATO Civil-Military Fusion Centre and the June 8, 2011 Foreign Relations Committee Comprehensive Report, entitled, "Evaluating U.S. Foreign Assistance to Afghanistan."

Anticipated Outcomes of Research:

- Thirty publications in peer-reviewed journals will provide new research findings on conflict topics.
- Research-ready, fine-grained geospatial data on aid, economic development and political violence will be available via the Empirical Studies of Conflict project's website (<http://esoc.princeton.edu>).
- Data and metadata from the following countries will ultimately be posted on the ESOC website: AFG (2001-present), COL (1999-2011), EGY (2010-11), KEN (2007-08), IRQ (2003-present), PAK (1988-present), the PHL (1975-present), and VNM (1965-73).
- We have developed a standard set of questions and innovative survey methods to elicit sensitive views, such as support for armed actors. Surveys were fielded in Northern Ireland and Colombia with TGD funding and in Afghanistan, Pakistan, Palestine, and the Philippines with other funding sources.
- A refined theory of insurgency may serve as an alternative framework to previously under-specified military doctrines. The baseline model has been published in the *Journal of Political Economy*.
- Senior leaders in military and aid organizations (in the U.S. and abroad) have been introduced to new methods of evaluating the effectiveness of their policies.
- A cohort of new scholars (including a dozen tenure-track placements at leading universities) will have the theoretical tools, data, and contacts to execute fresh research.
- Practitioners have received training on how to analyze current and emerging challenges, including one workshop on using emerging ICT technologies to combat corruption and enhance governance.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Rebuilding social and economic order in conflict and post-conflict areas will remain critical tasks for the U.S. and allies who seek to defeat violent organizations and prevent new non-state threats. Minerva TGD scholars have provided research and analytical support to government organizations, including ISAF Counterinsurgent Advisory and Assistance Team (CAAT), Defense Advanced Research Projects Agency, and USAID. These engagements build the human capital for analyzing social systems within DoD.

Publications through this Minerva research (selected from a total of 28 publications):

- Bahney, Benjamin W., Radha K. Iyengar, Patrick B. Johnston, Danielle F. Jung, Jacob N. Shapiro, Howard J. Shatz. 2013. "Insurgent Compensation: Evidence from Iraq." *American Economic Review Papers & Proceedings* 103:3, 518-522.
- Berman, Eli, Michael Callen, Joseph H. Felter, Jacob N. Shapiro. 2011. "Do Working Men Rebel? Unemployment and Insurgency in Afghanistan, Iraq, and the Philippines." *Journal of Conflict Resolution* 55(4): 496-528.
- Berman, E., Jacob N. Shapiro, and Joseph H. Felter. 2011. "Can Hearts and Minds be Bought? The Economics of Counterinsurgency in Iraq." *Journal of Political Economy* 119:4, 766-819.
- Berman, Eli, Joseph H. Felter, Jacob N. Shapiro, and Erin Troland. 2013. "Modest, Secure, and Informed: Successful Development in Conflict Zones." *American Economic Review Papers & Proceedings* 103:3, 512-517.
- Biddle, Stephen, Jeffrey A. Friedman, and Jacob N. Shapiro. 2012. "Testing the Surge: Why did Violence Decline in Iraq in 2007?" *International Security* 37(1): 7-40.

- Blair, Graeme, C. Christine Fair, Neil Malhotra, and Jacob N. Shapiro. 2013. “Poverty and Support for Militant Politics: Evidence from Pakistan.” *American Journal of Political Science* 57:1, 30-48.
- Blair, Graeme, Jason Lyall, and Kosuke Imai. “Explaining Support for Combatants in Wartime: A Survey Experiment in Afghanistan.” *American Political Science Review* Forthcoming.
- Callen, Michael, Mohammad Isaqzadeh, James D. Long, and Charles Sprenger. “Violence and Risk Preference: Experimental Evidence from Afghanistan.” *American Economic Review* Forthcoming.
- Condra, Luke N. and Jacob N. Shapiro. 2012. “Who Takes the Blame? The Strategic Impact of Collateral Damage.” *American Journal of Political Science* 56:1,167–187.
- Fair, C. Christine, Neil Malhotra, Jacob N. Shapiro. “Democratic Values and Support for Militancy: Evidence from a National Survey of Pakistan.” *Journal of Conflict Resolution* Forthcoming.
- Shapiro, Jacob N. 2013. *The Terrorist’s Dilemma: Managing Violence Covert Organizations*. Princeton University Press.
- Weidmann, Nils B. and Michael Callen. 2013. “Violence and Election Fraud: Evidence from Afghanistan.” *British Journal of Political Science* 43:1, 53-75.

Sharable data resources to be generated:

See “Empirical Studies of Conflict Database Set” on page 127.

Data (GIS and tabular format), publications, and working papers are available at the Empirical Studies of Conflict project’s (ESOC) website: <http://esoc.princeton.edu>.

Modeling Dynamic Violence: Integrating Events Data Analysis and Computational Modeling

Stephen Shellman, College of William & Mary, smshel@wm.edu

Michael Findley, Brigham Young University; Joseph Young, American University.

<http://www.wm.edu/offices/itpir/vipcat/index.php>

Government Program Officer: Amber Story, National Science Foundation

Research Problem:

Our interdisciplinary team's goal is to uncover causal mechanisms underlying the intensity of violent political conflict across space and time in order to develop actionable policies to quell such activities. Specifically, we aim to understand how government actions mitigate or intensify the use of violence by rebels, insurgents, and other dissident actors.

Methodology:

To address this problem, we combine the newest state of the art advances in automated events data, agent based modeling, and quantitative statistical models. First, our project pulls together a variety of data sources funded by NSF, DARPA, AFRL, and ONR efforts as well as employs new data collection efforts to fill in the gaps and brings them together under three fairly new, innovative analytic rubrics for rigorous investigation. We bring together event data containing myriad actors' tactical choices culled from 6 million text reports, social network data calculated from our dyadic events data, structural data available in many publicly available data sources such as the World Bank, Polity IV, etc, and sentiment data we have assemble from text reports, blogs, and Diaspora sources (and future work will make use of Twitter and Facebook data). To address the complexity of how these violent networks operate, we use agent-based models that simulate how actors behave given a variety of conditions and interdependent choices. The model yields hypotheses about the real world and allows us to evaluate actual data regarding how state policies lead to increases or decreases in violent activities of dissidents. We concentrate on repressive activities versus tactics that "win hearts and minds" such as offering aid, building infrastructure, and maintaining security. Then we test the agent based model's predictions using hierarchical models of the events and sentiment data we collected.

Results:

Figure 1 shows our agent based model platform and a static screenshot of interacting agents.

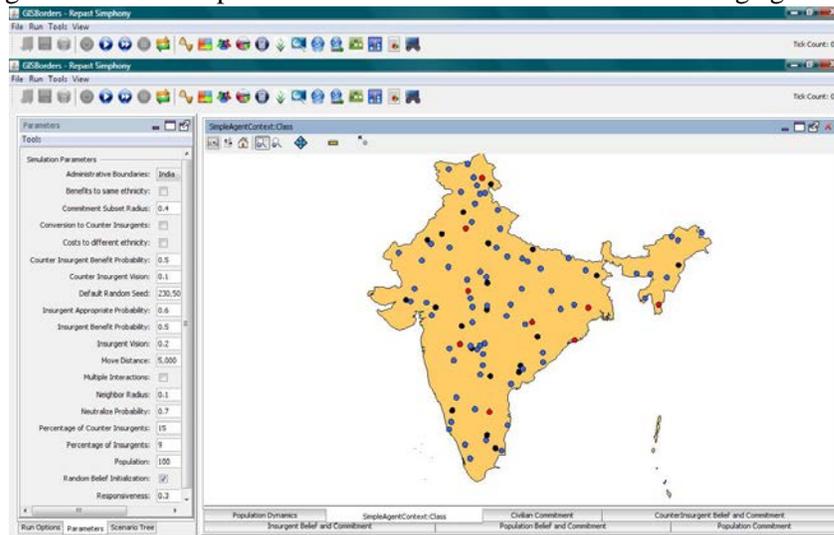


Figure 1 Interacting state and dissident agents within India.

Figure 2 shows the effects of insurgent benefits on the number of insurgents who join the cause.

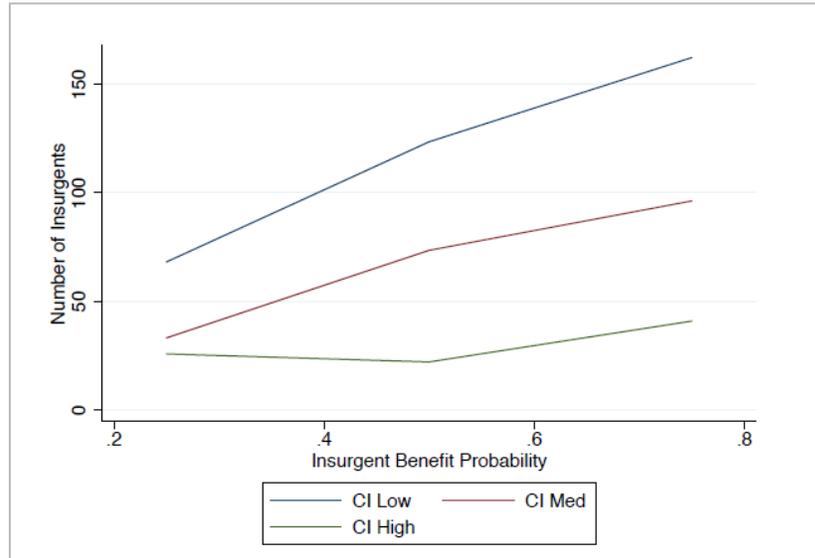


Figure 2 Graphed Effects of Insurgent Benefits

The agent based model produces the following hypotheses:

- (Support): When insurgents **increase** benefits to the population, this leads to an **increase** in insurgent strength
- (Hearts and Minds): When counterinsurgents **increase** benefits to the population, this leads to a **decrease** in insurgent strength
- (Attrition): When counterinsurgents **increase** costs imposed on the population, this leads to an **increase** in insurgents strength

To test the implications of the agent based model we developed a two stage statistical model depicted in Figure 3.

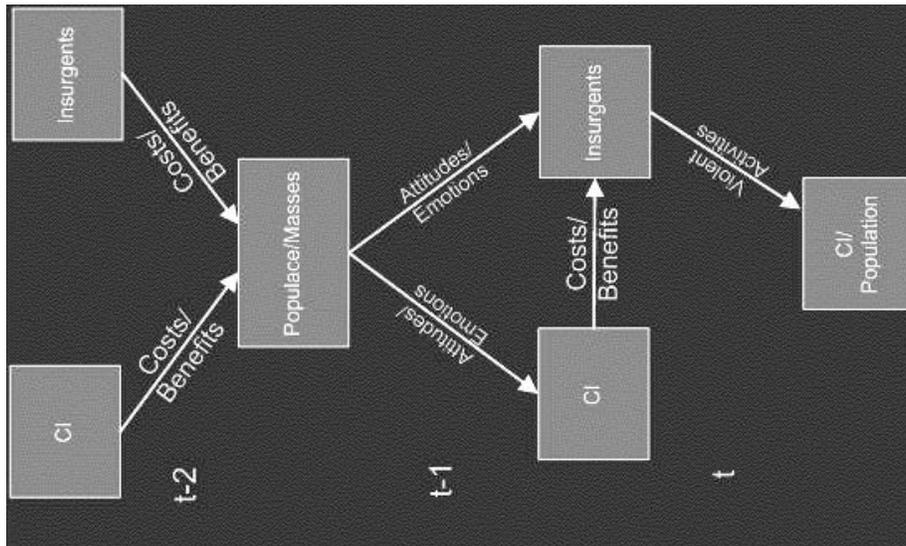


Figure 3 Two-Stage Statistical Model

Table 1 displays the outputs of the two stage model.

Table 1 Two Stage Model Results

IVs	DV 1: Pop Sentiment to CI_{t-1}		DV 2: Pop Sentiment to Insurgents $_{t-1}$		DV 3: Insurgent Violence $_t$ (Negative Binomial)	
Pop Sentiment to CI_{t-1}					.0064**	.0033
Pop Sentiment to Insurgents $_{t-1}$.0302**	.0145
CI to Insurgents Hostile Totals $_{t-1}$.0051***	.0013
CI to Insurgents Hostile Totals $^2_{t-1}$					-6.35x10 ⁻⁰⁶ ***	-1.73x10 ⁻⁰⁶
CI to Insurgents Cooperation Totals $_{t-1}$.0011	.0011
CI to Insurgents Cooperation Totals $_{t-1}$					-.0017	.0013
CI to Population Hostile Totals $_{t-2}$	-.0439*	.0233	.0044**	.0020		
CI to Population Cooperation Totals $_{t-2}$.0307*	.0167	-.0020	.0021		
Insurgents Population Hostile Totals $_{t-2}$	-.0136	.0702	.0053	.0083		
Insurgents Population Cooperation Totals $_{t-2}$	-.2045	.1917	.0016	.0211		
N		148		148		149

Figure 4 shows the effects of population attitudes on political violence.

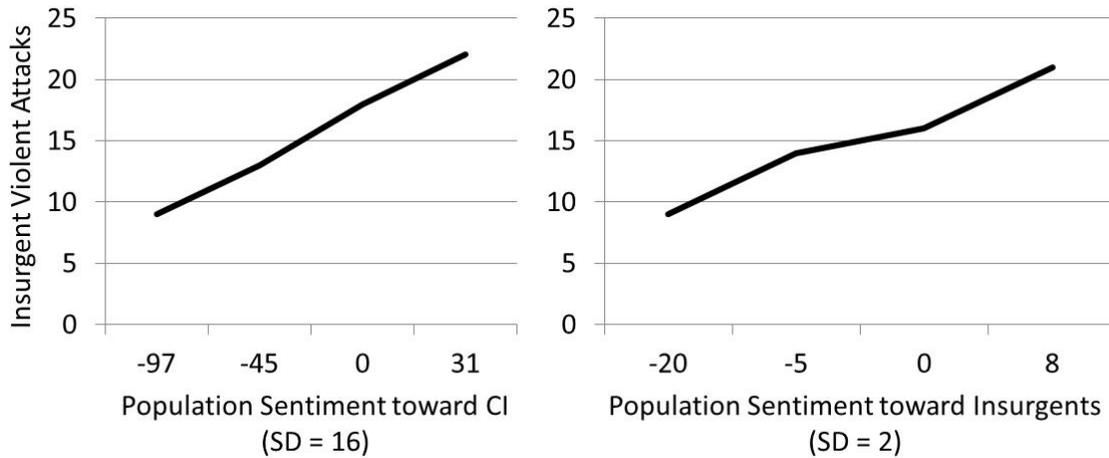


Figure 4. Effects of Population Sentiment on Violence

Results summary: Essentially we find that positive attitudes towards insurgents yielded more violence by those insurgents as they increased their support, while the same attitudes towards governments also increased violence. The government used the support of the population as a mandate to carry out violence against insurgents.

Current/Future Work: We have since been able to collect more disaggregated events and sentiment data by province and have updated the ABM to operate across multiple provinces. The results of this project will be posted on our project page as well as presented at future conferences and meetings.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Our project is one of the first to our knowledge (in the academic community) to study the links between support, government dissident interactions, group goals and ideologies, and the evolution of network structures. To date, these phenomena have been treated as separate domains of inquiry. Knowing the interrelationships among these sets of variables provides actionable information to policymakers and military. The research promises to tease out the direct and indirect effects of these related variables on one another, especially the impacts of DIMEFIL actions, and through one another to help us better understand dissidents and the threats they pose to the rule of law.

Publications through this Minerva research:

- 2013 "Shifting Sands: Explaining and Predicting Phase Shifts by Dissident Organizations." Stephen M. Shellman, Brian Levey and Joseph Young. *Journal of Peace Research* 50(3): 319-336.
- 2010 "Disaggregating Actors in Intrastate Conflict" with Clare Hatfield & Maggie Mills. *Journal of Peace Research* 47(1): 83-90.
- 2010 "Instant Data, Just Add Dictionaries: Political Analysis Using Automated Event Data and Sentiment Coding." Phil Schrodt & Stephen M. Shellman. In Human Social Culture Behavior Modeling Program Newsletter, US Department of Defense, 6 (Summer).
- 2010 "Analyzing Political and Social Regional Stability with Statistics: Challenges and Opportunities." Victor Asal & Stephen M. Shellman. In *Perspectives on Political and Social Regional Stability Impacted by Global Crises - A Social Science Context.* US Government White Paper, US Department of Defense. Edited by Hriar Cabayan, Office of Secretary of Defense, et. al.
- 2009 "The Effects of Counter-Terror: Empirical Political Dynamics." Stephen M. Shellman and Victor Asal In *Protecting the Homeland from International and Domestic Terrorism Threats.*, US Government Strategic Multi-Layer Assessment White Paper, US Department of Defense. Edited by Laurie Fenstermacher, Larry Kuznar, Tom Rieger, and Anne Speckhard.

Sharable data resources to be generated:

<http://www.wm.edu/offices/itpir/vipcat/index.php>

Data and papers to be posted off this site in coming months.

China's Emerging Capabilities in Energy Technology Innovation and Development

Edward S. Steinfeld, Brown University, edward_steinfeld@brown.edu
Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

In recent years with growing concerns about resource scarcity and climate change, the ability to develop and produce state-of-the-art energy technology has come to be seen in the United States as an important underpinning of American commercial competitiveness and U.S. national security. America's status of late as an energy technology innovator and producer, however, has been complicated by two developments: the emergence of China as a global leader in energy technology investment; and the increasing tendency for energy technology R&D to be conducted through globalized, multi-firm networks. The two phenomena are related, since Chinese technology firms have become deeply embedded in global production networks, including in the energy technology domain. The inter-firm division of labor has become more complex, and knowledge is flowing in new ways.

This study seeks to understand the exact nature of Chinese capabilities in the commercial energy technology development domain, as well as the relationship of those capabilities to technology innovation efforts conducted beyond China's borders. The study focuses primarily on four technology areas: wind turbine manufacturing, solar photovoltaics production, civilian nuclear power production, and clean coal technology.

Methodology:

This study relies primarily on qualitative research, including extensive firm-level field interviews and case study development. Interview respondents to date have included Chinese and overseas firms engaged in technology innovation and production, private and public sector investors, and government regulators. Members of the research team were present in China throughout the grant's first funding period (August 2012 through August 2013). The main aim of the interviews was to document the specific role played by Chinese firms in global energy technology development networks, the specific capabilities Chinese firms possess in terms of technology innovation, and the patterns of learning that exist between Chinese and overseas partners.

Initial Key Findings:

As previous studies have suggested, Chinese firms have yet to exhibit substantial capabilities for radical innovation, cutting edge upstream R&D, or new-to-the-world product introduction. However, we have identified important modes of downstream innovation, especially surrounding the technology commercialization process, for which Chinese firms are arguably now global leaders. These capabilities include:

- Adaptation to rapid tempo operations, and capabilities for compressing developmental lead-times for complex technology systems.
- Extensive capabilities for "cost out," the removal of waste from the product development and manufacturing process.
- Extensive capabilities for engagement in networked, inter-firm learning.

Important to emphasize is that each of these capabilities depends on far more than government subsidization or other factor cost advantages. Instead, each depends on extensive know-how, much of which resides in engineering teams that operate at the intersection of upstream R&D and downstream fabrication. In some cases, this knowledge is manifested in the redesign of existing products (for cost

reduction or greater manufacturability). In other cases, this know-how is applied in collaborative fashion to the new product designs of external commercial partners, thus making those designs commercially viable on a cost basis. In still other cases, this knowledge involves managerial approaches to handling large supply chains and complex operations. The initial research has also found, however, that in certain key areas, such as project management surrounding the deployment of complex technology systems (i.e., the deployment of civilian nuclear power plants, or the building of large scale manufacturing facilities as part of technology transfer agreements), Chinese firms are still substantially lagging overseas counterparts, including within the Chinese domestic market.

Chinese firms in the energy technology domain have also lagged in their ability to enter emerging high-value portions of the energy sector, most notably in energy services, IT-related products (including software and data management) surrounding power system optimization, and IT-related design tools.

In short, China has become an important source of downstream energy technology innovation, and an important enabler of certain kinds of upstream innovation abroad. But the country is still lagging in important areas of energy technology development, especially those involving cross-disciplinary, multi-sectoral knowledge.

Initial Publications through Minerva Research:

John Deutch and Edward S. Steinfeld, “A Duel in the Sun: The Solar Photovoltaics Conflict between China and the United States,” Report for the MIT Future of Solar Energy Study, MIT Energy Initiative, 2013.

John Deutch and Edward S. Steinfeld, “Made in America, and Everywhere Else,” *The Wall Street Journal*, March 12, 2013.

Florian Metzler and Edward S. Steinfeld, “Sustaining Global Competitiveness in the Provision of Complex Products and Systems: The Case of Civilian Nuclear Power Technology,” in Richard Locke and Rachel Wellhausen, eds, *Production in the Innovation Economy* (Cambridge: MIT Press, forthcoming).

Jonas Nahm and Edward S. Steinfeld, “The Role of Innovative Manufacturing in High-Tech Product Development,” in Richard Locke and Rachel Wellhausen, eds, *Production in the Innovation Economy* (Cambridge: MIT Press, forthcoming).

Adapting to Water Scarcity: River Treaties and Militarized International Conflict

Jaroslav Tir, University of Colorado – Boulder, jtir@colorado.edu

Douglas M. Stinnett, University of Georgia

Government Program Officer: Brian Humes, National Science Foundation

<http://sobek.colorado.edu/~jati3108/>

Research Problem:

Due to population growth, pollution, development, and climate change, humanity is facing the prospect of inadequate access to freshwater. The quest for water motivates countries to increasingly tap into water sources shared with other states, chief of them being trans-boundary rivers. The growing and increasingly competitive consumption of trans-boundary river water in turn has important implications for international security, as the unregulated use of rivers not only exacerbates problems of water scarcity but also sets the stage for political and military conflict between riparian countries. Indeed, many policymakers and pundits predict that water will soon replace oil as the major resource over which wars of the future will be fought – the so-called water wars scenario.

Unfortunately, problems related to water scarcity are here to stay, as the demand for water is only expected to increase in the coming years. Furthermore, climate change is making water access less reliable and predictable, as the weather patterns are already becoming more erratic and rainfall is projected to decrease in the arid and semi-arid regions of the world. At the same time, technological innovations that allows for a more efficient use of water are unfortunately a woefully inadequate solution for keeping up with the growing demand for water; that is, technology alone cannot save us from the expected negative political ramifications of water scarcity; political solutions are needed.

Methodology:

Given the above problems and projections, we argue that the best way of managing the political consequences of growing water scarcity is the strategy of adaptation. Because the pressure to draw increasingly more water from internationally-shared freshwater sources will place countries in a competitive mindset, we argue that managing the use of these sources will go a long way toward preventing water-related conflicts from growing into international armed confrontations or even water wars. We therefore focus specifically on institutions governing the use of trans-boundary rivers and their ability to prevent and manage armed conflicts between water-stressed riparian countries.

Our central hypothesis is that the ability of a river treaty to prevent armed international conflict depends on the extent of formal institutional features the treaty provides to oversee the agreement. The impact of four institutional features is investigated: monitoring provisions, conflict management procedures, enforcement mechanisms, and delegation of authority to intergovernmental organizations. The theory posits two different casual mechanisms. First, by supporting the cooperative management of rivers, treaty institutionalization can address the core problem of water scarcity and prevent the emergence of conflict. Second, in the event that disputes over rivers do arise, treaty institutionalization can provide mechanisms to resolve them before they escalate to militarized conflict. These expectations are tested systematically using a large sample of river treaties signed between 1950 and the early 2000s, followed up with case studies of riparian conflict management.

Initial Results:

The preliminary analyses of the data we have collected have produced the following findings.

1. We have identified water-related, geo-political, and economic factors that help determine the likelihood that riparian countries will sign institutionalized river treaties.
2. We have preliminary findings that institutionalized river treaties help increase cooperation and reduce conflict (including militarized conflict) between signatory states.
3. We have found that institutionalized river treaties can help reduce tensions between riparian states that stem from water scarcity.
4. Linking (3) with the anticipated freshwater-related effects of climate change, our findings show that institutionalized river treaties can act as important intervening factors that help reduce the suspected deleterious effects of climate change on international security.
5. We have preliminary evidence that institutionalized river treaties can help moderate acrimonious relations between riparian states stemming from the asymmetric nature of upstream/downstream relationships.

Anticipated Outcomes of Research:

Once complete, the project will make a strong case for how to successfully avoid the anticipated water wars (and lower intensity armed confrontations) of the future. By focusing on institutional adaptation as a means of managing relations between water-stressed riparian states, our insights show that highly destabilizing, dire security consequences of water scarcity can be avoided. Specifically, investing material and political resources to develop highly institutionalized river treaties produces tangible payoffs. And considering the costs of warfare (human, material, retardation of economic development, refugee flows, infrastructure destruction, etc.), the costs associated with developing and maintaining institutionalized structures to manage riparian country relations are minimal.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Preventing water wars will lower the chances that the US and its armed (and allied) forces will be drawn into armed conflicts taking place between water stressed countries (as direct interveners; peacekeepers; post-conflict state-builders; to assist neighboring countries with conflict spillover; dealing with refugees, etc.). This will allow the US armed forces to be deployed more selectively to deal with issues/areas that are seen as more critical to US national defense; that is, the risk of being spread too thin is lowered. The project also provides the recommendation to US policymakers to encourage and assist other countries with developing highly institutionalized river treaties, in order to insulate themselves from negative security ramifications of their (and their neighbors') water scarcity.

Publications through Minerva research:

- Tir, Jaroslav and Douglas M. Stinnett. 2012. "Weathering Climate Change: Can Institutions Mitigate International Water Conflict?" Forthcoming in the *Journal of Peace Research*.
- Tir, Jaroslav and Douglas M. Stinnett. 2011. "The Institutional Design Of Riparian Treaties: The Role Of River Issues." *Journal of Conflict Resolution* 55(4): 606-631.

Sharable data resources to be generated:

A database of institutionalized river treaties is forthcoming.

Political Reform, Socio-Religious Change, and Stability in the African Sahel

Leonardo A. Villalón, University of Florida, villalon@ufl.edu

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research

Research Problem:

This project seeks answers to questions about the factors affecting stability and instability in a set of six African countries—Senegal, Mauritania, Mali, Burkina Faso, Niger, and Chad—stretching across the arid Sahelian region. The predominately Muslim countries of the Sahel are collectively among the least developed countries on earth. Historically of limited strategic significance, they have also received relatively little scholarly attention; indeed they are among the least-studied countries in Africa. Recent developments in the region, however, have placed the Sahel at the center of significant international concern. The most significant of these have been the terrorist threats posed by Al-Qaeda in the Islamic Maghreb (AQIM) and various related groups, the aftermath of the fall of the Qaddafi regime in Libya, and in March 2012 the collapse of the political system in Mali and the subsequent occupation of the northern half of that country by radical *jihadi* movements. In addition to these threats, endemic underdevelopment and significant demographic changes have magnified pressures on the states of the region. The research project focuses comparatively on factors influencing the capacity of Sahelian states to manage these pressures, and hence to maintain stability and ensure the social order and effective governance that serves as a bulwark against radical movements.

The research builds on an analytic framework that focuses on the interactive and reciprocal effects of political and institutional reform on social change, in an iterative process of “micro-transitions” that cumulatively build to potentially more substantial transformations in state capacity, and hence shape the prospects for stability or instability. As with virtually all of Africa, the Sahelian states were directly affected by the intense pressures for political reform in the name of “democracy” of the early 1990s. While their initial responses were quite varied, all were obliged to undertake significant liberalization, reflected primarily in reduced state capacity to shape and control social forces. As a result, in all six countries significant social transformations were set in motion, and their political systems are still being shaped by those forces. Given the large Muslim majority in the region the dynamics of religious change have been particularly important; in the era of democratization there has been a proliferation of new religious movements and voices, of varying ideologies, across the region. These new religious groups are among the key social actors shaping politics in these countries today.

Methodology:

The research will be carried out in a series of stages over a three-year period, by a research team at the University of Florida comprised of the PI and three advanced PhD students in Political Science with significant expertise on Africa, including students themselves from the Sahel. It builds on the PI’s substantial previous research and strong network of ties in the region, on a three year State Department-funded project focused on elections in all six countries, and on the expertise of the GRAs themselves.

The research will involve multiple methods and a range of activities, including most centrally extensive fieldwork in all six of the study countries, to be carried out primarily by the GRAs under the direct supervision and close involvement of the PI. This fieldwork will be carried out in paired sets of countries, with one researcher responsible for each pair. In preparation for fieldwork, the first year of the project has involved: substantial documentary research and the preparation of background papers on each country; weekly discussion and planning sessions; intensive consultation with visiting specialists from key countries; a conference-workshop which brought together one key scholar from each of the study countries to comparatively examine the politics of institutional reform in terms of their effects on state

resilience. Scoping trips to all six study countries in summer 2013 have additionally prepared the groundwork for the necessary institutional affiliations and networks for field research. Regularly weekly seminars for the core research team are currently developing the comparative framework for analysis, key indicators, and a fieldwork protocol that will be adapted for each country. We anticipate that fieldwork will begin in early 2014. Fieldwork will be based primarily on intensive interviewing of key actors as well as documentary analysis and direct observation. The PI is training and will closely supervise the GRAs in interviewing and field data recording techniques.

Initial results:

While the core field research has yet to be carried out, our efforts to date—particularly in reconsidering the initially proposed framework in light of the collapse of the state in Mali and the resulting rapid expansion of jihadi groups through a vast portion of that country—have led to an initial observation that will be key to shaping the project as we move forward. In each of the six countries, the interactive processes of institutional reform and social change that have been carried out in the name of democratization had led to an initial grouping of the six countries into three pairs on the basis of an observed outcome on the democracy dimension. Our initial work has shown that these processes do intersect with processes of building resilient state institutions, but in complex ways that are in the end independent of the democratization outcome. Within each of our pairs, then, we have identified one country where the process appears to have strengthened state structures and another where it has not done so, despite similarities in terms of the democracy variable. Current efforts are aimed at trying to understand the processes that produce these varied results and the variables we need to consider in trying to build a broader understanding of these processes.

Anticipated Outcomes, Resources and Products of Research:

We anticipate a number of significant outputs of both academic and policy interest from the project. These will include the development of a website on the region to serve as a key resource for academics, policymakers, and journalists. Included in this website will be a major data resource with information and documentation on ten distinct dimensions of elections and electoral management in each of the six countries. This material was gathered as part of the State Department funded Trans-Saharan Elections Project and has been further expanded and enhanced by the work of the Minerva research team. Construction of the website is well advanced, and we anticipate it will be launched in early fall 2013. We also anticipate the publication of working papers, articles and book chapters, one or more edited volumes resulting from sponsored conferences, as well as a thematic book expanding our conceptual framework in light of the experiences of the Sahelian cases. We anticipate that the most significant enduring outcome of the project will be to institutionalize an ongoing university-based research and training program focused on producing the next generation of specialists on this crucial but poorly-understood region of the world.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

There are major security implications to the political stability and social harmony of the countries of the Sahel. This is evidenced by the development and significant investment in U.S. sponsored regional security arrangements now institutionalized under the “Trans-Saharan Counter-Terrorism Partnership” (TSCTP). All six countries in the proposed research project are members of the TSCTP. Beyond the immediate and significant concern with the evolving status of AQIM and its capability for establishing a solid base in the region, the fate of Sahelian countries will have major consequences for the stability of a huge swathe of West and Central Africa, with direct security implications for migration flows, economic development, illicit trafficking, and health concerns both for local people and for the broader international community.

Finding Allies for the War of Words: Mapping the Diffusion and Influence of Counter-Radical Muslim Discourse

Mark Woodward, Arizona State University, mark.woodward@asu.edu

David Jacobson, University of South Florida; **Hasan Davulcu**, Arizona State University;

Steven Corman, Arizona State University; **Riva Kastoryano**, Sciences Po (France);

Muhammad Sani Umar, Northwestern University, **Ahmadu Bello** University (Nigeria)

Project Manager: Maureen Olmsted, maureen.olmsted@asu.edu

Government Program Officer: Harold Hawkins, Office of Naval Research

<http://csrc.asu.edu/research/projects/mapping-counter-radical-discourse>

This project redresses deficiencies in our understanding of moderate Islam by tracking and analyzing publicly observable formal networks and others operating under the radar screen. Our purpose is to enhance understanding the structure of counter-radical networks, the ideas on which they are based, social locations of their leaders and followers, and the ways in which radical and counter-radical discourse intersect. We explore the social, religious, and political characteristics of these networks. Specific issues addressed include: the social location and political environments of discourse producers and consumers; institutions and affiliations (local to transnational) that disseminate counter-radical messages; media used; the roles of local and global conflicts in their formulation; and Islamic sources on which counter-radical discourse is based.

The project's contribution is a multidimensional portrait of counter-radical networks shifting through time and across regions. A web portal accessing broad informational dynamics will include a counter-radical database and diffusion mapping.

Methodology:

The project is characterized by an integrative approach that brings together a broad range of expertise and disciplinary approaches—Islamic and area studies; field research and discourse analysis; survey research; computer science and statistics—and triangulates methods to reveal patterns of counter-radical discourse at the local, regional, and global levels.

Initial Results:

A complex nexus of Enlightenment concepts—democracy, nationalism, religious pluralism, human and women's rights, Islamic theological and local cultural principles—inform counter-radical discourse systems.

Gaining a more nuanced understanding of the interaction of these concepts and related practices is essential for recognizing Muslim organizations and movements opposed to violent radicalism. We have located counter-radical/counter-extremist groups in all three regions and a substantial number of transnational and transregional networks not described in the existing literature. We have identified religious tolerance as a significant common factor among non-violent movements and religious intolerance as a common factor in violent groups. Interaction and communication between ethnographers across regions has contributed to the understanding of common features and differences between regions. Methodological integration has yielded significant substantive findings. It has enabled us to locate and track shifts in both extremist and counter-extremist discourse patterns. Web mining and ethnography both indicate that there have been significant shifts in extremist and counter-extremist discourse since 2011. Ethnographers have observed that extremist messages concerning global jihad and associated concepts, including the establishment of a global Caliphate, have less appeal than they did only two years ago. There has been a corresponding upsurge of interest in Sharia implementation. These findings are apparent

across regions and have been independently confirmed by tracking web based discourse in Southeast Asia and the UK. Web based research also confirmed the ethnographic observation that local or cultural Islam is now seen as the alternative to transnational radicalism. These findings confirm our hypothesis that counter-extremism is often culturally specific and that emphasizing the Islamic legitimacy of local cultures is an effective mode of counter-extremist discourse.

Web mining has revealed a substantial Salafi and Wahhabi presence in on-line discourse. This could be taken as an indication that efforts by Saudi Arabia based or financed organizations such as the Muslim World League have had a major impact on Muslim societies in other regions. A substantial body of academic literature and journalistic accounts echo this perspective. Our ethnographic and survey research, however, does not confirm this hypothesis.

Anticipated Outcomes of Research:

The project will lead to substantially enhanced theoretical understanding of relationships between religious doctrine and violence, and especially factors contributing to the emergence of movements opposing the use of religion for political purposes. The development of multi-scale based modeling techniques facilitates the formulation and evaluation of theories in ways not attempted previously. We are refining web mining technologies and developing a visual intelligence platform to track the online presence of radical, extremist and counter-radical movements. These technologies examine large numbers of texts to discern contested topics. We have also applied these methods in the analysis of Twitter streams, utilizing a discriminating perspectives approach to map Tweeters to social movements based on perspectives expressed in their weekly tweets. A visual intelligence platform (LookingGlass) tracks the geographic locations, shifting positions, and diffusion of topics and perspectives discussed by people employing this mode of online communication.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Knowing the centers of radical and moderate discourses and their constituencies will enhance the effectiveness of US defense and security policies and programs by allowing a targeted and focused approach. The findings will enhance irregular warfare capability with respect to radical Islam by documenting the landscape of counter-radical discourse. The project will provide information which will help the DoD determine whether a particular group qualifies as “moderate,” or how to identify the moderates.

Publications through this Minerva research:

Overall, the project has produced two single authored and one edited book, 19 refereed journal articles, 16 non-refereed significant publications, 9 books or book chapters, 4 technical reports/white papers, and 11 referred published conference proceedings. Team members have made 64 workshop or conference presentations and organized or had leadership roles in 8 workshops. The team has received 1 award. Recent publications include:

- Pieri, Z. P., Woodward, M., Yahya, M., Hassan, I. H., and Rohmaniyah, I. (2013). Commanding Good and Prohibiting Evil in Contemporary Islam: Cases from Britain, Nigeria and Southeast Asia. *Contemporary Islam*.
- Tikves, S., Banerjee, S., Temkit, H., Gokalp, S., Davulcu, H., Sen, A., Corman, S., Woodward, M., Nair, S., Rohmaniyah, I., and Amin, A. (2013) A System for Ranking Organizations using Social Scale Analysis. *Social Network Analysis and Mining* 3(3): 313-328

Sharable data resources to be generated: See “*LookingGlass: A Visual Intelligence Platform for Tracking Online Social Movements*” on page 129.

Autocratic Stability During Regime Crises

Joseph Wright, Pennsylvania State University, josephgwright@gmail.com

James Honaker, Harvard University

Government Program Officer: Harold Hawkins, Office of Naval Research

<http://dictators.la.psu.edu/>

Research Problem

This research helps policy makers understand the influence of different foreign policy tools on the behavior of military and security organizations in dictatorships during periods of domestic unrest. It contributes to our knowledge of how foreign policy tools and domestic factors such as regime type and leadership-security ties interact to influence government repression and democratic regime change.

Methodology:

This research will answer two questions: Does foreign engagement of authoritarian governments decrease governments' willingness to use force against their citizens during times of crisis? And if so, which foreign policy tools are most effective in accomplishing this end? The proposed project will gather global data on all authoritarian regimes from 1990-2012 to examine how foreign policy influences two outcomes in the context of domestic protest in dictatorships: state-led violence and regime instability. The project will examine how numerous tools of foreign policy – such as economic aid, military assistance, bilateral military ties, and diplomatic exchange – influence the behavior of autocratic governments during periods of crisis. It will account for two intervening factors, autocratic regime type and leadership security ties that influence these relationships.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

This project develops a better understanding of the relationship between foreign engagement of dictatorships, state-led violence in these countries, and the potential for democratic and non-violent regime change. The databases constructed for this research will have a broad impact for research on international conflict in non-democracies; foreign relations with autocratic countries; the integration of government and rebel fighters when civil wars end; the behavior of foreign militaries after regime change; and counter-terrorism effort in autocratic countries.

Initial results:

We have identified two time-varying latent dimensions of autocratic rule using an annual cross-country data set. We show these dimensions, which measure the strength of the military and of the supporting political party, are orthogonal to the most commonly used measures of democracy.

Manuscripts in progress:

- Honaker and Wright, 2013. "The Structure of Autocratic Rule." Paper presented at the Annual Meetings of the European Political Science Association (June 21, 2013) and the American Political Science Association (August 31, 2013) 2
- D'Orazio, 2013. "The Constraining Effects of Security Communities: Military Integration and Government Repression" (Dissertation Chapter)

Sharable data resources in progress: See "*Latent Dimensions of Authoritarianism*" on page 130.

Public Service Provision as Peace-building: How do Autonomous Efforts Compare to Internationally Aided Interventions?

Naazneen Barma, Naval Postgraduate School, nhbarma@nps.edu
Naomi Levy, Santa Clara University; **Jessica Piombo**, Naval Postgraduate School
Government Program Officer: Ivy Estabrooke, Office of Naval Research

Research Problem:

Scholars and practitioners alike have largely concluded that international efforts to build sustainable peace in post-conflict states must include a focus on building state capacity. It is not necessarily the case, however, that the twin goals of peace- and state-building are mutually reinforcing. The proposed project seeks to improve both the theory and practice of how peace is achieved in post-conflict countries by disentangling the related goals of peace- and state-building. It does so by focusing on the ability of three post-conflict states to provide public services and resolve societal grievances at the local level. It also seeks to understand how externally led peace-building interventions compare with more autonomous and domestically motivated peace processes in achieving sustainable peace and improvements in state capacity. To these ends, our study varies the “degree of aidedness” of peace- and state-building initiatives, selecting country cases that enable both a cross-national comparison (Cambodia and Laos) and an intertemporal comparison (Uganda in two distinct time periods). We further enhance our analytical leverage by focusing on outcomes at the subnational and sectoral levels, where the tangible results of peace- and state-building can be best observed.

Methodology:

Since our study aims to disentangle peace-building and state-building, we have two dependent variables in our research design: sustainable peace and sustainable state capacity. Our primary independent variable is the “degree of aidedness.” The research is designed as a structured, focused comparison of peace-building and state-building experiences in three countries and we build subnational and sectoral variation into our design by examining four public-service sectors in two locations within each country. The project’s research design thus enables us to draw comparisons across towns within countries, time periods within one country, and between the three countries and two regions. Through semi-structured interviews with elites, public service providers, and local stakeholders, we will compile data on the degree of aidedness in selected sectors and localities as well as on the extent to which sustainable peace and state capacity have been realized at the local level. Overall, this methodology will enable us to shed light on the causal relationships between the “degree of aidedness,” state-building, and peace-building.

Anticipated Outcomes of Research:

Measuring state capacity through the provision of public services allows us to examine how peace-building occurs where the state interfaces with society and how closing governance gaps at the domestic level can enhance a society’s resilience and ability to sustain peace. Local-level contestation often occurs around the provision of public services; thus, as we examine this element of state-building, we can analyze the extent to which ordinary grievances and local conflicts related to these services are routed to and resolved through official channels, a crucial measure of peace-building. In doing so, we expect to be able to build generalized findings on the advantages and drawbacks of top-down, international peace-building interventions when compared to more bottom-up, autonomous peace processes. In turn, we will deliver a series of policy implications of interest to the United States government and other agencies involved in national defense and the international peace-building endeavor.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Our study examines two hypotheses with high policy relevance: first, that it is possible—and highly likely—that peace- and state-building rest upon contrasting logics; and, second, that the degree of international involvement or “aidedness” in both of these processes might truncate outcomes in each. Understanding the implications of these two dimensions of our study is critically important for a range of U.S. government actors, missions and programs. By and large, most of these actors have treated peace-building and state-building as linked. In practice, U.S. policies have promoted the creation of elite settlements and policy interventions to achieve both sets of goals simultaneously. Yet because the nature of the elite settlement required to achieve a peace agreement is very different from that required to sustain peace and build state capacity in the longer term, our research has direct implications for the very foundations of U.S. policies in any post-conflict state (whether these are policies and missions organized by the DoD, State Department, USAID, or other agencies).

Multi-Source Assessment of State Stability

Kathleen Carley, Carnegie Mellon University, kathleen.carley@cs.cmu.edu
Jürgen Pfeffer, Carnegie Mellon University; **Huan Liu**, Arizona State University;
Mia Bloom, University of Massachusetts Lowell
Government Program Officer: Harold Hawkins, Office of Naval Research

The wave of revolutions in the Arab world, commonly referred to as the Arab Spring, took the world by surprise. To some extent the September 2012 consulate and embassy attacks were also unforeseen. Despite the rich literature on interstate conflict, state stability, revolution and regime change these events could not be predicted nor fully accounted for by the existing theoretical traditions in the social sciences. Clearly, social media was touted as critical to these revolutions. Traditional media also gave voice to public concerns and provided critical information. Social media is playing an increasing, albeit complex, role. It is used to provide rapid broadly available information on breaking events prior to traditional media, thus breaking control over information. Social media is used to organize events; however, it can be “spoofed” enabling groups to advertise “fake” meetings to trap potential participants, thus breaking trust. Finally, social media is a medium for cyber-warfare an example of which is when the “hackerist,” Anonymous, used social media to cripple Israeli websites in response to threats to cut off Internet access in Gaza and the Territories and so limit Palestinians’ access to social media. These recent events raise a number of questions about how access and usage of social media in comparison to traditional media can be used to promote change. In particular, how can these media be used to: 1) enable the diffusion of new ideas and actions that inhibit or promote violence, 2) support new agendas, 3) maintain or forge new alliances, 4) forge or break trust, 5) stabilize or destabilize situations, 6) alter lines of power, and 7) change an actor’s influentialness.

We propose to develop new capabilities in predictive state stability modeling and improve our understanding of the fundamental issues surrounding state stability in a cyber-mediated environment. Our primary objective is to understand the way in which media – social and traditional – can be used to effect state stability or instability by individuals, groups and corporations. A secondary objective is to identify indicators that are useful in predicting state stability based on social media and traditional media that signal of changes in trust, norms, influentialness, lines of stability, and lines of alliance or competition to predict state instability. This research is expected to lead to a new operationally relevant predictive tool for assessing the impact of individuals, groups and messages in media on state instability; operationally relevant metrics for assessing trust, state stability, and alliance and changes in these factors; and will support the development and testing of a new media informed theory of state stability.

The proposed research addresses three central concerns relative to the relation of media and state stability: First, indicators of state stability/instability, trust, alliance and competition are identified and then the related metrics which can be applied to social and traditional media are developed and tested at the region, state and province level. Second, using statistical, network and visual analytics extracted geotemporally tagged actor-topic networks and these metrics, are analyzed to assess and predict social behavior at the region, state and province level. Specific attention is paid to assessing who are the trusted information brokers, who are the vulnerable actors, what are the lines of balance, and characterizing the role of social versus traditional media in forging/breaking trust and forging/breaking lines of balance. Third, based on these findings we then turn to asking: ‘How can these media be used to influence or inhibit change and so foster changes in state stability, trust, alliance and competition?’ Using mixed-source data (twitter, blogs, news, trade, geographic information, and archival ethnographic sources) a series of meta-networks linking people, groups, issues, activities, and locations are constructed, and metrics for assessing changes in trust, state stability, and alliance are extracted for a set of countries in the

Middle East, Africa and the Pacific Rim. Analysis is done at the region, state and province level thus allowing for improved validation, multi-cultural assessment and a more nuanced understanding of change. A mixed-methods, multimodeling approach is used to support theory development, testing, and model validation. Blending qualitative and quantitative techniques supports the automated coding of media data using text-mining techniques, in-depth analysis of outliers and overall interpretation utilizing culturally informed qualitative ethnographic assessments, and theory testing using traditional and new “big-data” statistical, network and visual analytics with particular attention to dynamic and incremental metrics for identifying critical actors, issues, messages and groups of interest.

This research lays the groundwork for a media-based state stability modeling system that is reusable, easily instantiable from empirical open source data, and adaptable to different socio-cultural environments. The approach and findings pioneered in this work will support all-source data-collection and analysis efforts for operational needs.

The metrics for key indicators, social-topic network models and associated tools developed in this project will provide the DoD with a core operational capability to enhance predictive modeling for regime change, assess social and traditional media data, and assess changes in trust, stability and alliance. The proposed technology enhancements, particularly those for capturing, visualizing, analyzing, and fusing information from social media and traditional media are of immediate value to joint HA/DR operations, MISOC, public-relations operations, irregular warfare operations, intelligence efforts, and IO operations.

The Human Geography of Resilience and Change: Land Rights and Stability in Central American Indigenous Societies

Jerome E. Dobson, dobson@ku.edu

American Geographical Society and University of Kansas

Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

Anticipating and predicting cultural “instabilities” throughout the world requires a basic, scientific understanding of complex interactions among human and natural systems that has not been achieved for most of the world. Among the most vital, often overlooked, variables are land ownership and land use, and the related powers that control them. The land itself comprises a fundamental ingredient in the transformational changes that produce societal resilience and instability around the world. Anyone who doubts this principle should consider how many political movements and outright revolutions have been fought over land reform in Latin America. Even today, land ownership and security are the leading cause of political tension in many countries in the region. Understanding land, land tenure, and land use requires the methods and techniques of human geography and cartography to capture and analyze the complexities of human and natural systems. We focus on Central America due to the region’s growing awareness among state governments and development practitioners of the vital role of property rights, with associated natural resources access and use, in economic growth, governance, resource management, and conflict resolution. We focus on indigenous lands where stability is a constant matter of geopolitical concern.

Proposed Methods:

We propose to advance the study, modeling, and understanding of land tenure, land use, and political stability in indigenous societies of Latin America. This project will provide a new geospatial way of researching and understanding land tenure in Central America using participatory research mapping (PRM) in conjunction with geographic information systems (GIS).

Anticipated Outcomes:

We propose to develop a digital assessment of indigenous areas that display societal resilience and stability and to assess both the perturbing and stabilizing pressures imposed by governance, resource use, and other salient factors. We will document land tenures and land uses, and the related administrative, judicial and legal power over them, as indicators of societal resilience and instability in indigenous areas of Latin America.

This research uses participatory research mapping (PRM) and geographic information systems (GIS), together with publicly-available human geographic information, 1) to produce reliable, coarse to fine scale digital geographical data, mapping, and analyses of land use and land tenure regimes in indigenous municipalities of Central America; 2) to define, digitally map, and evaluate the land use and land tenure stability of indigenous municipalities in Central America, developing and digitally mapping a “land stability index”; and 3) to document, digitally map, and rate (using the land stability index) the diverse territorial jurisdictions (“sovereignty regimes”) that Central American States hold over these indigenous municipalities, ranging from historic Indian reserves to semiautonomous regions.

Impact on DoD Capabilities and Broader Implications for National Defense:

The proposed research addresses recognized deficiencies in U. S. foreign policy, military strategy, and foreign intelligence. DoD will gain new capabilities to conduct human geographic research, similar to but more advanced than those employed extensively in World Wars I and II. DoD will benefit directly and abundantly from the openly-reported research and the geographic information disseminated and from a greatly improved pool of regional experts, an improved labor pool, and a better informed public in times of future political debates and conflict. An informed public is essential to democracy, and the United States no longer has an informed public when it comes to foreign policy and military strategy. Our purpose is to improve U. S. understanding of foreign lands and peoples and, thereby, to reduce international misunderstandings, provide a knowledge foundation for peaceful resolution of conflicts, and improve humanitarian assistance in case of natural disasters, technological accidents, terrorist acts, and wars.

Sharable data resources to be generated:

See “*Data and mapping of land use and land tenure regimes in indigenous municipalities of Central America*” on page 113.

Deterring Complex Threats: The Effects of Asymmetry, Interdependence, and Multipolarity on International Strategy

Erik Gartzke, UC San Diego, egartzke@ucsd.edu

Jon Lindsay, UC Institute on Global Conflict and Cooperation; **Michael Nacht**, UC Berkeley;

Celeste Matarazzo, Lawrence Livermore National Laboratory;

Joseph Pilat, Los Alamo National Laboratory

Government Program Officer: Ivy Estabrooke, Office of Naval Research

Project Abstract:

Deterrence as a strategy and doctrine was convincingly and effectively deployed by the United States during the Cold War. Today, however, states face a widening range of destabilizing threats, in particular to space, cyberspace, financial, and other critical infrastructure. The interconnectedness of the contemporary world creates many new opportunities for state or non-state adversaries to seek asymmetric advantages (i.e., low-cost actions which undermine high-cost sources of power) against advanced industrial countries, including the United States. Technological and political complexity generates tremendous uncertainty, undermining in one stroke both the simple logic of the basic deterrence frameworks applied in the previous era and also the credibility of such efforts. “Cross domain deterrence” (CDD) seeks to counter threats in one arena (such as space or cyber warfare) by relying on different types of capabilities (such as sea power or nuclear weapons, or even non-military tools such as access to markets or normative regimes) where deterrence may be more effective. The increasing complexity of CDD poses both opportunities and challenges that necessitate, and will benefit from, a major evolution in thinking (and practice) about how deterrence operates.

The University of California Institute on Global Conflict and Cooperation (IGCC), in collaboration with the Lawrence Livermore (LLNL) and Los Alamos National Laboratories (LANL), aims to develop analytical clarity concerning the effects of increasing technological and political complexity on the logic of CDD. We plan to combat the complexity of CDD by breaking the concept into three complementary characteristics of the global political system: *asymmetry*, *interdependence*, and *multipolarity*. These interrelated concepts are strongly affected but not uniquely determined by emerging technologies. They build on one another in a modular yet cumulative process which will enable us to systematically explore key questions such as: How does asymmetric access to nuclear weapons, counterspace operations, and cyberspace capabilities shape threats and the use of force? How does political-economic and technological interdependence affect strategic calculations and a willingness to fight or compromise? How does the proliferation of diverse types of weapons to a growing number of actors shape the nature of deterrence or alter its scope? Answers to these questions promise to advance the social science of national security and inform policy for tackling emerging cross-domain threats.

We propose to develop rigorous and empirically grounded causal theory drawing from and building on each of the three categories, and then to subject the resulting theory of cross domain deterrence to computational analysis and quantitative tests. We believe that the best results will be produced by a multi-method approach, combining qualitative analysis, formal modeling, historical case study, policy (area) studies, and computational simulation.

The Strength of Social Norms Across Cultures: Implications for Intercultural Conflict and Cooperation

Michele J. Gelfand, University of Maryland, mgelfand@umd.edu

Luiz Pessoa, University of Maryland

Shinobu Kitayama, University of Michigan;

Klaus Boehnke, Jacobs University Bremen (Germany)

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research
www.gelfand.umd.edu

Research Summary and Methodology:

Humans are unique among all species in their ability to develop, maintain, and enforce social norms. It is likely, then, that humans have evolved cognitive and affective neuro-mechanisms to be able to detect norm violations very quickly which affords punishment of violators and enforcement of the social order. Despite this fundamental aspect of human nature, however, there has been surprisingly little research on how norm violation processes are supported at the neurobiological level. While there has been neurobiological research on how humans react to violations of task-related expectations in non-social domains, research on neurobiological processes related to social norm violations is only in its infancy and, moreover, there has been a dearth of research on cross-cultural variation in the neurobiology of social norms. Thus, at present, we know little about how vast cultural differences underlying reactions to norm violations are realized at the level of brain mechanisms. This lack of any cultural neuroscience research on social norms represents a large limitation on our current understanding of group identities, cultural norms, and belief systems. Using EEG technology, this research will address this deficit by investigating such questions as:

- How can we develop new measures of detection of social norm violations at the neurobiological level?
- Which cultures, individuals, and situations show stronger neurobiological reactions to norm-violating events?
- How are neurobiological processes underlying social norms violations related to behavioral processes, including implicit and explicit attitudes, self-control, cooperation, and other behaviors?
- Do neurobiological indices of social norm violation mediate cultural differences in social behaviors?
- How can research on the neurobiological basis of social norms help to improve intercultural interactions?

Anticipated Outcomes and Broad Implications for National Defense:

Social norms, though omnipresent in our everyday lives, are highly implicit. Recent social neuroscience research has provided compelling evidence that neural indicators of attitudes can predict meaningful social behaviors above and beyond self-report measures. Thus, this research has the potential to facilitate the development of theoretical models and measures with improved predictive power. It also has the potential to make important scientific breakthroughs regarding the mutual constitution of culture, mind, and brain. We will focus on outreach to the DOD community to enhance its capabilities through providing: (a) Tools to assess the strength of social norms across cultures; (b) An understanding of the behavioral correlates of such measures; (c) policy recommendations for how to manage clashes of moralities and improve intercultural interactions; (d), mechanisms to promote the spread of positive beliefs of Western countries through diverse communities; (e) a cadre of interdisciplinary young scientists available to study drivers and dynamics of social norms in the future; and (f) crucial input into training for the military, diplomats, policy makers, managers, immigrants, and travelers alike.

Homeownership and Societal Stability: Assessing Causal Effects in Central Eurasia

Theodore P. Gerber, University of Wisconsin-Madison, tgerber@ssc.wisc.edu

Jane Zavisca, University of Arizona

Government Program Officer: John Lavery, Army Research Office

Research Problem:

The project examines whether, how, and why homeownership and other aspects of housing affect societal stability in semi-authoritarian contexts. The US government promotes homeownership at home and abroad based on the proposition that homeownership promotes societal stability by improving living conditions, inducing respect for private property, and creating better citizens. However, there is little theoretical basis and scant evidence for these purported effects. Existing research is limited by vague and simplistic concepts, weak measures, a failure to employ research designs that can identify causal effects, and a narrow empirical focus on advanced capitalist democracies. Therefore, basic scientific knowledge lags significantly behind policy, and social scientists cannot say whether homeownership indeed plays the stabilizing role attributed to it.

To rectify this gap in scientific understanding of the effects of housing on stability, we have developed core hypotheses specifying how different aspects of ownership might affect the proximate causes of instability: political grievances, social grievances, civic norms, and ideology. Our hypotheses disentangle the discrete components of “ownership” that are often bundled together, and they include other aspects of housing status (quantity and quality of housing) that could affect the outcomes of interest independently of ownership. We also hypothesize how these relationships vary within and across countries depending on macro-level variables such as political regime, social climate, social structure, and culture; that is, we propose possible macro-micro linkages that shape whether and how housing influences stability.

We will test our hypotheses empirically using original survey and focus group data that we will collect in four semi-authoritarian countries: Azerbaijan, Kyrgyzstan, Russia, and Ukraine. These countries are uniquely suited for testing whether housing has causal effects on societal stability for the following reasons. First, they face elevated risk of experiencing various forms of instability. Second, they experienced a quasi-experimental distribution of homeownership as a result of Soviet-era housing distribution policies, post-Soviet housing privatization, and failed housing markets since the Soviet collapse. Third, property rights that in Western contexts are usually bundled together under “ownership” are often dispersed in these countries, producing a rare opportunity to test hypotheses about which specific aspects of ownership matter for which outcomes related to societal stability. Finally, variations in macro-conditions across these four study countries permit us to test hypotheses about macro-micro linkages.

Methodology:

We will conduct two waves of surveys with the same respondents (i.e. a two-wave panel survey), each preceded by focus group interviews. Each country’s survey sample will consist 2400 respondents, including a nationally representative sample of 1600 respondents ages 18-49, plus the following oversamples of 800 to let us test specific hypotheses: internally displaced persons in Azerbaijan, residents of regions that have experienced ethnic violence in the last three years in Kyrgyzstan, residents of regions with high concentrations of Muslims in Russia, and mortgagors in Ukraine. To carry out this major data collection, we engaging teams of international researchers (one from each country) with experience carrying out survey and focus group research on related topics.

We will analyze the data we collect using advanced statistical techniques. First, we will perform tests to ascertain whether the each theoretically important component of housing status is exogenously distributed. Second, we will use structural equation modeling to develop precise measures of our theoretical constructs and distinguish direct from indirect effects of the different components of housing status. Third, to deal with potential endogeneity and identify causal effects, we will use techniques such as instrumental variable estimation, propensity score estimation with sensitivity analysis, and difference-in-differences estimates.

Anticipated Outcomes of Research:

This study will produce a major advance in basic knowledge about how housing affects core attitudes and behaviors within populations residing in semi-authoritarian contexts, and how macro-level factors shape the individual-level relationships. Both the qualitative and quantitative data collected during the project will be made publicly available, so other researchers will be able to conduct their own analyses of housing issues, political attitudes, and behaviors in the four countries covered by the study. The results will help policymakers to better target homeownership promotion policies in semi-authoritarian societies so as to maximize their benefits for US national security interests.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

As a result of the study, leaders in the Department of Defense and other branches of the US government will potentially have improved capability of anticipating eruptions of societal instability and conflict in semi-authoritarian countries, particularly those in Eastern Europe, the Caucasus, and Central Asia. Military planners will understand the longer-term consequences of military actions that affect housing and gain insight into whether constructing housing and/or promoting ownership can help counter-insurgency campaigns.

Sharable data resources to be generated:

See “*Surveys and Interviews on Homeownership in Central Eurasia*” on page 117

- Transcripts from 32 focus groups about housing-related concerns, social and political grievances, civic norms, and political ideology
- Two waves of survey data from approximately 9600 respondents in four countries, including (from each country) nationally representative samples and specific oversamples.

Forecasting Civil Conflict under Different Climate Change Scenarios

Elisabeth Gilmore, University of Maryland, gilmore@umd.edu

John Steinbruner, University of Maryland; **Halvard Buhaug**, Peace Research Institute, Oslo; **Håvard**

Hegre, Peace Research Institute, Oslo; **Katherine Calvin**, Pacific Northwest National Laboratory;

Stephanie Waldhoff, Pacific Northwest National Laboratory

Government Program Officer: Micheline Strand, Army Research Office

While it is unlikely that the physical impacts of climate change will have a direct effect on conflict, there are a number of plausible causal mechanisms that run through intermediate variables, such as population exposure and human health, economic growth, institutional capacity and governance, and other known conflict predictors. Additionally, there is growing consensus that the anticipated physical effects of climatic changes will have serious implications for human wellbeing and security, but quantitative efforts to assess how the impacts will influence the future probability of armed conflict is relatively limited. Improving the understanding of these dynamics as well as forecasting how conflicts will emerge as the impacts of climate change are realized over the next few decades is critical for developing interventions and adaptations to mitigate these risks.

We propose the development of an integrated model to forecast the onset and duration of intrastate conflict under different climate change and socioeconomic trajectories. We will then employ the model to evaluate how different policies for development, climate mitigation and adaptation can alter the global and regional burdens of conflict. Our model consists of the following elements: 1) statistical models that capture how the physical impacts of climate change will influence conflict through indirect and structural variables with known risks for conflict; 2) scenarios for both socio-economic and climate change variables that are internally consistent and span the range of expected projections; 3) a simulation approach that allow us to generate probabilistic forecasts at different resolutions and model emergent system behavior by incorporating variables that are endogenous to the conflict; and, 4) demonstrable utility for the security community to evaluate a wide range of military and policy interventions that aim to reduce intrastate conflicts. This effort requires a highly interdisciplinary team. CISSM leads the effort with its experience with data and policy analysis for the security community. We then leverage existing research relationships to augment our team with conflict researchers (PRIO) and climate researchers (JGCRI).

Our model will provide a consistent and integrated framework for testing new hypotheses regarding conflict and climate as well as for examining the implications of the existing parameters in literature and theory. We also intend for our model to address the needs of the security and policy communities for information to allocate of resources for conflict prevention and to provide guidance on the costs and risks associated with climate change.

Dynamics of Sacred Values and Social Responsibilities in Governance and Conflict Management: The Interplay between Leaders, Devoted Actor Networks, General Populations, and Time

Lawrence Hirschfield, New School for Social Research

Scott Atran, ARTIS; **Doug Medin**, Northwestern University; **Jeremy Ginges**, New School;

Richard Davis, ARTIS; **John Alderdice**, University of Oxford;

Adolf Tobena and **Oscar Vilarroya**, Universitat Autònoma de Barcelona.

Project Point of Contact: Richard Davis, rdavis@artisresearch.com

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research

Research Summary:

Most successful political and advocacy (e.g., environmental) groups must manage strong commitment to core values with the pressing responsibilities of governance or and implementation of advocacy issues. Perceived compromise over core values can undermine popular legitimacy, but practical compromise may be necessary to ensure the economic and social welfare of the people. How, then, do such groups maintain values yet meet responsibilities over time? Ever since Max Weber first posed this question as the fundamental moral and practical challenge for anyone having “a vocation for politics,” there has been relatively little systematic study or cumulative insight into a realistic answer. Although substantial work has been done on the instrumental side of decision-making, until recently there was little analysis of the values side. More recently, however, studies by our multidisciplinary and multinational research team, as well as work by others has focused on protected or “sacred” values that drive ambitions, policies and actions independently of calculated costs, risks or expected outcomes. Still, there has been little serious study of the dynamic relationship between deontological and instrumental reasoning in general and, in particular, of how political and advocacy groups manage values and responsibilities over time.

From the vantage of national and international security, few problems may be more pressing than understanding this dynamic as it relates, for example, to the future course of the Arab Spring and the rise to political power of the Muslim Brotherhood in Egypt. This was made clear to us by National Security Staff at our last White House briefing (ARTIS, Nov. 2012), focused on the implications of our theoretical and field research for potential developments in U.S. relations with Egypt and the wider region of the Middle East and North Africa (MENA). The theoretical and practical implications of the dynamic relationship between values and responsibilities potentially apply to a wide range of political and advocacy movements across the world, including in our own country. Accordingly, in this proposal we concentrate on study populations (in Egypt, Palestine, Israel, Spain, Ireland, India, USA), chosen to balance pressing matters of national and international security with wider theoretical and practical understanding.

Methodology:

Our methodology involves a series of interrelated data elicitation and analysis techniques, including: (1) open and structured interviews with leaders of political and advocacy groups and committed followers and advocates, in different cultural settings and conflict zones, in order to generate and test specific hypothesis, (2) lab experiments in the USA to experimentally refine the hypotheses for testing, (3) experimentally designed surveys to test hypotheses among different cultural populations, (4) neuroimaging experiments to: (a) characterize the neural processes underlying group conformity in decision making, and their plasticity under leadership, (b) identify the neural markers that distinguish sacred-value conformity versus compliance to social norms., and (c) characterize the neural processes underlying the attachment to concrete markers of sacred values and their plasticity under conditions of threat. Because our sampling of leaders and committed followers and advocates will be relatively small,

we will use cultural consensus modeling (CCM) to evaluate patterns of agreement and disagreement. This is a powerful tool originally developed by anthropologists in collaboration with psychologists, which allows considerably more insight than standard statistical techniques into the psychological patterning of small cultural populations up to the level of individual variation. In addition, for committed followers and advocates, we will use social network analysis to build our sample groups. In the past, we have used these techniques to successfully probe a range of theoretical issues in diverse cultural populations: from principles of natural classification and environmental management among Maya and other Native American groups, to causes of extremist violence and intractable conflict in global hotspots.

Study Stages and Responsibilities. This work progressively builds in overlapping stages: A) Participant observation and, semi-structured in-depth interviews, B) Structured interviews and psychological experiments, C) General surveys, D) Neuroimaging, E) Analyses.

- A) In depth questioning follows standard anthropological practice of participant observation. Questions are semi-structured to provide insights for new experiments and survey questions that probe deeper. We follow up questions with requests for justifications, which can reveal surprising information leading in new directions.
- B) At this stage, the questionnaire is fixed and questions must be transparent (if subjects ask interviewers to interpret a question it is discarded; however, follow-up justifications are still elicited). (A) and (B) involve field studies carried out by our senior researchers. Using results from the interviews we then design lab studies to refine our experimental design and predictions before taking the studies to the field. Some of these experiments are designed for small-scale populations (e.g., networks of militants and other devoted actors), and some are structured into experimentally-designed surveys .
- C) We use population surveys to explore issues that we cannot safely or directly ask some individuals about (e.g., we cannot ask some Hamas leader – even hypothetically - what he would do to stop or encourage a suicide action, although we can ask some individuals); and to see if reliable differences arise between patterns of anonymous written responses in surveys vs. personalized oral interviews. D involves large-scale population surveys with local partners (e.g., Tel Aviv University, Palestinian Center for Policy and Survey, Cairo University, Universidad Autònoma de Barcelona, Oxford University).
- D) Neuroimaging studies test and complement the results of field studies, particularly how sacred values psychologically affect appreciation of other salient values, events, places and persons in narratives that call for political change -- and under what conditions. E involves fMRI studies by the Cognitive Science Research Group in the Department of Psychiatry and Forensic Medicine at the Universidad Autònoma de Barcelona).
- E) Analyses of response patterns to (A) and (B) provide the input-items to (C) and (D), as well as summary assessments of results from all tasks, including (C) and (D), and implications for understanding how such values interact with governing and social responsibilities over time. F involves USA-based analyses of responses and results from (A), (B), (C) and (D).

Anticipated Outcomes of Research:

Theory Development. Common approaches to understanding and resolving resource and political conflicts often assume adversaries aspire to construe the world instrumentally, and that the chief difficulty lies in translating and standardizing instrumental frames and preferences across different cultural actors so that everyone is “on the same page.” Such assumptions prevail in risk assessment and modeling by foreign aid and international development projects, and in proposals for “business-like” negotiations and “carrots and sticks” policies to deal with deep-seated cultural and political conflicts. Our anthropological

fieldwork and psychological experiments relating to political and cultural conflicts suggest that distinct value frameworks constrain preferences and choices in ways not readily translatable (fungible, substitutable) across frameworks, thus defying the utilitarian logic of realpolitik. We seek to study of the dynamic relationship between deontological modes of decision making associated with SVs and instrumental modes of decision making associated practical necessities of governance and policy implementation and how political and advocacy groups manage values and responsibilities over time.

Education. This research involves the creation and testing of alternative hypotheses that challenge the status quo and encourage creative thinking. Our scientific goals highlight the need for interdisciplinary approaches and alternative reasoning essential to advance discovery and understanding while at the same time promoting training and learning. Both field and laboratory activities will be collaborative working with the PI and Senior Scientists, as well as graduate and undergraduate students. The research plan is designed to educate senior scholars as well as the students. We have found that novel ideas and strategies from students, visiting and working in the field can bring surprising results and new and productive directions in career paths.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Our research ultimately aims to identify shared values and how they may be used to build relationships and encourage others in ways favorable, or at least not hostile, to our way of life. Where hostile or antagonistic values persist, then an understanding of how groups manage the tensions between responsibilities and values gives affords us possibilities for containing and, if necessary, parrying those values by leveraging responsibilities (e.g., conditioning our economic, military and other forms of foreign aid) and creating openings for value change (including from our most influential non-governmental organizations, such as our universities, multimedia, faith-based organizations, and myriad forms of peer-to-peer technical and cultural exchange). The ultimate goal of our work is to help save lives, resources and national treasure, keeping our people, our war fighters, and our potential allies out of harm's way by affording them psychological knowledge of how culturally diverse individuals and groups advance values and interests that are potentially compatible or fundamentally antagonistic to our own.

Moral Schemas, Cultural Conflict, and Socio-Political Action

Steven Hitlin, University of Iowa, steven-hitlin@uiowa.edu
Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

Sacred moral values underlie group differences and motivate social movements, especially in times of cultural conflict (e.g., Atran et al. 2007, Sheikh et al. 2012, Tetlock et al. 2000). However, established models rarely consider values' diffusion and influence on political activity, in part due to a lack of engagement with the role of culture and social identities in shaping moral values, collective beliefs, and social movements. As such, policy makers lack proper tools for understanding social unrest and devising effective strategies promoting social stability and decreasing violence. We propose an interdisciplinary project to address this gap by investigating the interplay of social and mental mechanisms for the formation and modification of moral values within a cross-cultural perspective.

Methodology:

Our project will employ a cross-cultural empirical strategy combining social scientific survey methodology with neuroscientific brain imaging techniques to reveal the role of values in social mobilization. We propose a two-phase methodology that collects large-scale survey data from the U.S. and Turkey to identify important value dimensions for each culture (Phase 1), and then obtains neurological and behavioral data while people respond (partnered with people who share or violate those values) to cultural conflict scenarios threatening these important values in a functional Magnetic Resonance Scanner (Phase 2). Our interdisciplinary empirical approach will (a) reveal how moral values anchored in group identities trigger socio-political action (e.g., violent, non-violent) in cultural conflict situations, (b) explicate the subtle mental processes that contribute to socio-political action ranging from passive support to active mobilization by specifying involved brain activity, and (c) assess inter and intra-cultural variability in the content of moral values in the face of social influence.

Anticipated Outcomes of Research:

Our research will expand current knowledge in four ways. First, Phase 1 of our project will derive a theoretically informed, culturally sensitive model identifying sacred values in ways that will improve on current perspectives that rely on after-the-fact indicators rendering them difficult to disprove. Second, we can address intra-cultural variability in the content and the use of moral values and their influence on socio-political action. By comparing the U.S. to Turkey, a majority Muslim country in the Middle East region, we will either find differences in the way values operate or substantiate largely untested universalistic assumptions about the functions and content of sacred values. Thirdly, our research links sociological understandings of values with specific mental mechanisms underlying socio-political action. We expect to find that brain regions associated with fast processing (the ventromedial prefrontal cortex and the amygdala) will be associated with confrontational action choices (such as active, violent) while regions related to slow cognitive control (dorsolateral prefrontal cortex) will be related to passive and non-violent action responses. Finding distinct activation patterns in the VMPFC and the amygdala vs. the DLPFC would inform policy by suggesting what types of messages trigger fast/intuitive psychological processes associated with more violent actions and socio-political mobilization. These results offer a mechanism underlying social movement participation and violence. Fourth, we expect that these processes are strongly influenced by other people, something rarely incorporated into the study of values. We plan to explore how interactions with moral in-group/out-group members influence neurological processing, which in turn shapes interactional strategies and appraisal processes. We expect that interacting with moral in-groups and out-groups provokes distinct mental processes, one relying on moral empathy (dampening confrontational responses), the other linked with basic negative arousal (fostering

confrontational responses). These findings can inform appeals to calm violence, and what sorts of spokespeople might best spread these messages.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

This study can inform defense communication policy by: A) offering survey instruments for obtaining locally sensitive measures of sacred values to guide cultural interpretation of foreign societies; B) linking individual moral responses to social networks and cultural values, suggesting efficacious ways to use social networks to spread messages among populations; C) exploring specific value motivations in American and Turkish samples that foster transitions from passive support to violent responses to cultural conflict, improving prediction of potential triggers for organized violence; D) locating either core cultural differences or similarities in sacred values and their influence on socio-political behavior within a Middle Eastern country located in an important geographic conflict region. Findings can contribute to effective strategies and policies in reducing organized violence and preventing its contagion, suggesting how U.S. government and military communication and actions are perceived by American and Turkish audiences, and how those messages are proximally influenced by others.

Neural Bases of Persuasion & Social Influence in the U.S. and the Middle East

Matthew Lieberman, UCLA, lieber@ucla.edu

Subawards to University of Michigan and Defense Group Inc

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research

Our nation's capacity for crafting persuasive messages that will successfully propagate strategically important ideas, beliefs, and value throughout countries resistant to our ideas and influence is limited at best and problematic at worst. Similarly, our ability to counter undesirable messages that spread virally is far from perfect. Our research team has engaged in a functional magnetic resonance imaging (fMRI) program of research to identify the neurocognitive predictors of the persuasiveness of non-controversial ideas demonstrating that neural predictors can significantly outperform traditional ways of assessing a messages likelihood of success (success measured in terms of individual behavior change and helping to propagate the message effectively to others). In the current proposal, we extend this work in multiple directions that will increase its practical application within several sensitive regions including the Middle East and North Africa. We will examine persuasion using topics that will and will not induce resistance and examine (along with manipulations designed to overcome resistance) using neuroimaging and behavioral assessments. We will examine the neural bases of successful persuasion and social influence in both the U.S. and Egypt. We will also examine how neural assessments of individuals in the U.S. can be used to predict social media trends in Cairo and to effectively insert persuasive messages into their social media. Finally, we will assess the utility of functional near infrared spectroscopy (fNIRS) as a relatively inexpensive and portable replacement for fMRI that can be shipped around the world to conduct operational neuroscience investigations in key places around the world.

Political Reach, State Fragility, and the Incidence of Maritime Piracy: Explaining Piracy and Pirate Organizations, 1993-2015

Brandon C. Prins, University of Tennessee, bprins@utk.edu
and Ursula Daxecker, University of Amsterdam
Government Program Officer: Harold Hawkins, Office of Naval Research
<http://brandonprins.weebly.com/maritime-piracy.html>

Research Problem:

According to the International Maritime Bureau (IMB), pirates carried out 297 piracy incidents, 28 hijackings, and took more than 500 crew-members as hostages in 2012. Yet despite the resurgence of piracy since the early 1990s, and the economic and security concerns associated with it, academic researchers have neglected a comprehensive study of this often-violent activity. Indeed, research on maritime piracy consists mostly of case studies of countries or regions with particularly pressing piracy problems. We therefore lack systematic explanations and analyses of piracy. In part, this problem stems from the absence of comprehensive and systematic data on pirate attacks. While several international organizations (such as the IMB) collect information on piracy incidents, no unified data source exists to date. In addition, data on incidents collected by these organizations provide almost no information on the pirates and their organizational structure.

This project pursues four objectives to alleviate the above shortcomings. The first goal is to provide a comprehensive and novel theoretical explanation of piracy. Existing studies of pirate prone regions identify state capacity and economic opportunities as the main drivers of piracy. Yet, we believe that such arguments neglect the importance geo-spatial conditions and the extent of a government's political reach. We argue that the effect of state capacity and economic opportunities on piracy is a function both of the government's ability to project power over a country's entire territory as well as certain geographic constraints faced by governments and pirates. It is therefore expected that government reach – a function of the distance between a country's capital and its coastline, or the length of a country's coastline - conditions the effect of other factors on piracy. Second, to evaluate these expectations systematically, the authors propose the creation of a comprehensive database on piracy incidents that combines information from all four organizations currently engaged in data collection. Existing data sources suffer from diverging or incompatible formats, partly overlapping data, or a lack of public access. Third, to address the lack of information on pirates and their organizational characteristics, the project involves expert surveys in several countries identified as particularly piracy prone. To our knowledge, this is the first attempt to collect data on pirate organizations. Finally, we intend to use geo-spatial and causal modeling methods to forecast piracy events into the future, which we believe will benefit policymakers interested in identifying at-risk states and other maritime areas.

Methodology:

We intend to collect data on piracy incidents based on reporting by the four major organizations involved in collecting piracy data. The data will be uploaded into an online database with mapping capabilities and will be available in incident, time, and country-level formats. To improve existing knowledge of pirate organizations, expert surveys on pirate groups in four countries identified as particularly piracy prone regions by the IMB will be conducted. Surveys include questions on pirate group location, size, ports used by the organizations, among others. The resulting data will be uploaded into a database that is publicly accessible. Using these data, the authors will empirically evaluate our argument on the relationship between state strength, economic opportunities, and reach for both the global sample of piracy and the subset of piracy prone regions.

Anticipated Outcomes of Research:

Our expectation is that pirate groups who are further removed from the capital can take advantage of the lower political reach of governments, but that this effect is conditional on the level of state capacity. That is, while states with the lowest levels of state capacity and low political reach will have the highest incidence of piracy, countries with intermediate state capacity and low political reach will also experience substantial piracy. We expect a similarly conditional relationship for economic opportunity and reach. If our expectations are supported empirically, they could help explain why states with intermediate levels of state capacity but low levels of reach (such as India, Tanzania, or Brazil) struggle with substantial piracy. At the subnational level, the MPO database will allow PIs and other researchers to analyze the micro-level determinants and evolution of piracy. Our expectation is that regions with intermediate levels of state capacity would experience high amounts of piracy if political reach is low. For example, the region of Puntland in Somalia has higher levels of political stability than other Somali regions but experiences lots of piracy because of its physical distance from the capital. Yet regions such as Somaliland, while also far removed from the capital, would be expected to have a lower incidence of piracy because Somaliland is arguably the most stable (if not quasi-independent) region in Somalia. While this anecdotal evidence is arguably not a systematic test of our expectations, it seemingly confirms our hypotheses at the subnational level.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

Maritime piracy represents a post-Cold War challenge to U.S. and international security and remains underexplored. Yet understanding the incidence and evolution of maritime piracy in multiple contexts is essential for developing effective government policy and clarifying public perceptions of the pirate threat. In order to craft effective counter-piracy strategies, governments need to know where and why incidents are occurring, but also how pirate groups are organized and carry out their attacks. Improving our understanding of the determinants of piracy thus has several implications for national defense.

Sharable data resources to be generated:

See “Maritime Piracy Event and Location Datasets” on page 126.

Who Does Not Become a Terrorist, and Why? Towards an Empirically Grounded Understanding of Individual Motivation in Terrorism

Maria Rasmussen, Naval Postgraduate School, mrasmsussen@nps.edu

Richard English, University of St. Andrews, United Kingdom

Rogelio Alonso, King Juan Carlos University, Madrid, Spain

Government Program Officer: Benjamin Knott, Air Force Office of Scientific Research

This project aims to examine an important question: *Why do individuals eschew violence?* Since the 1990s scholars have periodically conducted fieldwork among terrorists in order to understand the motivation of individuals who decide to engage in violence. The body of literature that resulted from these endeavors has been too deterministic. In every context we find many individuals who share the demographic, family, cultural, and/or socioeconomic background of those who decided to engage in terrorism, and yet refrained themselves from taking up armed militancy, even though they were sympathetic to the end goals of armed groups. The field of terrorism studies has not, until recently, attempted to look at this control group. This project is not about terrorists, but about supporters of political violence. Our goal is twofold. First, we propose to study supporters of armed militancy, in order to describe the panoply of activities they are willing to undertake short of violence, and the determinants of those actions. At the same time, we aim to contribute to theory building in the field of individual radicalization by looking at a control group that has, so far, never been studied.

Our research design is straightforward. The principal investigators will prepare a questionnaire of closed- and open-ended questions to be used in fieldwork. We will then commission 14 case studies. Each case study will involve extensive interviews with ten or more activists and militants in parties and NGOs who, though sympathetic to radical causes, have chosen a path of non-violence. This research will yield over 140 life histories. Following the fieldwork, we will bring together all case study authors for a conference in which they will discuss the findings from their interviews. The co-PIs will then commission a content analysis of the interview transcripts, and work on a final manuscript that analyzes the main findings from systematic, cross-regional and cross-national comparisons, and suggests avenues for further research.

This project will provide substantial empirical evidence on which to base sound policy. The field of terrorism studies cannot as yet generalize with great confidence about the issues that drive individuals to armed militancy and the factors that prevent such radicalization. This study will broaden our knowledge base on the subject of support for violence, and thereby inform sound policymaking in the area of counter-radicalization and counter-terrorism.

Natural Resources and Armed Conflict

James Igoe Walsh, University of North Carolina at Charlotte, jwalsh@uncc.edu
Victor Asal, University of Albany; **Justin Conrad**, University of North Carolina at Charlotte;
Michael Findley, University of Texas at Austin; **James A. Piazza**, Pennsylvania State University;
Beth E. Whitaker, University of North Carolina at Charlotte
Government Program Officer: Micheline Strand, Army Research Office

Research Problem:

How do natural resources, such as oil reserves, mineral deposits, and alluvial gemstones, influence the likelihood, type, and duration of armed conflict in the developing world? Large literatures in political science, economics, and geography address this group of questions but have not reached much of a consensus on the answers. We argue that one reason for this lack of progress is that most existing work has not investigated how variation in the degree and type of control that rebel groups exercise over resources influences their strategies of violence. Existing explanations of the links between resources and conflict make important assumptions about the role of control. But few develop these assumptions in any detail, and none utilize direct evidence about control in testing their hypotheses.

Methodology:

Our project addresses this deficit by developing (1) a comprehensive, global, geocoded dataset of natural resource locations, and (2) measuring if and precisely how rebel groups control exploit such resources.

Anticipated Outcomes of Research:

We use this data to generate scholarly analyses of the following major questions:

- Do “lootable” resources increase the likelihood, severity, and duration of ethnic rebellion?
- How does access to natural resources influence the type of violence employed by non-state actors? Does access to resources lead violent actors to scale up from terrorist to insurgent violence?
- Do natural resources fuel third-party interventions into civil wars?
- How do natural resources influence state failure and political violence?
- How do the different ways that rebels can exploit resources (controlling production, theft, providing protection for producers, etc.) influence their duration, use of violence, and cohesion?

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

This project has important implications for US defense policy. Political instability and conflict in the developing world has been identified as a key security policy concern in the National Security Strategy of the United States. We know from existing research that natural resources are linked in some ways to such instability and conflict. Better understanding this link would place the United States in a stronger position to prevent conflict. In particular, understanding how control of resources influences conflict would allow the United States to identify and influence actors who control resource locations that are most likely to fuel conflict.

Sharable data resources to be generated:

See “Geocoded Database of Natural Resources” on page 128.

METANORM: A multidisciplinary approach to the analysis and evaluation of norms and models of governance for cyberspace

Patrick Winston, MIT CSAIL

Roger Hurwitz, Research Coordinator, MIT CSAIL;

Martha Finnemore, George Washington University; **Duncan Hollis**, Temple University;

Panayotis “Pana” Yannakogeorgos, Air Force Research Institute

Project Point of Contact: Roger Hurwitz, rhu@csail.mit.edu

Government Program Officer: Harold Hawkins, Office of Naval Research

Research Problems:

In little more than two decades, the Internet has evolved from a medium for scientific communication, embedded in an academic culture, to a worldwide ecosystem supporting an enormous variety of interactions and transactions at the global and local levels. These changes have a dark side as cyberspace has also become a platform for threats to individual, organizational and national security, in the forms of cybercrime, ubiquitous surveillance, intentional disruptions of critical services, attacks on digitally controlled infrastructure, growing militarization, etc. Cyber norms and Internet governance therefore vitally concern states, the private sector, civil society, and individual users, but they are increasingly matters of contention. Policy makers in major and emerging cyber powers have realized that the Internet has outgrown earlier notions of acceptable behaviors in cyberspace; and the rules for interactions among state actors and their citizens are unclear and inadequate

Our research will accordingly address the following questions: Are there norms for acceptable uses of information and communication technologies (ICT), which can gain broad acceptance among states and significant non-state actors and thereby contribute to security in cyberspace and international stability? What are the sources for such norms, the reasons for their adoption, the best ways to promote and enforce them, and their potential impacts? What models of governance for the Internet (and more generally cyberspace) can accommodate the diversity of interests in and claims on it, while enabling its further beneficial development?

Methodology:

METANORM will provide a multidisciplinary analysis, reconstruction and evaluation of (a) the development, adoption, coverage, force, institutionalization and efficacy of current and potential norms for regulating international behaviors in cyberspace and (b) current models for Internet and cyberspace governance and the debates and trends regarding their futures. The project leverages methods in legal studies, political science, international relations studies, artificial intelligence and computer science, and draws upon a variety of data in order to represent the potential norms, their intents and coverage. The data includes national cyber laws and policies, intergovernmental agreements and discussions, frameworks for collaboration in the private sector and technological communities, scholarly literature, and statements of key policy makers in government, private sectors, civil society and technological communities, both in the US and abroad. At the macro level, the project will provide an understanding of the roles and values of certain cyber norms and governance model in the active defense of the United States from cyber threats. It will also develop an integrative model to evaluate the viability of such norms and their potential to sustain cyberspace as a commons and platform, for global economic, social, political and intellectual development, in the face of security motivated trends toward lock-downs at national and organizational levels.

Anticipated Outcomes of Research:

We expect the research will identify norms that can contribute to security and stability in international cyberspace and develop effective strategies and arguments for promoting the acceptance and observance of such norms by states and significant non-state actors. METANORM will also develop a typology of (potential) cyber norms which links them to the actual status of phases in their respective life cycles, including origins, promotion, dissemination, acceptance, modifications, implementations, enforcements, etc. This will enhance theoretical knowledge of how technological realities and political agendas can constrain development, diffusion and observance of norms. The typology will be an accessible database and include practical information on the inclusion of particular norms in national and transnational cybersecurity strategies and agencies and organizations with responsibility for their observance.

Potential Impact on DoD Capabilities and Broader Implications for National Defense:

This project will contribute to US cyber defense planning and capabilities by developing a dynamic typology cyber norms that enables both humans and machines to access information on norms relevant to a decision making problem, including the extent of their adoption and institutionalization. This step in turn lays groundwork for a later development of software agents capable of both normative and instrumental (cost/ benefit) reasoning in response to cyber threats. Other components of the project will investigate methodologies for norm based signaling, escalation and de-escalation in the conduct of cyber conflicts, and also track how well DoD's interests in norm development are being met in interagency and international processes.

Any other anticipated research products:

METANORM researchers will also contribute to annual workshops where their research can be brought to the attention of government, NGO and private sector personnel, academics and practitioners concerned with cyber norms. These workshops (not funded under the award) will be continuations of the Harvard-MIT-U of Toronto Cyber Norms Workshops.

Social Science Resources for Academics and Policymakers

PI	Resources	Pg #
C. Buckley	Eurasian Migration	110
T.M. Cheung	Chinese S&T – Relationships, Technology Development, and Translated Documents	111
N. Choucri	Cyber International Relations	112
J. Dobson	Data and mapping of land use and land tenure regimes in indigenous municipalities of Central America	113
T. Fazal	War Initiation and Termination	114
F. Gavin	Mapping Climate Change and African Political Stability	115
T. Gerber	Surveys and Interviews on Homeownership in Central Eurasia	117
L. Gerdes	Dynamic Network Models of Salafist-Motivated Terrorism in Southeast Asia	118
J.C. Jenkins	Deciphering Civil Conflict in the Middle East	119
C. Lee	The Chinese Communist Party's Economic Transitions via Organizational Reform	120
P. Potter	Terrorist Alliance Database	121
L. Pratson	Assembled Datasets for MENA Food and Energy Global Value Chains	123
B. Prins	Maritime Piracy Event and Location Datasets	126
J. Shapiro	Empirical Studies of Conflict Database Set	127
J. Walsh	Geocoded Database of Natural Resources	128
M. Woodward	LookingGlass: A Visual Intelligence Platform for Tracking Online Social Movements	129
J. Wright	Latent Dimensions of Authoritarianism	130

Eurasian Migration Data

Cynthia Buckley, Social Science Research Council & UT Austin
Beth Mitchneck, University of Arizona; **Blair Ruble**, Woodrow Wilson Center
Point of Contact: buckley@ssrc.org
Government Program Officer: Jack Meszaros, National Science Foundation

Research Problem:

The emergence of the Russian as a major recipient of registered and unregistered labor migration challenges assumptions concerning the inherently liberal nature of migrant destination states. It also raises important issues concerning regional interdependence and socio-political stability. Our project seeks to improve our understanding of both the scale and trends of population movements within the Eurasian migration system and their implication for Russian influence in the region.

Methodology:

We employ a mixed methodological approach to the emergence of the Eurasian migration system including a detailed assessment of regional and national policies on labor migration and registration practices, a thorough review of press reports concerning migration, and detailed indirect demographic estimation of migration flows into the Russian Federation. These background data are supplemented with expert interviews and ethnographic work in three cities: Yekaterinburg (a city attempting to attract labor migrants), Krasnodar (a border city known for anti-migrant attitudes and policies), and Nizhny Novgorod (a formerly closed city struggling to develop a clear approach to labor migration). In the fall of 2011 we are fielding a survey of labor migrants in each of these three cities, using respondent driven sampling procedures to collect data on migration processes, labor conditions, human security, and remittances. It is the first multi-site survey of its kind in the Russian Federation. In the final stage of the study we will develop detailed national case studies of Ukraine, Tajikistan, Georgia and Vietnam, highlighting how remittances and labor out migration are incorporated into national development strategies and gathering expert opinions on the perceived importance of access to the Russian labor market. These three stages of research will contribute to a comprehensive assessment of human and international security concerns for regions sending migrants to the Russian Federation, and on the relationship between migration, remittance reliance, and political influence.

Sharable data resources to be generated:

Early access to the project data bases is available upon request from the PI. Public access late 2013.

- Legislative database concerning labor migration, visa requirements, bilateral migration treaties and regional laws concerning migration and registration for the Russian Federation 1991- 2012
- Demographic data base concerning international migration into the Russian Federation, including all governmental estimates and published registration results and published estimates of unregistered international migration across Russian and English language mass media.
- Survey data base, including social network information and cognitive mapping results, on labor migrants in Yekaterinburg, Krasnodar, and Nizhny Novgorod (estimated N=600). Data to be filed with ICPSR in 2013.

Chinese S&T – Relationships, Technology Development, and Translated Documents

Tai Ming Cheung, University of California - San Diego, tcheung@ucsd.edu
Deputy Director **Kevin Pollpeter**, University of California - San Diego, kpollpeter@ucsd.edu
Government Program Officer: Micheline Strand, U.S. Army Research Office
<http://igcc.ucsd.edu/research/technology-and-security/innovation-and-technology-in-china/>

This project examines China's drive to become a world-class technological power, especially in the defense and dual-use sectors, and understanding the implications for the United States and the rest of the world. A central research question is what are the key sources of innovation and barriers that will shape China's technological development trajectory? The project looks at a diverse number of areas from the roles and relationship between the state and market, China's place in the global technology order, governance regimes and incentive mechanisms, the different elements of the innovation eco-system, and the inter-relationship of the civilian and defense economies.

Sharable Data Resources to be Generated:

We have continued populating a **relational database** on Chinese S&T actors and programs. To date we have collected information on more than 1,300 S&T organizations, 476 Chinese corporations, 2,754 people, 35 major S&T projects, 30 S&T conferences, 150 publications and 540 universities.

Data relating to the Chinese security political economy, technological development and the implications for technology trade policies, and organizational structures, processes and leadership will be available to the broader scholarly community via a quantitative relational database.

Additionally, translated Chinese newspapers and journals will be available via another searchable database and we will continue to publish new analyses through our weekly bulletin.

Cyber International Relations Dashboard and Course Curricula

Nazli Choucri, Massachusetts Institute of Technology, nchoucri@mit.edu

Venkatesh Narayanamurti, Harvard Kennedy School

http://belfercenter.ksg.harvard.edu/project/67/explorations_in_cyber_international_relations.html

<http://ecir.mit.edu>

Government Program Manager: Erin Fitzgerald, Office of the Secretary of Defense

All our data are rooted in public sources.

Cyber System for Sustainable Development. Expansion of MIT's Global System for Sustainable Development to cover the Cyber domain (GSSD). Ontology-based and quality controlled knowledge data base consisting of tagged searchable abstracts with links to source. Content structure is based on the ECIR framework for integrating cyberspace and international relations. See gssd.mit.edu

Cybersecurity Wiki Harvard's Berkman Center for Internet & Society—with contributions from the Science, Technology, and Public Policy Program's Explorations in Cyber International Relations—has developed a Cybersecurity Wiki that is designed to be a curated, comprehensive, evolving, and interactive collection of resources for researchers (not just legal researchers), technologists, policymakers, judges, students, and others interested in cybersecurity issues, broadly conceived. The general aim of the wiki is to collect in one place, and organize intelligently, important documents related to cybersecurity.

ECIR Data Dashboard designed to provide scholars, policymakers, IT professionals, and other stakeholders with a comprehensive set of data on national-level cyber security, information technology, and demographic data. The Dashboard allows stakeholders to observe chronological trends and multivariate correlations that can lead to insight into the current state, potential future trends, and approximate causes of global cyber security issues. (See <http://coin.mit.edu:8080/Dashboard/>).

Cybersecurity Model Curriculum Harvard's Berkman Center's tool for instructors who plan to teach a cybersecurity class, providing them with resources arranged in a coherent, teachable fashion. Not for lay teachers. Provides a structured guide that is adaptable, yet rigorous, permitting professors to take various elements of the course plans and "drag and drop" to create their own customizable syllabi. Developed with contributions from HKS and HLS faculty and fellows. Website:

<http://h2o.law.harvard.edu/playlists/633>

Cyber Politics in International Relations MIT multidisciplinary course, offered by Department of Political Science with participation from CSAIL-computer science and Sloan School of Management customized course for graduate and undergraduate students.

Data and mapping of land use and land tenure regimes in indigenous municipalities of Central America

Jerome E. Dobson, dobson@ku.edu

American Geographical Society and University of Kansas

Government Program Manager: Micheline Strand, Army Research Office

In “The Human Geography of Resilience and Change: Land Rights and Stability in Central American Indigenous Societies” (pg. 90) we propose to advance the study, modeling, and understanding of land tenure, land use, and political stability in indigenous societies of Latin America. This project will provide a new geospatial way of researching and understanding land tenure in Central America using participatory research mapping (PRM) in conjunction with geographic information systems (GIS).

Sharable data resources in progress:

We will develop a digital assessment of indigenous areas that display societal resilience and stability and to assess both the perturbing and stabilizing pressures imposed by governance, resource use, and other salient factors. We will document land tenures and land uses, and the related administrative, judicial and legal power over them, as indicators of societal resilience and instability in indigenous areas of Latin America.

This research uses participatory research mapping (PRM) and geographic information systems (GIS), together with publicly-available human geographic information, 1) to produce reliable, coarse to fine scale digital geographical data, mapping, and analyses of land use and land tenure regimes in indigenous municipalities of Central America; 2) to define, digitally map, and evaluate the land use and land tenure stability of indigenous municipalities in Central America, developing and digitally mapping a “land stability index”; and 3) to document, digitally map, and rate (using the land stability index) the diverse territorial jurisdictions (“sovereignty regimes”) that Central American States hold over these indigenous municipalities, ranging from historic Indian reserves to semiautonomous regions.

War Initiation and Termination data sets

Tanisha Fazal, Columbia University, tmf2001@columbia.edu

V. Page Fortna, Columbia University

Government Program Manager: Jacqueline Meszaros, National Science Foundation

Although research in international relations has generated extensive knowledge about the onset and termination of war, the study of how the conduct and termination of war have changed over time has been neglected. As a result, the field is poorly positioned to understand critical recent changes, for example: military victory has become less common, formal peace treaties have become less common in interstate war but more common in civil war, military and political outcomes of war have diverged, and clauses of war guilt are much more common today. These changes may do more to hinder than to help the long-term prospects for peace. It is critical for our national security to understand how and why these changes have occurred.

Sharable data resources to be generated:

War Initiation and Termination (WIT) data set

This data set codes a series of variables on war initiation and termination, including declarations of war, military outcome of war, political outcome of war, and conclusion of a formal peace treaty for interstate wars between 1816 and 2007.

Civil War Initiation and Termination (C-WIT) data set

The data for C-WIT are still being collected. C-WIT codes series of variables on war initiation and termination, including declarations of war and independence, military outcome of war, political outcome of war, and conclusion of a formal peace treaty for civil wars between 1816 and 2007. It also codes for compliance with relevant laws of war, use of contraband financing, and the use of terrorism by either side of a civil war dyad.

Mapping Climate Change and African Political Stability

Francis J. Gavin, University of Texas at Austin

Project Point of Contact: Ashley Moran, CCAPS Senior Program Manager, amoran@austin.utexas.edu
www.strausscenter.org/ccaps

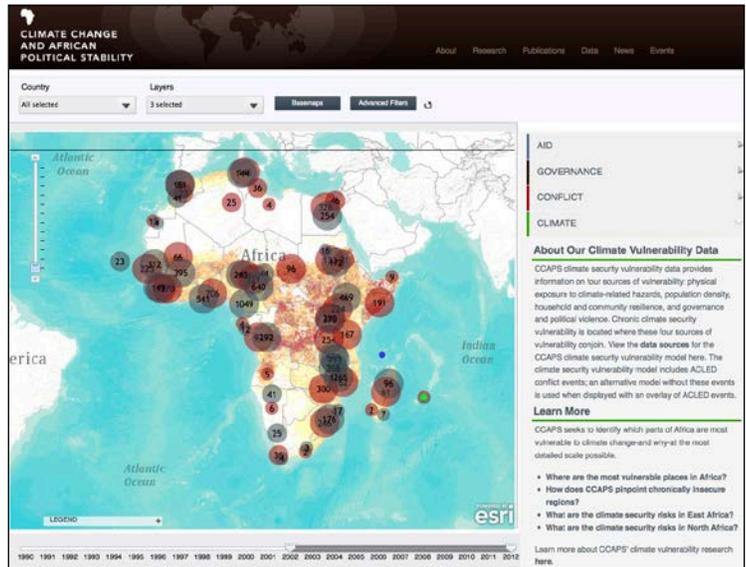
MAPPING TOOL



The CCAPS program has developed an online mapping tool to enable researchers and policymakers to visualize data on climate change vulnerability, conflict, governance, and aid, and to analyze how these issues intersect in Africa. The mapping tool, which uses Esri technology, allows users to select and layer any combination of CCAPS data onto one map to assess how myriad climate change impacts and responses intersect. In July 2013, CCAPS received the Special Achievements in GIS (SAG) Award for its work mapping security risks related to climate change.

Mapping conflict data over climate vulnerability data can assess how local conflict patterns could exacerbate climate-induced insecurity in a region. It also shows how conflict dynamics are changing over time and space. To analyze the interaction of climate vulnerability and international aid, users can locate aid projects funded by the 30 donors, layered on top of climate change vulnerability data. Mapping such aid flows provides a new way to discern if adaptation aid is effectively targeting the areas where climate change poses the most significant risk to the sustainable development and political stability of a country.

The mapping tool is available at <https://strausscenter.org/ccaps/mappingtool>.

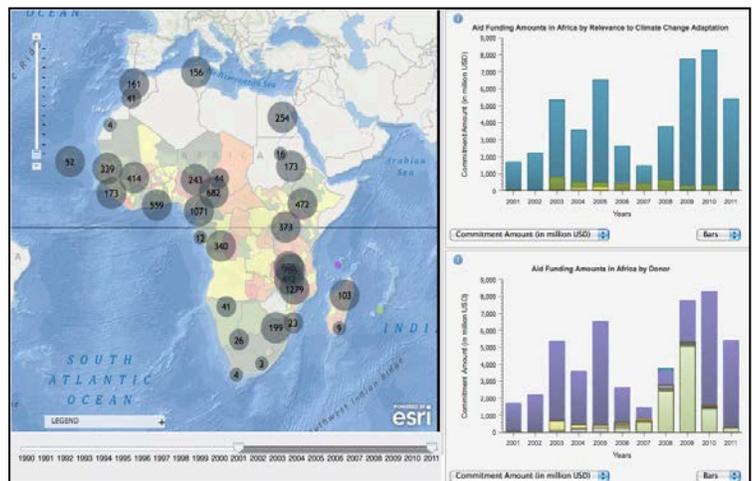


THEMATIC DASHBOARDS

CCAPS is producing dashboards for several thematic areas under study, including climate, conflict, governance, and aid. Built in collaboration with Development Gateway, the dashboards bring together mapping, trends analysis, tabular data displays, and data downloads for a comprehensive view of each issue. The program has used CCAPS data to launch three dashboards focused on aid, conflict, and climate. CCAPS will release additional dashboards in 2013-14.

The CCPAS aid dashboard includes geocoded aid data from CCAPS and several partner institutions, combining trends analysis with the most comprehensive collection of geocoded data on aid projects in Africa. The CCAPS conflict dashboard allows users to analyze conflict by actor, event type, issue, intensity, and a range of other conflict dynamics in near real time. The climate dashboard explores how various factors influence overall climate security vulnerability at the local level.

The dashboards are available at <https://strausscenter.org/ccaps/mappingtool>.



DATA & TOOLS

SEARCHABLE ONLINE DATABASES

Social Conflict in Africa Database (SCAD)

Event ID	Country	Location	Start Date	End Date	Event Type	Actor	Target	Deaths	Issue
941001	Mali	Niamey	Jan 01, 1997	Oct 04, 1999	Insurgency/Civil War	Rebels	Government	Unknown	Other
941002	Mali	Mopti	Jan 04, 1999	Jan 08, 1999	Unarmed Strike	Police	Government	0	Economy/Labor
941003	Mali	Mopti	Jan 08, 1999	Jan 08, 1999	Unarmed Strike	City Council	Government	0	Economy/Labor
941004	Mali	Mopti	Jan 09, 1999	Jan 10, 1999	Unarmed Strike	Health workers	Government	0	Economy/Labor
941005	Mali	Niamey	Jan 09, 1999	Jan 11, 1999	Unarmed Strike	Police	Government	0	Economy/Labor
941006	Mali	Mopti	Jul 22, 1999	Jul 29, 1999	Unarmed Strike	City bus workers	Government	0	Economy/Labor
941007	Mali	Mopti	Jul 29, 1999	Aug 02, 1999	Spontaneous Demonstration	Militant leaders	Government	0	Economy/Labor
941008	Mali	Ukhege	Aug 11, 1999	Aug 11, 1999	Spontaneous Demonstration	Militant leaders	Government	1	Economy/Labor
941009	Mali	Niamey	Aug 13, 1999	Aug 20, 1999	Organized Demonstration	Students	Government	0	Economy/Labor
941010	Mali	Ber	Aug 13, 1999	Aug 13, 1999	Organized Demonstration	Students	Government	0	Economy/Labor

The Social Conflict in Africa Database (SCAD) is a resource for research and analysis on social and political unrest in Africa. SCAD includes georeferenced data on protests, riots, strikes, coups, communal violence, and other types of social unrest in Africa from 1990 to 2011. Each event record includes start and end dates, locations, actors and targets involved, number of participants and fatalities, issues of contention, and government response, allowing detailed analysis of the issues and actors that drive social conflict in Africa.

SCAD data are available at www.strausscenter.org/scad.html.

Armed Conflict Location and Event Dataset (ACLED)

EventID	Country	Location	Event Date	Event Type	Actor1	Actor2	Deaths
5163A	Uganda	Gulu	Jan 01, 1997	Battle/No change of territory	Military Forces of Uganda (1996)	LRA, Lord's Resistance Army	4
1163A	Uganda	Buganda	Jan 01, 1997	Battle/No change of territory	Military Forces of Uganda (1996)	UPDF, Uganda Federal Democratic Coalition	8
5163B	Uganda	Napak	Jan 07, 1997	Battle/No change of territory	Military Forces of Uganda (1996)	ACF, Allied Democratic Forces	8
4163A	Uganda	Kasaba	Jan 08, 1997	Battle/No change of territory	Military Forces of Uganda (1996)	ACF, Allied Democratic Forces	2
5163C	Uganda	Arusha	Jan 11, 1997	Violence against civilians	LRA, Lord's Resistance Army	Civilians (Uganda)	0
5309C	Democratic Republic of the Congo	Kimba	Feb 01, 1997	Battle/No change of territory	Military Forces of Uganda (1996)	RPF, West Nile Bank Front	0
6163A	Uganda	Kigali	Feb 01, 1997	Violence against civilians	LRA, Lord's Resistance Army	Civilians (Uganda)	10
1163B	Uganda	Paar	Feb 01, 1997	Violence against civilians	LRA, Lord's Resistance Army	Civilians (Uganda)	8

ACLED tracks the actions of government forces, opposition groups, and militias in Africa in real time, specifying the exact location and date of battle events, transfers of military control, headquarter establishment, civilian violence, and rioting. ACLED includes data from 1999 to 2013, with real-time conflict data updated monthly on the CCAPS site. All data are date-specific and geo-referenced to the town level. ACLED's disaggregation of civil and transnational violence thus allows analysis of the local factors that drive instability.

ACLED data are available at www.strausscenter.org/acled.html.

Malawi Geocoded and Climate Aid Dataset

Project Name	Sector	Donor	Recipient	Location	Year Agreement Signed	Year Planned Completion	Cumulative Commitment (USD)	Cumulative Disbursement (USD)
Poverty reduction support and institutional support project	Economic Governance	African Development Bank (ADB)	Malawi	Central Region			11,875,381	8,370,993
Smallholder Agriculture Infrastructure Project	Agriculture	African Development Bank (ADB)	Malawi	Central Region	2015		23,277,407	25,968,021
Horticulture and Food Crops Development Project	Water Irrigation	African Development Bank (ADB)	Malawi	Central Region	2000	2008	13,178,430	9,448,791
Horticulture and Food Crops Development Project	Water Irrigation	African Development Bank (ADB)	Malawi	Central Region	2000	2008	10,178,430	9,448,791
Horticulture and Food Crops Development Project	Water Irrigation	African Development Bank (ADB)	Malawi	Central Region	2000	2008	13,178,430	9,448,791

In partnership with AidData and the Government of Malawi, CCAPS published a first-of-its-kind geocoded and climate-coded aid dataset. The dataset includes all types of aid from 30 donors in Malawi's Aid Management Platform, geocoded and climate-coded to provide a more complete picture of how adaptation fits into development efforts within the country. The dataset also allows researchers to assess if adaptation aid is targeting areas of greatest climate security risks.

Adaptation aid data are available at www.strausscenter.org/aid.html.

CLIMATE PROJECTIONS

CCAPS researchers have designed and run a mid-century climate projection model for Africa based on a derivation of the National Center for Atmospheric Research (NCAR) Weather Research and Forecasting (WRF) model. Using the Texas Advanced Computing Center supercomputer facilities at the University of Texas at Austin, the model produces high-resolution (90-km) projections for climate in Africa in the present day, mid-21st century, and late-21st century. Comparing present-day results with mid-century and late-century projections, researchers are investigating which regions in Africa are undergoing significant climate change and how the effects will vary within and across countries. CCAPS climate modelers have also run multi-year simulations to generate data on inter-annual variability at mid- and late-century.

Surveys and Interviews on Homeownership in Central Eurasia

Theodore P. Gerber, University of Wisconsin-Madison, tgerber@ssc.wisc.edu

Jane Zavisca, University of Arizona

Government Program Manager: John Lavery, Army Research Office

The project “Homeownership and Societal Stability: Assessing Causal Effects in Central Eurasia” (pg. 94) examines whether, how, and why homeownership and other aspects of housing affect societal stability in semi-authoritarian contexts. We will test our hypotheses empirically using original survey and focus group data that we will collect in four semi-authoritarian countries: Azerbaijan, Kyrgyzstan, Russia, and Ukraine. These countries are uniquely suited for testing whether housing has causal effects on societal stability for the following reasons. (See project description.)

Methodology:

We will conduct two waves of surveys with the same respondents (i.e. a two-wave panel survey), each preceded by focus group interviews. Each country’s survey sample will consist 2400 respondents, including a nationally representative sample of 1600 respondents ages 18-49, plus the following oversamples of 800 to let us test specific hypotheses: internally displaced persons in Azerbaijan, residents of regions that have experienced ethnic violence in the last three years in Kyrgyzstan, residents of regions with high concentrations of Muslims in Russia, and mortgagors in Ukraine. To carry out this major data collection, we engaging teams of international researchers (one from each country) with experience carrying out survey and focus group research on related topics.

We will analyze the data we collect using advanced statistical techniques. First, we will perform tests to ascertain whether the each theoretically important component of housing status is exogenously distributed. Second, we will use structural equation modeling to develop precise measures of our theoretical constructs and distinguish direct from indirect effects of the different components of housing status. Third, to deal with potential endogeneity and identify causal effects, we will use techniques such as instrumental variable estimation, propensity score estimation with sensitivity analysis, and difference-in-differences estimates.

Both the qualitative and quantitative data collected during the project will be made publicly available, so other researchers will be able to conduct their own analyses of housing issues, political attitudes, and behaviors in the four countries covered by the study.

Sharable data resources to be generated:

- Transcripts from 32 focus groups about housing-related concerns, social and political grievances, civic norms, and political ideology
- Two waves of survey data from approximately 9600 respondents in four countries, including (from each country) nationally representative samples and specific oversamples.

Dynamic Network Models of Salafist-Motivated Terrorism in Southeast Asia

Luke Gerdes, Luke.Gerdes@usma.edu

Minerva Fellow, U.S. Military Academy at West Point (2012–)

Knowledge dissemination among extremists

As part of this effort, we built an original dataset that examines the extent/timing/nature of agent-level participation in kidnapping-teams by members of the Abu Sayyaf Group, which operates in-and-around the Southern Philippines. This data demonstrates that current data-collection methods, which focus their information-acquisition strategy at the organizational level rather than the individual level, produce questionable results that negatively bias the scholarly community's understanding of extremism. I also used this new dataset to measure the amount of specialized knowledge that senior members of ASG distribute to junior members of the organization, and then I built a simulation that allowed me to test whether or not this observed pattern was random or meaningful. Thus, in the most general terms, this analysis combined network analysis and simulation. At present, the paper that resulted from this project is under consideration by *Terrorism and Political Violence*, a peer-reviewed journal. If (and hopefully when) the paper is accepted, the data is also ready for public release.

Deciphering Civil Conflict in the Middle East

J. Craig Jenkins, Ohio State University, jenkins.12@osu.edu
<http://merp.osu.edu>

This research advances a new conceptual framework for understanding civil conflict and political instability in the Middle East region by focusing on transnational processes. In particular, it examines the development of the rentier economy, the growth of international migration, and the enlargement of international social networks which form the context for civil protest, terrorism and guerrilla warfare in the Middle East over the two decades since the 1990-91 Gulf War. Our key question is whether these transnational trends have contributed to or diminished political conflict and instability.

Specific questions team members are addressing include:

- How are new forms of rentier dependence based on international tourism, worker remittances, international aid and assistance and foreign direct investment related to the traditional oil/mineral rentierism? What are the effects of new and old rentierism on governance, civil conflict, and social development in the region? (Aly, Jenkins, Meyer, Costello, Price)
- What are the trends in international migration, both political and economic? How have these affected transnational social networks and civil conflict and political instability? How can we best map these migrations geographically and represent the uncertainty of our estimates? (Ahlqvist, Vanhorn, Stearmer, Fontanella, Rush)
- What influences the expansion and influence of networks of NGOs and local organizations which are active in both intra-state and international activism? (Meyer, Stearmer, Rizzo, Price)
- What role do social media outlets play in stimulating protest activity and other forms of social activism in the Middle East? Specifically, what possibilities does Twitter and other social media offer to understand the organization and mobilization of the recent “Arab spring” and other popular protests? (Ahlqvist, Jenkins, Stearmer, Costello, Rush)

Sharable data resources generated:

- Global rentier state data base
- Geocoded Kurdish nationalist events database
- Women’s networks in Egypt and Turkey

The Chinese Communist Party's Economic Transitions via Organizational Reform

Charlotte Lee, clee@hamilton.edu
Minerva Chair, US Air Force Academy (2012 —)
Home institution: Hamilton College

Research Question

How does a ruling party maintain the relevance of its political organizations in the midst of a transition to a global market economy? My project considers organizational changes taking place within contemporary China's ruling communist party to understand how the party has adapted to economic and social reforms while maintaining its hold on political authority. Specifically, this project seeks to account for the party's renewed emphasis on an understudied but core set of party organizations: a national network of party-managed training schools, also known as "party schools."

Sharable data resources to be generated:

- Chinese Communist Party party school training syllabi, 1983-2011
- Chinese Communist Party Central Party School alumni career histories, 2001 and 1995 classes

Methodology:

My case study of China's party school system draws on field visits that I conducted from the central to grassroots levels, in coastal and inland provinces, including over 200 interviews with party and government officials (from 2005 to 2011).

In addition to qualitative fieldwork, I draw on nationally representative survey data to determine patterns in the career paths of Chinese officials and test whether attending a training class at a party school constitutes a channel for selection to higher office. To control for selection bias, I employ a matching method on survey data to analyze a national sample of individuals on an administrative and/or political career track. I also present corroborating results drawn from a separate, original dataset of the career histories of Central Party School trainees.

To map changes in party school training content over time and across schools, I compiled an original dataset comprising over 100 syllabi from central and local party schools. Content analysis of these syllabi reveals a gradual de-emphasis on orthodox party theory and a heightened focus on modern management skills across training programs.

Terrorist Alliance Database

Philip Potter, University of Michigan, pbkp@umich.edu

Erica Chenoweth, University of Denver; **Michael Horowitz**, University of Pennsylvania
Government Program Officer: Ivy Estabrooke, Office of Naval Research

Research Problem:

Recent scholarship challenges the image of the individual terrorist as a “lone wolf,” suggesting few terrorists truly exist in isolation. The same is true of terrorist groups. Examples from around the world suggest that alliances between terrorist groups represent the rule much more than the exception. Such alliances can enhance the capabilities of the linked groups. When and how do terrorist groups ally with one another, states, and other non-state actors?

Unfortunately, answering that question is difficult because there is no comprehensive, time series data on terrorist alliances, and little systematic academic work addressing their causes and consequences. But understanding these alliances is vitally important for those interested in US security and counter-terrorism strategy. Intelligence organizations around the world already attempt, at the micro-level, to networks of terrorists within groups like Al Qaeda. We believe that a clearer understanding of the relationship between organizations will also yield significant benefits for those interested in reducing the capacity of these groups to inflict harm.

Methodology:

We began our dataset construction by generating a list of all terrorist groups known to exist from 1945-present. We are now in the process of identifying and coding the attributes of the relationships among these organizations including 1) the onset of collaboration; 2) the type of collaboration (material, training, ideological/inspirational, or intelligence); and 3) the termination of collaboration. We will then merge that into data on the activities of terrorist groups to understand the consequences of terrorist alliances for group behavior.

We have adopted a three-tiered data-collection strategy. First, we turn to content analysis of publically available media and scholarly sources to document the validity of these alliances described by prior research and identify alliances missed by prior data collection efforts. Relying primarily on encyclopedia, open source news reports, and declassified intelligence documents, we will also gather all available information on the genesis and decline of these relationships so that we can add the time series element to the data, which is entirely absent from existing studies but is crucial for any work that hopes to make causal inferences. Second, because linkages between many groups are difficult to identify and track over time, we will poll terrorism experts and generate a reliability score for each alliance relationship we identify. Third, we will conduct interviews with experts who have particular expertise in certain groups and regions.

In a parallel process, we are using use the same sources to develop brief case studies of each collaborative relationship. These case studies will both include what is known about the nature of the alliance and document the evidence that we have uncovered. The result will be a degree of transparency that is unusual in social science datasets. Qualitative analysis will further establish the motivations behind terrorist alliances, the processes that give rise to them, and the direction of the causal arrows in terms of the relationship between alliance and capability.

Anticipated Research Products:

1. A data set, which we will make publicly available.
2. An interactive website containing the dataset, animations of relationship formation over time, a resource bibliography, and profiles on each terrorist group alliance.
3. Additional refereed articles explaining the rise and decline of terrorist group alliances based on our analysis of the data and case studies. These articles will include:
 - A paper on the founding of terrorist alliances, based on our new dataset.
 - A methodological paper on the design of the study of terrorist alliances.
 - A paper on factors that influence the end of terrorist alliances. This paper should be of particular interest to the Department of Defense since it will explore strategies that states have used to disrupt relationships between groups and the success and failures of those various strategies
 - An additional paper on the consequences of terrorist alliances. This paper will build on existing work by the co-principle investigators and study how these alliances lead to the diffusion of terrorist attacks and influence the lethality of terrorist groups.
 - A book bringing together the papers described above and including in-depth case studies and network maps of the terrorist alliance universe.

Assembled Datasets for MENA Food and Energy Global Value Chains

Lincoln Pratson, Duke University, lincoln.pratson@duke.edu
and **Gary Gereffi**, Duke University
Government Program Officer: Micheline Strand, Army Research Office
<http://sites.duke.edu/minerva>

Phase I of the project “A Global Value Chain Analysis of Food Security and Food Staples for Major Energy-Exporting Nations in the Middle East and North Africa” (pg. 65) included database building, analysis, and mapping in order to examine the MENA food and energy GVCs in detail and develop a food security ranking scheme. This encompassed compiling data on socioeconomic factors, demographics, agriculture, ports, trading, and more for each MENA country. Additionally, import and export commodity flows were analyzed as food and energy were traded between MENA and the rest of the world. All data was then dynamically linked to GIS to allow for mapping and visualization, which aided in further food security analysis and evaluation of various ranking schemes. Details of the data compilation and map creation are below.

Methodology:

Our goal is to identify the energy-exporting countries in the Middle East and North Africa (MENA) whose grain imports are at most risk to insecurity. These grains form a major source of the caloric needs for the peoples in this region and include rice, wheat and corn. We are identifying and quantifying the supply chains for these staples to determine their structure, size and scope, the players involved in them, and the drivers governing their operation, including market forces, environmental change, internal politics, and external geopolitics with other nations. The analysis includes the development of a database that is integrated with GIS so that spatial information on the supply chains can be mapped and analyzed geographically. The data and supply chain models will be used in scenario analyses to identify specific risks to the supply chains and suggest prioritized defensive and/or proactive strategies to deal with problems arising from food shortages in MENA. If successful, our approach should provide a framework for conducting similar security analyses involving trade in commodities elsewhere in the world.

Initial Results:

- Assembled an extensive, multiyear database of attributes for each MENA country pertinent to the region’s food and energy security (see Tables 1-5 in attachment).
- Database has been integrated into ArcGIS and a number of maps of the MENA regions have been generated, including country specific maps for Syria, Egypt, Saudi Arabia, Iran, United Arab Emirates (UAE) and Qatar (Tables 4 & 5 in attachment).
- The maps are viewable in an interactive web application, which along with the database and other project information is available to MINERVA Researchers via secure login to the Project URL, sites.duke.edu/minerva.

Data can be downloaded by MINERVA members via the Data Download page (<http://sites.duke.edu/minerva/data-download/>). A password is required and is available by contacting the webmaster (dmh22@duke.edu).

Table 1. Staple Grain Data in Duke MINERVA Database, Years Available, and Sources

Data Type	Years*	Source(s)
Grains (all) Imports & Exports (tons)	1980-2012	FAO STAT (http://faostat.fao.org/)
Corn Imports & Exports (tons)	1980-2012	FAO STAT
Rice Imports & Exports (tons)	1980-2012	FAO STAT
Wheat Imports & Exports (tons)	1980-2012	FAO STAT
Grains (all) - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE (http://comtrade.un.org/db/)
Corn - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Rice - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Wheat - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Corn Stocks	1980-2012	USDA (http://www.fas.usda.gov/psdonline/psdQuery.aspx)
Rice Stocks	1980-2012	USDA
Wheat Stocks	1980-2012	USDA
Food affordability index	1980-2012	EIU (http://foodsecurityindex.eiu.com/index)
Food availability index	1980-2012	EIU
Corn producer price	1980-2012	FAO/USDA
Rice producer price	1980-2012	FAO/USDA
Wheat producer price	1980-2012	FAO/USDA
Corn - consumer price	1980-2012	USDA
Rice - consumer price	1980-2012	USDA
Wheat - consumer price	1980-2012	USDA

Table 2. Energy Data in Duke MINERVA Database, Years Available, and Sources

Data Type	Years*	Source(s)
Crude Imports & Exports (tons)	1980-2012	EIA (http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=3&pid=3&aid=1)
Petroleum Product Imports & Exports (tons)	1980-2012	EIA
Natural Gas Imports & Exports (tons)	1980-2012	EIA
Crude - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Petroleum Products - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Natural Gas - Country to Country Quantity and Value of Imports, Exports, Re-Imports, & Re-Exports (tons/\$)	1980-2012	UN COMTRADE
Crude Production & Consumption	1980-2012	EIA
Petroleum Products Production & Consumption	1980-2012	EIA
Natural Gas Production & Consumption	1980-2012	EIA
Crude Reserves	1980-2012	EIA
Petroleum Products Reserves	1980-2012	EIA
Natural Gas Reserves	1980-2012	EIA
Crude - average consumer price	1980-2012	EIA
Petroleum Products - average consumer price	1980-2012	EIA
Natural Gas - average consumer price	1980-2012	EIA

Table 3. Demographic & Socioeconomic Data in Duke MINERVA Database, Years Available, and Sources

Data Type	Years*	Source(s)
GDP	1980-2012	World Bank (http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators)
Population	1980-2012	World Bank
Literacy rate as a percentage of population by age class	1980-2012	World Bank
Unemployment as a percentage of population by age class	1980-2012	World Bank
External debt (\$)	1980-2012	World Bank
Access to electricity as a percentage of population	1980-2012	World Bank
Urban population as a percentage of total population	1980-2012	World Bank
Rural population as a percentage of total population	1980-2012	World Bank
Total miles of roads	1980-2012	World Bank
Total miles of paved roads	1980-2012	World Bank
Total miles or railroad	1980-2012	World Bank
Quality of port infrastructure (index)	1980-2012	World Bank
Malnutrition as percentage of population by age class	1980-2012	World Bank
Amount of external aid received	1980-2012	World Bank
Percentage of population below the poverty line	1980-2012	World Bank
Port location and size	1980-2012	World Port Source (http://www.worldportsource.com/)
Percentage of population under age 25	1980-2012	CIA World Factbook https://www.cia.gov/library/publications/the-world-factbook/)
Median age	1980-2012	CIA World Factbook
Population growth rate	1980-2012	CIA World Factbook
School life expectancy (years)	1980-2012	CIA World Factbook
Installed electric capacity (MW)	1980-2012	CIA World Factbook
Percent of electricity from fossil fuels	1980-2012	CIA World Factbook
Cell phone users	1980-2012	CIA World Factbook
Population with internet access	1980-2012	CIA World Factbook
Airports with paved runways	1980-2012	CIA World Factbook
Miles of crude, petroleum products, natural gas, condensate, water, & combination pipelines	1980-2012	CIA World Factbook
Geopolitical and socioeconomic information	1980-2012	CIA World Factbook

Table 4. GIS Shapefiles Available for All MENA Countries

File Name	Source(s)
Cities (with populations)	CIA World Factbook
Ports (with sizes)	World Port Source
Railroads	DIVA-GIS (http://www.diva-gis.org/gdata)
Roads	DIVA-GIS
Bodies of water	DIVA-GIS
Utility lines	GEOCOMM (http://data.geocomm.com/)
Power Plants	CARMA/IEA (http://carma.org/plant)
Land use-land cover	DIVA-GIS
Elevation	DIVA-GIS
Population Density	DIVA-GIS
Airports	GEOCOMM
World Shipping Networks	Oak Ridge National Lab (http://cta.ornl.gov/cta/)

Table 5. Additional GIS Shapefiles Available for Syria, Egypt, Saudi Arabia, Iran, UAE and Qatar

File Name	Source(s)
Conflict areas	Relief Web (via UN) (http://reliefweb.int/maps)
Refugee movements (by country and number displaced)	Relief Web (via UN) (http://reliefweb.int/maps)
Agricultural and Crop Production Regions	Nation Master (http://www.nationmaster.com/countries)
Land Utilization	Nation Master
Oil & Gas Fields	EIA (http://www.eia.gov/countries/)
Energy Reserves	EIA
Major Border Crossings	ESRI, Geoportal SDI-T Data Center

Maritime Piracy Event and Location Datasets

Brandon C. Prins, University of Tennessee, bprins@utk.edu
and **Ursula Daxecker**, University of Amsterdam

Government Program Officer: Harold Hawkins, Office of Naval Research
<http://brandonprins.weebly.com/maritime-piracy.html>

While several international organizations (such as the IMB) collect information on piracy incidents, no unified data source exists to date. In addition, data on incidents collected by these organizations provide almost no information on the pirates and their organizational structure.

To systematically test hypotheses for the study “Political Reach, State Fragility, and the Incidence of Maritime Piracy: Explaining Piracy and Pirate Organizations, 1993-2015” (pg. 103), the authors propose the creation of a comprehensive database on piracy incidents that combines information from all four organizations currently engaged in data collection. Existing data sources suffer from diverging or incompatible formats, partly overlapping data, or a lack of public access. We also intend to use geo-spatial and causal modeling methods to forecast piracy events into the future, which we believe will benefit policymakers interested in identifying at-risk states and other maritime areas.

Collection methodology:

We intend to collect data on piracy incidents based on reporting by the four major organizations involved in collecting piracy data. The data will be uploaded into an online database with mapping capabilities and will be available in incident, time, and country-level formats. To improve existing knowledge of pirate organizations, expert surveys on pirate groups in four countries identified as particularly piracy prone regions by the IMB will be conducted. Surveys include questions on pirate group location, size, ports used by the organizations, among others. The resulting data will be uploaded into a database that will be publicly accessible. Using these data, the authors will empirically evaluate our argument on the relationship between state strength, economic opportunities, and reach for both the global sample of piracy and the subset of piracy prone regions.

Sharable data resources to be generated:

- Global Piracy Incidents Database (GPI) – Events data on piracy events recorded by event, by time, and by country.
- Mapping Pirate Organizations Database (MPO) – Survey data on pirate organizations in four or five piracy-prone countries. At the subnational level, the MPO database will allow PIs and other researchers to analyze the micro-level determinants and evolution of piracy.
- Maritime Piracy Event and Location Dataset (MPELD) – Geo-spatial coding of piracy incidents and important correlates of piracy.

Empirical Studies of Conflict Database Set

Jacob Shapiro, Princeton University, jns@princeton.edu

Eli Berman, University of California at San Diego

Joseph Felter, David Laitin, and Jeremy Weinstein, Stanford University

Jason Lyall, Yale University

Project Manager: Kristen Seith, kseith@princeton.edu

Government Program Manager: Benjamin Knott, Air Force Office of Scientific Research
<http://esoc.princeton.edu>

The Minerva TGD Team’s goal is to enhance the understanding of how to implement governance and development policies to more efficiently (re)build social and economic order in conflict and post-conflict areas. (See “Terrorism, Governance, and Development” on page 70.) We use new data from a range of locations to extend and test current theories and provide empirically-based findings to inform policy decisions about terrorism, governance, and development.

Sharable data resources to be generated:

- Research-ready, fine-grained geospatial data on aid, economic development and political violence will be available via the Empirical Studies of Conflict project’s website.
- Data and metadata from the following countries will ultimately be posted on the ESOC website: AFG (2001-present), COL (1999-2011), EGY (2010-11), KEN (2007-08), IRQ (2003-present), PAK (1988-present), the PHL (1975-present), and VNM (1965-73).

Other generated data (GIS and tabular format), publications, and working papers have been made available at the Empirical Studies of Conflict project’s (ESOC) website: <http://esoc.princeton.edu>.

Geocoded Database of Natural Resources

James Igoe Walsh, University of North Carolina at Charlotte, jwalsh@uncc.edu
Government Program Manager: Micheline Strand, Army Research Office

How do natural resources, such as oil reserves, mineral deposits, and alluvial gemstones, influence the likelihood, type, and duration of armed conflict in the developing world? Large literatures in political science, economics, and geography address this group of questions but have not reached much of a consensus on the answers. In “Natural Resources and Armed Conflict” (pg. 106), we argue that one reason for this lack of progress is that most existing work has not investigated how variation in the degree and type of control that rebel groups exercise over resources influences their strategies of violence.

Sharable data resources to be generated:

Our project will develop a comprehensive, global, geocoded dataset of natural resource locations. We will also develop an online “dashboard” that identifies natural resource locations and their key geographic and political characteristics. Defense planners and others will be able to access this open-source resource to prepare for potential conflicts that might involve the interests of the United States.

LookingGlass: A Visual Intelligence Platform for Tracking Online Social Movements

Mark Woodward, Arizona State University, mark.woodward@asu.edu
Point of Contact: **Hasan Davulcu**, Arizona State University, hdavulcu@asu.edu
Project Manager: Maureen Olmsted, maureen.olmsted@asu.edu

This project – in support of work described in “Finding Allies for the War of Words: Mapping the Diffusion and Influence of Counter-Radical Muslim Discourse” on page 83 – redresses deficiencies in our understanding of moderate Islam by tracking and analyzing publicly observable formal networks and others operating under the radar screen. Our purpose is to enhance understanding the structure of counter-radical networks, the ideas on which they are based, social locations of their leaders and followers, and the ways in which radical and counter-radical discourse intersect. We explore the social, religious, and political characteristics of these networks. Specific issues addressed include: the social location and political environments of discourse producers and consumers; institutions and affiliations (local to transnational) that disseminate counter-radical messages; media used; the roles of local and global conflicts in their formulation; and Islamic sources on which counter-radical discourse is based.

Web mining has revealed a substantial Salafi and Wahhabi presence in on-line discourse. This could be taken as an indication that efforts by Saudi Arabia based or financed organizations such as the Muslim World League have had a major impact on Muslim societies in other regions. A substantial body of academic literature and journalistic accounts echo this perspective. Our ethnographic and survey research, however, does not confirm this hypothesis.

Anticipated Outcomes of Research:

The project will lead to substantially enhanced theoretical understanding of relationships between religious doctrine and violence, and especially factors contributing to the emergence of movements opposing the use of religion for political purposes. The development of multi-scale based modeling techniques facilitates the formulation and evaluation of theories in ways not attempted previously. We are refining web mining technologies and developing a visual intelligence platform to track the online presence of radical, extremist and counter-radical movements. These technologies examine large numbers of texts to discern contested topics. We have also applied these methods in the analysis of Twitter streams, utilizing a discriminating perspectives approach to map Tweeters to social movements based on perspectives expressed in their weekly tweets. A visual intelligence platform (LookingGlass) tracks the geographic locations, shifting positions, and diffusion of topics and perspectives discussed by people employing this mode of online communication.

LookingGlass has multilingual capabilities and enables rapid recognition of contested topics, and networks in which they are located.

Latent Dimensions of Authoritarianism

Joseph Wright, Pennsylvania State University, jgw12@psu.edu

James Honaker, Harvard University

<http://dictators.la.psu.edu/>

The research at “Autocratic Stability During Regime Crises” on page 85 helps policy makers understand the influence of different foreign policy tools on the behavior of military and security organizations in dictatorships during periods of domestic unrest. It contributes to our knowledge of how foreign policy tools and domestic factors such as regime type and leadership-security ties interact to influence government repression and democratic regime change.

Methodology:

This research will answer two questions: Does foreign engagement of authoritarian governments decrease governments’ willingness to use force against their citizens during times of crisis? And if so, which foreign policy tools are most effective in accomplishing this end? The proposed project will gather global data on all authoritarian regimes from 1990-2012 to examine how foreign policy influences two outcomes in the context of domestic protest in dictatorships: state-led violence and regime instability. The project will examine how numerous tools of foreign policy – such as economic aid, military assistance, bilateral military ties, and diplomatic exchange – influence the behavior of autocratic governments during periods of crisis. It will account for two intervening factors, autocratic regime type and leadership security ties that influence these relationships.

This project develops a better understanding of the relationship between foreign engagement of dictatorships, state-led violence in these countries, and the potential for democratic and non-violent regime change. The databases constructed for this research will have a broad impact for research on international conflict in non-democracies; foreign relations with autocratic countries; the integration of government and rebel fighters when civil wars end; the behavior of foreign militaries after regime change; and counter-terrorism effort in autocratic countries.

Sharable data resources in progress:

- **Latent Dimensions of Authoritarianism.** Using recently coded, time-varying data on autocratic regime characteristics for all dictatorships since 1946, we model the underlying structure of authoritarianism for use in applied research.
- **Leadership Security Ties.** A global database (1990-2012) that uses information on the leaders of military and security organizations in each dictatorship to measure the extent to which these organizations are connected to the regime leader through familial or ethnic ties.