

2012 MINERVA RESEARCH SUMMARIES



2012 Minerva Research Summaries

(last updated September 12, 2012)

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Energy and Environmental Security

Chad Briggs and Tracy Walstrom Briggs

Minerva Chairs, Air University

chad@globalint.org

<http://afri.au.af.mil/minerva/>

Research Problem:

Energy and environmental security issues have always been crucial to the operation of militaries and effective strategic planning, but rapid changes in these areas have been recognized as posing potentially unique risks to USAF and DOD missions, risks that will increase significantly in coming years. Fossil fuel supplies will become increasingly critical, but will also intersect with critical shortages in environmental resources such as water. As changes to environmental conditions accelerate, critical vulnerabilities to systems will be exposed, resulting in lack of capacity, or systemic instability as areas are unable to cope.

Without effective planning, USAF/DOD infrastructure such as bases may be left without adequate sources of water or electricity, critical energy supplies may shift, and complex emergencies may require intervention from US troops or heavy airlift capabilities. The pace of scientific data on such changes has far exceeded the ability of policymakers to adapt or plan effectively. Military capabilities in risk foresight planning under conditions of high uncertainty can help lead to development of effective planning, providing both tools for foresight and translation of scientific data into meaningful security risks.

Methodology:

The integration of climate science and public health (epidemiology) with security assessments requires methods for assessing complex risks and impacts associated with sudden environmental changes on global and regional scales. As these are high-impact, unknown probability events, new tools need to be developed to understand the associated energy and environmental security implications. This necessitates research into the nature of cascading failures within and across complex systems. Thus, the inclusion of regional assessments of vulnerability to assess known, presumed and as yet unknown risks. Recent work indicates that past approaches to environmental security were insufficient to capture the complexity of such interrelated systems, and largely tended to be both narrowly focused and reactive. Approaches must also be willing to increase, rather than decrease, proximate uncertainty.

Energy and environmental security assessments must be designed to use the latest scientific data and regional expertise, determining not only what is collectively known, but where critical uncertainties exist through our research and monitoring. The process is also designed to be 'scalable,' taking global changes and translating them down to regional levels for better resolution of potential risks. Energy and environmental risks of high uncertainty can be translated into a risk framework employing scenario methodologies. These scenarios are constructed using a distributed network of subject-area and field studies experts, collectively identifying areas of most interest and key changes that may occur within a given planning time frame. These changes must then be mapped (this can be done visually or mathematically) onto a multidimensional grid indicating cascading effects of second and third-order impacts. This process, including related boundary mapping of critical uncertainties and Rapid Impact Assessments, serves to identify key vulnerabilities and risks in a complex system. Such vulnerabilities can be crucial to prioritizing responses in both pre-conflict (Phase 0) and post-conflict environments,

where key intelligence is often lacking. A version of this scenario-risk assessment process can also be readily adapted for instructional purposes, and data can also be ported into wargames.

Scenarios are applied both to regional focused-issues (workshops have been conducted focusing on the Arctic, South Pacific and NATO-related regions), while comprehensive assessments can be conducted on long-term energy and environmental security risks. In 2012 AU Minerva, in cooperation with the Air Force Research Institute (AFRI), integrated energy and environmental risks into long-range strategic planning for the Asia-Pacific region, helping to identify how emerging risks affect partnerships, infrastructure and force structure requirements.

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

In FY2012 the AU Minerva project moved from refinement of methodologies to comprehensive regional assessments of energy and environmental security. In cooperation with the Air Force Research Institute (AFRI) 2030 strategy assessment, the Minerva team has produced a strategic outlook on energy and environmental security factors for USAF in the Asia-Pacific region. Focusing on the essential links between energy and water, the assessment begins with the Japanese experience following the 2011 tsunami, cascading impacts from the Fukushima Daiichi disaster, and the role of US forces in Operation Tomodachi. Drawing on lessons of vulnerabilities and critical nodes in the Japanese case, we then analyze future hazards, risks and responses to conditions in China and India. Scarcity of water in the north of China, combined with rising energy demands and infrastructure expansion, create a series of responses that impact larger Asian security environments in the next twenty years.

Parallel projects for energy-environment scenario development have been pursued for regions of the Arctic (e.g. with the International Polar Year), the South Pacific, and regions of the Middle East, Central Asia and North Africa in cooperation with NATO. These projects collectively identify emerging risks from energy security and environmental changes, including best practices to preplan for disaster response and capacity building under conditions of high uncertainty..

Publications through FY2012 Minerva research

- Chad Briggs and Tracy Walstrom Briggs. *Energy and Environmental Security Futures for the Asia-Pacific Region*, expected public release December 2012.
- S. O’Lear, C. Briggs and M. Denning. ‘Water security and the military: next steps’, *Military Review*, in progress.
- Chad Briggs. ‘Climate security, risk assessment, and military security planning’, *International Affairs* Vol 88 No 5, 2012.
- Chad Briggs. ‘Developing strategic & operational environmental intelligence capabilities’, *Intelligence and National Security* Vol 27 No 5, 2012, pp. 652-667.
- Miriam Matejova and Chad Briggs. ‘Like oil and water: European disaster response and energy security in the Arctic,’ in *Perspectives on Energy Security for Eastern Europe*, Malyarenko ed. (London: Routledge, 2012 forthcoming).
- Tracy Walstrom Briggs and Chad Briggs. Air University Minerva Initiative 2010-2011: Energy and Environmental Security (Maxwell AFB: Air University Press, 2011).

Impact of social and cultural changes in the Muslim world

Jocelyne Cesari, Minerva Chair, National War College, 2011-2012

Visiting Professor, School of Advanced International Studies (SAIS) Johns Hopkins University

Director, Islam in the West Program, Harvard University

jcesari@fas.harvard.edu

<http://islamopediaonline.org>

2011-2012 Minerva research conducted by Jocelyne Cesari at the National War College examined the role of the state in the politicization of Islam. By analyzing the central role of state-Islam relations in the modernization process of Tunisia, Egypt, Iraq and Pakistan her Minerva research demonstrated that political Islam is an unexpected offshoot of institutional and policy changes at the state level in Muslim-majority countries. These findings shed new light on the role of Islam in democratization process and the plausibility of regimes with both a democratic and Islamic character.

Research Problem:

In light of the 2011 Arab revolutions, Jocelyne Cesari's Minerva research addressed an unexamined dimension in the politicization of Islam – that is, state actions and policies vis-à-vis religion in general and Islam in particular. Politicization in this context is broader than Islamism and encompasses: nationalization of Islamic institutions and personnel; usage of Islamic references in political competition by state actors and opponents (Islamism); religiously-motivated social unrest or violence; and the internationalization of Islam-orientated political movements or conflicts.

The research adopted an institutional approach to Islam in order to introduce state actions and policies into the analysis of political influence of cultural and religious changes at both the domestic *and* international levels. Institutionalization refers to the way new socio-political situations are translated into the creation or adaptation of formal institutions like constitutions, laws, and administrative bodies and agencies. The adoption of the nation-State model by Muslim-majority countries after the collapse of the Ottoman Empire has served as the decisive historical backdrop for the subsequent national reshaping of values and institutions. These changes are salient over two matters: hegemonic status granted to one religion and state's regulations of religions.

Hegemonic status refers to legal and political privileges provided to one religion over the others, usually the dominant religion (but not automatically as attested by the case of Sunni in Iraq under Saddam or Sunni in Barhein).

Her research showed that legal privileges characterize the majority of Muslim countries, where legal and political rights have generally been granted to the dominant orientation of Islam and highlights the correlation between institutionalization of Islam and politicization of religion. Some of the data are accessible as country profiles on Islam and governance for Iraq and Egypt on <http://islamopediaonline.org> (Pakistan and Tunisia will be uploaded in November 2012.)

Key Findings:

- Religious norms have been the substratum of social norms and political cultures in most of Muslim majority countries
- These religious norms have been deeply redefined and transformed by State Actions toward Islamic education, Islamic institutions and Islamic legislation.

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

By offering a more pragmatic approach to State policies and interactions with different social groups, this research serves in different briefings and trainings by providing a methodology of acting on the ground and paying attention to some social and cultural processes often discarded because not —political|| or not —Islamic|| such as education policies, legal or penal changes, while they are key elements to understand the relationship of power between different religious and cultural groups. Being aware of the different protagonists and their interactions with the State will allow the determination of different scenarios of crisis or exit of crisis.

A conference on the results of this research was held at the National Defense University, June 20-21 2012 (*Islam and Democratization: Lessons Learned from the Arab Spring*) that highlighted the relevance of this angle of investigation for civil and military governmental agencies. Proceedings will be published in the coming months.

Publications through Minerva research

- Academic Article The impact of this research on understanding current political transitions happening in Libya, Tunisia ,Egypt.(under review)
- Book Manuscript on Islam and World Politics (currently under review)
- Country profiles report on <http://islamopediaonline.org>.

Sharable data resources to be generated:

Data generated on Libya and Syria will be shared on <http://islamopediaonline.org> by the end of 2012.

Al-Qaida and the Arab Spring: Reacting to Surprise and Adapting to Change

Norman Cigar

Minerva Chair, Marine Corps University
cigarnl@usmc.grc.edu

Research Problem:

Understanding how Al-Qaida has engaged the phenomenon of the Arab Spring in terms of analyzing, forecasting, and seeking to shape it is necessary both in order to gain additional insights into how Al-Qaida thinks and operates as an institution, especially in a crisis situation. In many ways, the challenge which Al-Qaida has confronted has mirrored that faced by the United States in dealing with an unexpected and unpredictable series of events as part of a longer-term process, a challenge which has required Al-Qaida to craft new and evolving strategies in order to perform damage-control to its legitimacy and relevance and to continue the global war it has been waging.

Methodology:

The focus of this study was on the analytical framework within which Al-Qaida has reassessed and formulated policy in conceptual terms, as well as its translation of assessments into concrete plans and guidance in individual national situations – or theaters or fronts as Al-Qaida often refers to them— where ideology confronts reality in order to appreciate the specificity and diversity of the challenge Al-Qaida has faced and of the differentiated pragmatic strategies it has had to craft in response. The research relied heavily on the internal thinking within Al-Qaida, as embodied in policy writings and analytical assessments by the organization’s decisionmakers and analysts, both at the center and in the regional branch organizations.

Outcomes of Research:

Al-Qaida has shown itself to be an adaptive organization with a fundamental analytical reassessment and policy review, combining enduring ideological objectives and pragmatic strategic thinking. Al-Qaida’s enduring long-term objectives are likely to endure, although the strategies intended to achieve such goals are malleable and sensitive to Realpolitik. The Arab Spring has allowed Al-Qaida to become a player in the political system, even if outside the formal institutional channels, for the first time in countries such as Tunisia, Egypt, Libya, and Syria using a flexible combination of non-violent and violent means, and seeks to position itself for what it recognizes as a long-term process, rather than a single event.

Al-Qaida views secular democracy as a challenge in the post-Arab Spring environment, but assumes continuing political and economic instability in the post-Arab Spring countries and that the democracy will not be able to meet the people’s material and political expectations and will therefore fail. Al-Qaida sees more moderate Islamist forces -- such as Al-Nahda in Tunisia and the Muslim Brotherhood in Egypt-- as its most effective competitors in the post-Arab Spring environment, and the international community may have to accept what may at times be an uncomfortable relationship with such Islamist organizations which have or are likely to come to power in the wake of the various revolutions as the most realistic alternative to greater Al-Qaida

While Al-Qaida has limited assets to affect events in a decisive way, it cannot be dismissed as a player that can undercut stability and security, and especially so in the often confused situation and the

fragility of the successor political system resulting from the Arab Spring. In practical terms, Al-Qaida can influence the situation by serving as a radicalizing influence to other political players anxious to retain their legitimacy, which may translate into reduced U.S. military access, a potential deterioration in regional relations with Israel, and the enactment radical social and economic policies, as well as greater opportunities for Al-Qaida to achieve increased operational space for recruitment, training, financing, and outreach.

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

Understanding Al-Qaida's assumptions, perspective, and future projections in relation to the phenomenon of the Arab Spring can contribute to more nuanced U.S. assessments and can contribute to the the crafting of more effective operational and information plans and strategies

Publication through Minerva research:

This 120-page study will be published by the Marine Corps University Press.

**Deterrence, Paradigms, and Operational Culture in a WMD Environment:
Did Iraq Expect a Nuclear Desert Storm?**

Norman Cigar

Research Problem:

Despite the increasing research being done to gain a better understanding of Iraqi thinking during the Saddam Husayn era, many questions still remain to be addressed. The intent of the study was to study the role and impact of paradigms on decision-making, planning, and –given the issue of nuclear weapons involved— on deterrence. Decision-makers, of necessity, formulate paradigms or models, whether consciously or unconsciously, in order to make sense of problems and to organize and interpret relevant information to enable them to make decisions. Once adopted, such paradigms are likely to have a significant impact on policy and are hard to dislodge even in the face of contradictory evidence, something termed "premature cognitive closure." If they are based on questionable assumptions or misperceptions using faulty or incomplete information, such paradigms can result in flawed policies that will fail to achieve desired objectives. In a similar way, military operational culture, often enshrined in official doctrine, can also help shape paradigms within the military and, through advice provided to the civilian leadership, may also help shape the latter's outlook.

Methodology:

The focus of this study was on applying the Iraqis' own analytical framework and understanding of nuclear strategy and of U.S. security thinking in relation to Iraqi decision-making during the 1990-91 confrontation with the United States and on the impact of the leadership's paradigms on Iraqi planning. The research for the study relied heavily on captured Iraqi documents to study thinking within the political and military leadership, including, records of discussions, doctrinal manuals, intelligence assessments, and plans. Troves of documents were seized in 1991 from the Iraqi Army in the field, which were housed originally at the Defense Intelligence Agency (DIA) and were subsequently declassified and digitized, and include intelligence assessments, plans, doctrinal manuals, and operational orders.

Additional documents and recordings originating from high-level Iraqi government sources became available in 2003 and are now housed in the Conflict Record Research Center.

Outcomes of Research:

This study shows that Iraqi political and military leaders, relying on established paradigms and military doctrine, believed that there was strong possibility that the United States could well use nuclear weapons and that, as a result, this enduring assumption, however unfounded, had an impact on Iraq's planning and conduct of the war, and may have served as self-deterrence, shaping and limiting Iraqi decision-making in a number of areas.

One can draw several conclusions from this case study that are applicable not only to Iraq's own circumstances but also more widely. First, Iraq's experience reinforces the commonsense requirement that intelligence assessments and planning considerations must be free from faulty assumptions. Second, mirror-imaging, whether by one's own side or by an adversary, can distort assessments and planning, with potentially devastating results. In this case, Iraq's civilian and military leadership misread U.S. intentions by projecting their own doctrine and assumptions on the adversary, and failed to understand the enemy.

Third, and more basically, this case highlights that discarding a paradigm is never easy, since this process entails both heightened internal uncertainty and having to admit that one was wrong. In the Iraqi case, it would have been difficult to change basic assumptions even in the face of contradictory evidence once those assumptions about nuclear weapons and about U.S. policy had been adopted by the country's leadership. Such rigidity of thought can also afflict military planners and commanders, as well as civilian decision-makers. Moreover, change is especially difficult during a crisis or war, when major adjustments might be equated to weakness and indecision, as well as to acknowledging error. At such times, in fact, the temptation is to the contrary, that is to fall back on familiar, accepted, military doctrine.

Fourth, there is a delicate balance between highlighting a threat and need for force protection and not undermining morale and mission requirements, especially so if the capabilities needed to deal effectively with the threat are clearly not available. Ultimately, the lack of a mature understanding of the real impact and limitations of nuclear weapons is not restricted to Iraq during the Saddam era, but may be relatively widespread among emerging and aspiring nuclear powers who lack real-world experience developed through years of exercises and debate in relation to nuclear weapons. Such deficiencies in understanding can contribute to instability and miscalculations and represent an additional element of uncertainty for all players in a crisis or a war.

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

Understanding the strategic culture --including decision-making and doctrinal paradigms-- of other countries, particularly of authoritarian ones, can help U.S. decision-makers and planners formulate more accurate and effective assessments and plans. Such considerations may especially significant when dealing with actual or potential nuclear powers in order to avoid mirror imaging and maximizing opportunities while avoiding pitfalls.

Publication through Minerva research:

Dr. Cigar organized a panel on the history of weapons of mass destruction in the Middle East for the Society of Military History annual conference in May 2012, at which he presented his research on Iraq. Proceedings will be published by the Marine Corps University Press.

Examining the Diffusion of Tacit Knowledge Among Kidnappers in the Abu Sayyaf Group

Luke M. Gerdes

Minerva Chair, U.S. Military Academy

http://www.westpoint.edu/minerva/SitePages/Asian_Islam.aspx

Luke.Gerdes@usma.edu

Research Problem:

Although the online availability of terror training resources remains a legitimate concern, scholars increasingly recognize that the dissemination of knowledge within violent non-state groups requires hands-on, first-person interactions. Indeed, a number of analyses have used case-study approaches to demonstrate that the successful conduct of terrorism typically requires substantial tacit knowledge—knowledge that can only be learned by doing. Our research tests the fidelity of this pattern among the Abu Sayyaf Group’s kidnapping gangs and assesses the factors that shape the dissemination of knowledge among ASG’s members.

Methodology:

We began by constructing an original dataset derived from open-source information. The process involved three stages. In the first, we reconciled four existing terror databases’ conflicting accounts of ASG’s involvement in abductions. Owing to these databases’ different periods of coverage, different objectives, and different collection methodologies, they paint distinct, though overlapping, pictures of ASG’s role in kidnappings. With this reconciliation complete, the second stage of the data-building process consisted of drilling-down in order to obtain information on individual ASG members’ involvement in events. We accomplished this task by using the date, location, and other details of each kidnapping as search terms in Academic Lexis-Nexis. These searches returned a reasonably complete sample of the journalistic information available on each attack, though it is worth noting that the level of detail available on attacks differed. We then hand-coded individual attackers’ involvement in each event in each of the three following longitudinal matrixes: (1) an agent x event matrix containing a multi-relational ontology that captures the differing nature of individuals’ involvement in various attacks, (2) an agent x organization matrix, and (3) an agent x location matrix. Finally, the third stage of data collection involved assembling attribute data on the agents, events, and locations we found during the earlier collection stages. These attributes enable all nodes in the network to be sorted by several user-determined criteria, and as the location attributes include latitude and longitude coordinates, the attributes also allow the data to be viewed in geo-space. The end result is a longitudinal, multi-modal network that covers the period between 1991 and 2011 and shows: the individuals who participated in each ASG abduction; the nature of each individuals’ role in the attack; the organizational membership each individual held at the time of the attack; the GPS-tagged location where each individuals’ involvement in the attack took place; and formally cited qualitative information supporting each of these determinations.

From this data, we constructed the variable “mentorship gap,” which provides a proxy measurement of the dissemination of tacit knowledge among the perpetrators of each attack. We conducted a pair-wise comparison of the duration of each participating individual’s experience in ASG kidnapping events. Put simply, our variable measures the extent to which individuals possessing tacit knowledge gained via experience partnered with novices in need of instruction.

In order to determine whether or not the pattern of mentorship gaps was random, we compared the observed data against simulated data. Specifically, we re-wired the agent x event data, by holding constant the number of individuals who participated in each event, but assigning agents randomly to events that transpired during the agents' known period of involvement in ASG. We then repeated the simulation through several iterations, and formally tested the results against the observed data using ANOVA.

Initial Results:

Although our research is still in its early stages, the results suggest that ASG conducts little in the way of long-term strategic thinking regarding how to grow the skills necessary for future organizational success. The mentorship gaps observed in the data are similar to the pattern we would expect to see if kidnapping teams were selected at random from the pool of available ASG members. The dissemination of the tacit knowledge necessary to conduct successful kidnappings does not appear to follow any meaningful pattern. More broadly, the apparent absence of formal patterns of knowledge dissemination may provide evidence supporting the view that ASG more closely resembles a loose collection of bandits than a structured terrorist organization.

Anticipated Outcomes of Research:

Our research aims to inform policy makers regarding the dissemination of knowledge among radical groups, in the hopes that a clearer understanding of how radicals learn will facilitate the creation of better strategies to mitigate violence.

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

Counterterrorism strategy has long emphasized the importance of controlling physical space to eliminate safe havens and training camps. More recently, counterterrorism strategy has also emphasized the importance of mitigating extremists' use of the Internet to preclude self-training. However, these strategies have inherent limitations; examples drawn from the history of the American militia movement demonstrate that controlling physical does not entirely preclude terror training, because instruction can take place on small patches of privately-owned land, even in developed countries. Moreover, the breadth of the Internet makes it exceptionally challenging to limit extremists' online presence. Therefore, identifying and understanding the human component of knowledge dissemination can augment counterterrorism policy by highlighting where, when, and how to limit extremists' access to the expertise necessary to succeed in the conduct of violence against American interests.

Publications through this Minerva research:

Our research effort began in March. We anticipate the research will be ready for consideration by peer-reviewed journals by the end of the calendar year.

Sharable data resources to be generated:

Our dataset on ASG members' involvement in kidnapping can be made available on request.

Indonesian *Jihadist* Networks: Assessing the Extent of Overlap among Operational and Affinity Ties

Luke M. Gerdes

Research Problem:

Violent non-state actors often take tremendous pains to conceal their operational networks. Even when we know the identities of some of an organization's members, the internal dynamics and the boundaries of the group typically remain unknown. Case studies have demonstrated that these opaque operational networks often overlap with other more visible networks, such as those containing family ties and relationships formed during co-attendance of the same educational institutions, but formal estimations of the extent of this pattern remain elusive. Our research hopes to provide empirical measurements of the scale and location of these overlaps, in order to better understand the role that affinity bonds play in generating operational networks.

Methodology:

This research will involve the construction of an original, multi-relational dataset characterizing the nature, extent, and frequency of operational and affinity bonds among a sample of approximately 200 Indonesian *jihadists*. This dataset will draw on proprietary information collected and maintained by our collaborators at the International Centre for Political Violence and Terrorism Research at Nanyang Technological University in Singapore. The end result of the coding process will be a longitudinal agent x agent model of the multi-faceted relationships shared among radicals operating in-and-around Indonesia. Once the dataset is complete, we plan to use formal methods of network comparison, such as QAP and ERGM, in order to assess the extent of correlation between operational and affinity networks.

Initial Results:

Our research is currently in the early stages of the data-building process; consequently, there are no results to report at this time.

Anticipated Outcomes of Research:

Understanding the interplay between affinity networks and operational networks may serve to highlight the mechanisms through which radical groups recruit new members. We hope to explore the conditions under which existing personal relationships morph into operational ties.

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

Although it is difficult to gauge the policy implications of research that is in its earliest stage, we hope to inform counterterrorism policy at the strategic level by highlighting effective means to mitigate recruitment into radicalism. At present, much of the research on the underlying causes of extremism focuses on understanding the impact of broad, societal-level variables, such as economic development and access to education. We hope to compliment this effort with an individual-level perspective that examines the role interpersonal bonds play in the recruitment process, in an effort to highlight how micro-level policy initiatives, which target small constituencies rather than entire nation states, can help to mitigate the broader threat posed by violent extremism.

Political resilience of the Chinese Communist Party amidst economic liberalization and global integration

Charlotte Lee

Minerva Chair, U.S. Air Force Academy

clee@hamilton.edu

Research summary:

This project unpacks organizational changes taking place within the ruling Chinese Communist Party to understand the political resilience of the CCP in the midst of China's recent economic liberalization and global integration. It makes two contributions to existing understandings of politics in contemporary China. First, it investigates political reforms taking place within key bureaucracies of the CCP-led party-state. This diverges from scholarly focus on elections, letters and complaints, and other political reforms of recent decades. Second, this research seeks to unravel the organizational logic underpinning the authoritarian resilience of the CCP, in particular how a combination of market and political incentives have induced organizational change.

Book Summary:

Since the onset of post-Mao reforms, party authorities have emphasized economic transformation and political stability. This political conservatism is evident in continuity in the party's core Leninist organizations. In contemporary China, organizations of elite training (party schools) have been tapped by central party leaders to transform party and government leaders into managers of a rising global power.

Through investigating changes within the party school system, this paper argues that a dual-track system, combining plan and market, now shapes the behavior of political bureaucracies. The "inner party marketization" that has resulted from this dual track reflects a bid on the part of the party to incentivize adaptive organizational change. CCP leaders have exposed the schools to market forces in order to give them an incentive to produce new training content and self-generate revenues. Since the onset of liberalizing reforms in the 1980s, party schools across China have been encouraged to engage in market activity to boost revenues, for example by creating new degree programs and partnering with universities within China and around the globe. More recently, the CCP leadership has also created a market for cadre training contracts. This marketplace has the potential to discipline party schools and induce schools to adjust their training content to convey more updated, relevant knowledge. Certain features of the organization of the party school system, e.g., the decentralization of funding and semi-autonomy over curriculum matters, produce the conditions for entrepreneurial activity and competition. However, these changes are also problematic due to mission ambiguity and the potential for some loss of party control over political outputs.

The implications of these findings for Sino-US relations are several. The opening of party schools to global exchanges and influences implies the building of a more cosmopolitan political elite within China. US institutions have entered partnerships with Chinese party schools and may continue to deepen these ties. Second, party school reforms have created opportunities for the building of international relationships between China's leaders (future and current) and counterparts in the United States. These deepening international ties, however, must be understood in the domestic context of party school reforms, which are at heart an effort to professionalize China's political managers and bolster human capital within the CCP. The objective is continued party survival, which is now bolstered by adaptive political organizations.

Conventional Arms Control and 21st Century Deterrence

Jeffrey D. McCausland

Minerva Chair, Strategic Studies Institute, US Army War College

mccauslj@comcast.net

Overview of FY2012 Efforts:

Tactical Nuclear Weapons and NATO

In October 2011, I organized and conducted a workshop on this issue involving experts from the United Kingdom, France, Italy, Germany, Russia, as well as the United States. It focused on the deterrent role provided by these weapons as well as the NATO's Summit in May 2012.

The resulting book *Tactical Nuclear Weapons and NATO* was completed in April 2012 and had a direct impact on the *Defense and Deterrence Policy Review* completed by the NATO Alliance. The book has now become a reference item for policymakers focused on this ongoing debate in the Alliance as well as between NATO and the Russian Federation. I have delivered a number of presentations on the book and this topic in the last several months at leading think tanks and academic centers in the United States and Europe.

I have delivered summaries and conducted discussions with members of the National Security Council Staff, Office of the Undersecretary of State for Arms Control, and for the Office of the Deputy Assistant Secretary of Defense for Russia, Ukraine, and Eurasia on this topic and expect to be asked to provide additional input as the issue continues to develop.

Our book on tactical nuclear weapons and NATO which assesses the implication of the Defense and Deterrence Posture Review is now available on line at:

<http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=1103>

Regional stability and crisis escalation dynamics

Dr. Jeff McCausland is assessing the impact and consequences of introduction of new classes of weapon systems on regional stability/instability and crisis escalation dynamics. His report will draw from historical experience of NATO and the Soviet Union that were equipped with similar classes of weapon systems during the Cold War. Work ahead will assess "lessons" from arms control in Europe that could be applied in the South Asia context to enhance crisis management.

Additional efforts:

- Completing a book on arms control, its impact on extended deterrence in Europe, and how this may affect our ability to conduct meaningful negotiations with the Russian tactical nuclear weapons (a US goal).
- Completed a chapter on **conventional arms control and its impact on extended deterrence** for a forthcoming book on strategic stability to be jointly published by the Strategic Studies Institute and the Center for Naval Analysis.
- Delivered a paper in November 2011 on **arms control and deterrence** for a conference organized by the Center for Naval Analysis, Washington, to appear in an upcoming book *Strategic Stability and U.S. Force Structure and Posture* published later this year.
- Spoke on a February 2012 panel on **conflict management in the 21st Century** at a conference hosted by Kennesaw University in Atlanta, Georgia.

- Chaired a panel on the **threats posed by cyberwarfare** at the annual McCain Conference hosted by the United States Naval Academy. I also participated in a panel on **evolving security issues in Southeast Asia** at the International Studies Association annual conference in San Diego.
- Briefed the **lessons of arms control** and the role of this policy tool in the 21st century at an inter-agency workshop organized by the Office of the Undersecretary of State for Arms Control.
- Provided advice and assistance to the Director, South Asia Project, OSD-ATL and the office of the Deputy Assistant Secretary of Defense for Russia, Ukraine, and Eurasian Policy.

Focus for the Year Ahead:

In 2012-2013 I will continue looking at issues of deterrence and in some cases its relationship to arms control. More specifically, I intend to focus on deterrence and escalation dominance in South Asia (an effort in support of the OSD Strategic Multilayer Assessment program) as well as how deterrence thinking is evolving, particularly in the Asian context and our efforts to combat terrorism. I have been asked to work with a group at the Australian National University and Defense College on joint US-Australian efforts. Obviously, this is a fascinating aspect due to the US efforts to refocus our security policy to place greater emphasis on Asia. I have also been asked by General John Allen to visit ISAF in Afghanistan to discuss how evolving thinking on deterrence may be appropriate for counter-terrorism and counter-insurgency.

Cultural Knowledge and National Security

Montgomery McFate

Minerva Chair, Naval War College

montgomery.mcfate@usnwc.edu

This book, in progress, explores how socio-cultural knowledge has been used in the execution of foreign policy primarily at the strategic and operational level, and some of the structural, cognitive and bureaucratic barriers commonly encountered by military forces in employing such knowledge.

Chapter 1 introduces some of the main themes of the book, particularly how and why cultural knowledge matters for the effective implementation of foreign policy. The military imperative to understand adversaries, allies, and civilian populations has a history dating back to the 5th century BC when Herodotus wrote about the habits and beliefs of the Persians. More recently, socio-cultural knowledge emerged as a requirement once major combat operations ended in Iraq, and the US military made various adaptations (programmatic, doctrinal, and training) to the emergent requirements of counterinsurgency and stability operations. This ‘cultural turn’ within the defense community was not without detractors. Some observers argued that cultural knowledge is less important than firepower; that the use of cultural knowledge was unethical; and/or that military modes of understanding were completely flawed.

Chapter 2 examines how culture influences warmaking and warfighting, exploring the concepts of strategic culture (and its alternatives) within international relations theory, ‘military culture’ as a professional ethos, organizational culture of the services, and ‘sub-tribes’ within the services. This chapter introduces the processes of ‘framing’, ‘sensemaking’ and ‘worldmaking’, through which individuals organize their experiences of ‘the Other’ and themselves. **Chapter 3** explores the flipside of the proposition that culture influences warmaking and warfighting: that the implementation of foreign policy using military force profoundly influences local societies, including first, second, and third order effects. While terrain may not change radically as a result of military presence, local societies constantly adapt and react to the presence of the military. This social process requires that the military, in turn, adapt its operations to changes in the operational environment.

Chapter 4 explores knowledge imperatives and knowledge systems. If we accept the idea that culture matters in some way for military strategy and operations, then we would next inquire what kind of socio-cultural knowledge facilitates what kind of operations? Different types of military operations create implicit or explicit cultural knowledge and skill (cultural competency) imperatives and these imperatives in turn create the need for knowledge systems to produce, manage and distribute that knowledge.

The **remaining chapters** of the book provide a series of case studies on how socio-cultural knowledge has been employed in a variety of military operations, including British indirect rule in Africa, the US military government in Japan, US counterinsurgency in Vietnam, etc. Following an introductory discussion of relevant doctrine, concepts and historical context, each of these evaluates the knowledge imperatives, knowledge gaps, and knowledge systems as they existed at the time. Each chapter discusses the intersections and disjunctions that resulted from the application of cultural knowledge (drawing on the earlier discussion of framing’, ‘sensemaking’ and ‘worldmaking’), including selective perception; underestimation of social complexity; structural incompatibility; the fallacy of non-interference; unintended consequences of social engineering; etc. The book concludes with a discussion of policy recommendations for improving implementation of socio-cultural knowledge in military operations.

Nationalization in Practice: Comparative Research in Ethnicity, Religion, and Society in Post-colonial Tanzania

Makame Muhajir

Minerva Chair, U.S. Military Academy

Makame.Muhajir@usma.edu

<http://www.usma.edu/minerva/SitePages/Africa.aspx>

This research is reviewing how contested issues about ethnicity, religious differences, and nationality of culture are being contemplated in Tanzania's news coverage and population politics.

Research Problem:

One of the most successful political achievements of Tanzania's post-colonial administration has been the idea of political stability. The idea of stability rests on the unity and ethno-cultural harmony modeled on a socialist and revolutionary-nationalist political and religious environment, which occurred in most of the period since independence in the 1960s. However, since the early 1990s, the newly-instituted multi-party democratic model has experienced some unintended and under-examined consequences in the nationalization process of the Swahili culture - solidifying the government's desire for, and intensifying pressures against, ethno-cultural harmony in the country. Some unusual patterns of popular resistance involving deadly civil service strikes in the mainland Tanzania, succeeded by religious demonstrations and Zanzibari riots against the union between the mainland and Zanzibar islands have been generating political and security concerns in 2012. Coincidentally, these waves of public reactions and political incidents, including the revision of the Zanzibari constitution to satisfy the islanders' desire for redefinition of the union, ahead of the on-going union constitutional review debate, alongside the unexpected resistance by some Muslims to participate in the on-going Tanzanian census, are now demography-related incidents that require in-depth social science analysis.

Through the analysis of spatial and population characteristics of two Tanzanian case studies - Zanzibar and mainland Tanzania - this research aims to identify to what extent ethno-cultural harmony has been solidified in the country. In order to do so, there is a need to understand the background behind this cultural nationalization project and what it entails - politically, religiously, and ethno-culturally. More importantly, why has the Tanzanian society been suddenly showing some elements of public defiance towards the peaceful, harmonious environment the country has been enjoying since Tanganyikan independence (1961) and the subsequent Zanzibar revolution and union with Tanganyika in 1964? What has been the role of the state in guiding this nationalized culture? And, to what extent is the new democratic system in contradiction to the country's controlled political traditions? It is here argued that the increased public strikes and riots are civil rights maturity indicators which pose some security challenges to the national political landscape of the country's socialist norms alongside the on-going national democratic dialogue.

Methodology:

This research proposal is currently in the data collection phase which began in July 2012. Facilitated with the involvement of the Minerva research associate and project intern, population projections for Tanzania and Zanzibar have been conducted using statistical analysis. Academic LexisNexis, along with monitoring specific local newspapers were accessed and then captured on a daily basis with the subject, dates, and locations of the authored articles included. Once this data collection is complete, it will be analyzed using ORA, a Network Analysis tool. Network visualization and analysis

products will be completed from this dataset. For example, thematic maps will be generated to illustrate networks from the article's location, location by location, events by location, organizations involved in the census and people's involvement. The study is based on Thompson (2011), Kessler (2006), and Myers, Klak, and Koehl (1996), and analysis of the 2002 Tanzanian population census. Further analysis will be completed using survey data from an open, independent, and nonpartisan source, Afro-barometer. The measurements examined include social, political, and economic data. More specifically, identity trends will be explored with regard to national, religious and tribal affiliations - to include languages used in Tanzania.

Initial Results:

Media articles on the ongoing Tanzania 2012 census have been gathered from local, regional, national and international news sources, specifically from the date range of 1 June to 27 August, 2012. Population data was also collected from the 2002 Census Report compiled by the Tanzania National Bureau of Statistics. This data will be employed in ArcGIS v.10 in order to create the following map products: Total Population of Tanzania by Region (2002), Total Population Comparison - Zanzibar & mainland Tanzania (2002), Population Density (2002), and Population Growth Rate of Tanzania by Region (1988-2002).

Anticipated Outcomes of Research:

Data collection process is in the final stages and once population projections are made and the inscribed contents and context of the news coverage are fully completed, a descriptive peer-reviewed paper will be completed for journal publication supported by the following graphs: Projected Population to 2212 for each- United Republic of Tanzania, mainland Tanzania, and Zanzibar (High/Median/Low Figures), Comparison of Median Projected Population in the United Republic of Tanzania, mainland Tanzania, and Zanzibar, Projected Population Growth Rates (High/Median/Low) for each region to 2212, Comparison of Projected Median Population Growth Rates, Projected Population Density (High/Median/Low) to 2212 for each region, and Comparison of Median Population Density to 2212. The following maps will be produced from this data: Projected Median Population of Tanzania and Zanzibar Comparison (2012-2212), and Projected Median Population Density of Tanzania and Zanzibar Comparison (2012-2212).

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

This research contributes a greater understanding of ethno-cultural topologies within a country of importance such as Tanzania to both the DoD and AFRICOM, and the methodology used in this research can be replicated with other countries. The knowledge gained on those topologies will allow for a better understanding of the human terrain at the national and sub-national levels, and would be beneficial towards any command's understanding of the their assigned area of operations.

Sharable data resources to be generated:

1. Data from the Tanzania Population and Housing Census 2002 and population density;
2. Maps, utilizing Arc-GIS); and 3) Population projections for Tanzania and Zanzibar.

Security Implications of Global Energy Ambitions

Denise Natali

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

denise.natali@ndu.edu

The purpose of this research project is to examine energy sector development in Iraq, the East Mediterranean Basin, the Gulf States and Russia and the implications on governance, intra-regional relations, and energy security. The presence of significant hydrocarbons reserves in each of these regions has created opportunities to develop domestic economies, stabilize societies, diversify export markets, and strengthen regional relations. Still, despite these opportunities, energy sector development has often impeded political opening and regime transformation while exacerbating tensions within and between states, particularly where boundaries of water and land are disputed, where state authority is contested, and where “energy newcomers” challenge (or are perceived to challenge) the balance of power. This research project will examine these issues in greater detail and determine the conditions in which hydrocarbons potential can impede or encourage regime reform and the circumstances under which it can become a source of cooperation or conflict among regional states.

Research Problem:

Studies have cited different variants of the “resource curse” to support or dispute the claim that hydrocarbons have deleterious effects on political systems; however, the link between the presence of energy resources and regime type remains unclear. Additionally, insufficient focus has been given to the impact of regime type on energy sector development. Former authoritarian regimes or newly federalizing states rich in hydrocarbons resources have been no less able to effectively manage or develop their energy sectors than have centralized states. In fact, 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 have emerged at the domestic and regional levels, impeding energy sector potential. What are the sources of these new, energy-based conflicts? To what extent can the dual trends – calls for political opening and institutional structures and political behavior that favor centralized control of the energy sector – be reconciled to encourage cooperation and maximize energy security?

Methodology:

This project will examine these issues and tensions through comparative case study analysis. Each detailed case will assess the nature of the energy sector and its timing of development, the evolution of regime type before and after the discovery of hydrocarbons, and the implications of government energy policies on state-society and regional relations. Attention will be given to key junctures in the nature of the state or regime type and their impact (or lack thereof) on hydrocarbons policies, as well as shifts in global energy markets and regional geopolitical trends. In addition to my own research in developing the case studies and fine-tuning the methodology, I will sponsor a series of regional energy conferences at the National Defense University that will provide the venue in which energy sector experts, U.S. government policy makers, regional scholars can examine and discuss these critical issues so that comparisons can be made and potential solutions identified.

Initial Results:

Two case studies (Iraq-East Mediterranean Basin) have thus far been examined in part. Initial findings indicate that 1) federalization or decentralization in former authoritarian states does not necessarily lead to greater energy sector efficiency or enhanced development of hydrocarbons resources. Where institutional capacities are weak and power distribution is contested, federal systems can create new contestations over resources and revenues between state and society, and across borders; 2) in states where boundaries are disputed (land and water) and energy potential has become salient, new sources of instability and conflict are likely to arise or become exacerbated if one actor exploits energy in disputed territories, and 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.

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.

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

This analysis has implications for U.S. energy security and 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:

- “The Politics of Kurdish Crude”, *Middle East Policy*, Vol. XIX, No. 1, Spring 2012; 110-118.
- Articles in *al-Monitor* on energy sector conflict in Iraq and the impact on regional relations.
- Internal INSS Event Reports disseminated to USG to include: “The East Mediterranean Basin: A Third Energy Corridor”, “Iraq’s Energy Ambitions and Regional Relations”, and “Turkey as a Regional Energy Hub: Opportunities and Challenges Ahead” (forthcoming).
- (In process) “Energy and Strategic Decision-Making: The Case of Iraq”
- (In process) “Pipeline Politics in Iraq”, *Gas and Pipeline Journal*.

Irregular Conflict and the Humanitarian Imperative

Sarah Sewall

Minerva Chair Professor, Naval War College

sarah.sewall@usnwc.edu

Research Problem:

What uses of military power can most effectively protect civilians in the 21st Century?

Methodology:

Examination of current operating environment, doctrine, and capabilities; study of past cases and problems regarding the realization of civilian protection in its multiple dimensions

Initial Results:

Operation Odyssey Dawn in Libya (later continued as Operation Unified Protector under NATO command) exemplifies how current US/coalition operations are caught between extant paradigms for responding to mass atrocities and heightened expectations that civilian protection entails a different mode of military activity.

Anticipated Outcomes of Research:

Improve understanding of external expectations of civilian protection, genres of civilian protection, and means of operationalizing civilian protection.

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

Refining doctrine, tailoring training, new demand and use for persistent ISR and other non-lethal tools, new partnership training and planning opportunities.

Publications through this Minerva research: (forthcoming)

- Civilian Protection Chapter in the Handbook of Global Security Policy, Wiley-Blackwell
- Contribution to “The Prevention of Mass Atrocity Crimes”, Jennifer Welsh ed.

China in Africa: Opportunistic Acts or Strategic Moves?

Phil Fei-Ling Wang

Minerva Chair, U.S. Air Force Academy

fw@gatech.edu , philip.wang@usafa.edu

Research Problem:

As part of an inquiry into the strategic implications of the rise of China, this research investigates China's current activities in Africa and the Indian Ocean. It seeks to answer the following questions: Is China's going to Africa a part of a grand strategic ambition and aspiration for worldwide competition of power and global dominance? Namely, is it a politically and strategically driven effort? Or is it primarily a pragmatic instinct, by default, for more access to raw materials and energy as well as for profits? I.e., is it an opportunistic move driven mostly by the economics?

In either case, how will the growing Chinese stakes in Africa affect Chinese military doctrine especially its force development? Will China's rapidly growing interests in Africa and the related needs for sea lanes in the Indian Ocean become assets or liabilities to China and especially to the Chinese military, the PLA (People's Liberation Army)?

Methodology:

The research will first seek to ascertain China's strategic consideration and especially Beijing's policy towards the United States and the current world order it leads. Then the researcher and his collaborators will make site visits to Chinese ventures in Africa, and interview the managers and workers of the Chinese operations in Africa and in China. We will also conduct field research to observe and study the interactions between the Chinese and their local hosts.

We will do quantitative and qualitative studies of the collected data, mostly in the Chinese language, to describe and examine China's activities in Africa. We will also select a few cases, such as the massive Chinese mining ventures and China's heavy investment in creating "Hope" schools in Africa, to do in-depth studies to capture and report the nuanced and illuminating details.

Initial Results:

The PRC (People's Republic of China) is not new in Africa. For its ambitious agenda of promoting world revolution and its pragmatic and often desperate needs of international recognition and regime survival, Beijing went to Africa during the Mao Era (1949-76) with massive sums of foreign aid and investment. The Chinese efforts yielded considerable political payoff for the ruling Chinese Communist Party (CCP) as the PRC made advances in securing international recognition, culminating in its return to the United Nations in 1972.

However, the early round of China's going to Africa was financially unrewarding and costly. The expedient nature of it also made it unsustainable. When Beijing started to trade-away its world-revolution goals for economic ties with the West, Chinese activities in Africa were scaled back and even gutted and abandoned.

Only by the late 1990s, China's own capitalistic economic reform at home led to the rising needs for new market for its exports, especially when its trade relationship with its main market, the United States, remained unstable. China "went back" to Africa as a trader this time.

In the past decade especially since the mid-2000s, China has sped up its activities in Africa as a rapidly growing trader and investor (mainly in energy, mining, and infrastructure construction). The

bilateral trade volume has grown at a double-digit rate every year and has now already exceeded \$100 billion. China also became a major provider of aid (mostly in the areas of education, medicine, and civic projects like building sports stadiums) to Africa in the 2010s. One latest example is that China plans to build 1,000 schools in Africa, with nearly 100 already funded.

Consequently, Chinese cultural influence is also expanding in Africa. Large number of Chinese merchants, investors, and workers now live in Africa; large number of African students now attend Chinese funded schools and the growing number of Confucius institutes, and go to study in China. Beijing's nearly total disregard of local human rights and other political considerations has enabled it to grow its interests and stakes very quickly in Africa.

Anticipated Outcomes of Research:

- Workshops – the first one to be held on the campus of Harvard University in October, 2012.
- Articles, reports, and/or parts of book manuscript to be published.

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

China's purpose and acts in Africa, unlike its much-watched activities in the Asia-Pacific region, poise to reveal more the long-term policy objectives and strategic visions of the rising Chinese power. The findings of this research will substantiate my assessment of the nature and the prospects of the rising Chinese power and the evolving Chinese foreign policy and military doctrine, so to help the United States to respond to the Chinese empowerment properly.

Responding to the Call: the Religious War Against al-Qaida

Nahed Zehr

Professor of Islam and Religious Studies at Western Kentucky University

Former Minerva Research Professor, Naval War College

nartoul@gmail.com

Dr. Zehr's book *Responding to the Call* is an investigation of the War against al-Qaida¹ from the field of religious studies, and more specifically the sub-field of religious ethics. Its overall aims are twofold.

First, it re-conceptualizes al-Qaida through a serious investigation of its theological underpinnings. While in response to September 11th, a range of material on al-Qaida and the War on Terror have been produced, I argue that the majority of available research does not take sufficient account of the theological foundations that serve to give al-Qaida meaning, legitimacy, and *direction* in its "War against the West." Such inquiries carry particular relevance in the War against al-Qaida, as it stands by way of observation that al-Qaida is a *religious*, and hence, *theologically* driven organization. In order to perceive the full spectrum of its "grand strategy," as well as the manner in which it has served to structure its organization and tactics, it is necessary to examine the religious narratives and symbols that lend them both meaning and consequence. Through this approach, *Responding to the Call* argues that al-Qaida has intentionally put forward a new model of jihad. And, that furthermore, this model is both rooted in, and departs significantly from, the historical tradition of Muslim thinking on warfare. Grounding themselves in a novel application of individual legitimate authority to undertake the use of force, al-Qaida's major ideologues have constructed a model of war that is diffuse in geographical reach, decentralized in authority, and virtually indiscriminate in its use of force.

Second, this project argues that understanding al-Qaida's model of jihad carries important implications for an American military response. Very quickly in both the Iraq and Afghanistan campaigns, the relevant decision makers put forward two models for the application of force: "counterinsurgency" and "counterterrorism." However, I argue that once al-Qaida's diffuse and decentralized model is illustrated, a reevaluation of both models is in order. Through the application of the historic moral and ethical guidelines of the just war tradition, I argue that neither framework is able to provide an application of military force that is effectual and proportionate – in other words, that is *just*.

In light of this, the project concludes that any effort to "disrupt, dismantle, and defeat" the new al-Qaida must involve serious efforts to counter the legitimization narratives that its ideologues use for the use of force without distinction. *Responding to the Call*, then, investigates, assesses, and constructively critiques current efforts at "counter-narratives" by both American military and foreign policy decision makers, as well as the attempts at alternative theological narratives put forward by the Muslim community in the United States, Europe, and the Muslim world.

¹¹ Since its inception, the "War on Terror" has been understood and carried out more specifically as a "War against al-Qaida." Therefore, this project uses them interchangeably.

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

Principal Investigator: Cynthia Buckley, Social Science Research Council & UT Austin

Beth Mitchneck, University of Arizona

Blair Ruble, Woodrow Wilson Center

Contact: buckley@ssrc.org

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 (Tajikistan) to support viewing 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:

Early access to the project data bases is available upon request from the PI. Public access anticipated in May of 2012.

- 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.

The Study of Innovation and Technology in China

Principal Investigator: Tai Ming Cheung, UC San Diego

Susan Shirk, UCSD; Barry Naughton, UCSD

Peter Cowhey, UCSD; Dieter Ernst, East-West Center

Bates Gill, Stockholm International Peace Research Institute; David Meyer, UCSD;

Alice Miller, Stanford and Hoover Institute;

Project Manager: Heidi Serochi, hserochi@ucsd.edu

Program Manager: Elisa Bienenstock, Army Research Office

<http://igcc.ucsd.edu/SITC>

Research Problem:

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. One of the central research problems is to identify, understand, and measure what are the key sources of innovation, broadly defined, and barriers that will shape China's technological development trajectory. To be able to answer this overarching question, the project looks in detail at a diverse number of important 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 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 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. A relational database project will support quantitative and network analysis of data from these projects.

The emphasis is on inter-disciplinary research, which means a diverse set of methodological approaches is being utilized from political economy, business and management studies, security studies, political science, economics, mathematics, history, and sociology. There is extensive employment of qualitative case studies and use of quantitative analysis.

Much of the research is conducted using Chinese-language sources, with extensive use of databases such as Wanfang and CNKI. Field research has been conducted in China, East and Southeast Asia, and Europe. This research primarily consists of interviews with officials, scientists, researchers, business executives, and others knowledgeable on Chinese S&T and related issues. In addition, survey work has been conducted in China.

Initial Results:

In the first three years of the project, an extensive number of conferences, workshops and training sessions have been conducted that have generated and disseminated new research in this field while cultivating a new generation of scholars and policy analysts adept with expertise on these issues. Our events have included:

- Summer Training Workshops on the *Relationship between National Security and Technology in China*, which train PhD students, junior faculty, practitioners, and policy analysts.

Summer Training Workshop Participants (2010–2012)

Ph.D. Students	20
Junior Faculty	4
U.S. Government	46
Industry	5
TOTAL	75

- Training workshops in Washington, D.C., at U.S. Pacific Command, and Lawrence Livermore National Laboratory. Briefings were held for the commanders of Pacific Command and the Pacific Surface Fleet Headquarters, senior leadership at DOD, DARPA, Northrop Grumman, and the national security community. These briefings are intended to provide DOD decision-makers access to the latest academic research on key developments and trends in the Chinese national and defense science, technology and innovation systems and how these trends might affect the United States.

Presentations Delivered (2010–2012)

Summer Training Workshops	63
Other Presentations	219
TOTAL	282

- Academic conferences on topics including the Structure, Process, and Leadership of the Chinese Science and Technology System, Chinese Defense Industry, Chinese Approaches to National Innovation, China and Cybersecurity, and Chinese High Technology Trade and Investment were held that brought together leading experts from around the world to produce collaborative papers and policy briefs on these topics. A particularly noteworthy feature of these conferences is the extensive presence of participants from China with scholars and policy analysts from the Chinese Academy of Sciences, Chinese Academy of Science and Technology for Development, Tsinghua University, and the National Defense University for Technology:

Academic Conferences (2010–2012)

Academic Papers	87
Policy Briefs	41
Speakers and Invited Guests	214

In addition to these training sessions, briefings, and conferences, we are producing and publishing timely research papers and policy briefs (some are listed below). Our team collects data with a wide array of Chinese language databases with access to tens of thousands of publications to populate our relational database. We have also sponsored a conference in Washington D.C. to showcase the research of younger generation policy analysts and students to the policy community and encourage these researchers to collaborate with more senior scholars to produce original research. Highlights of this research include the

development of more sophisticated approaches to analyzing innovation and a detailed mapping of the state of the Chinese defense and dual-use system.

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 Minerva research:

- Cheung, Tai Ming, ed., *China's Emergence as a Defense Technology Power*. (London: Routledge, forthcoming, 2012).
- Cheung, Tai Ming, ed., *Forging China's Military Might: A New Framework for Assessing Science, Technology, and the Role of Innovation*. (Baltimore: Johns Hopkins University Press, forthcoming, 2013).
- Lindsay, Jon R, ed., "China and Cybersecurity: Political, Economic, and Strategic Dimensions," Report from Cyber workshops held at the University of California, San Diego, April 2012.
- *Policy Briefs: Changing Military Dynamics in East Asia: Grand Strategic and Technological Drivers and the Implications for U.S. and Regional Security* (IGCC, Jan. 2012).
- *Policy Briefs: New Perspectives on Assessing the Chinese Defense Economy: 2011 Industry Overview and Policy Briefs* (IGCC, Oct. 2011).
- *China's Emergence as a Defense Technological Power*, ed. Tai Ming Cheung. Special issue of the *Journal of Strategic Studies*, June 2011.
- *The Rise of the Chinese Defense Economy: Innovation Potential, Industrial Performance, and Regional Comparisons* (IGCC, Sept. 2010).

For a current list of publications and to access our policy briefs, please visit www.igcc.ucsd.edu/SITC.

Sharable data resources to be generated:

A relational database is being designed and populated to analyze networks and linkages between Chinese corporations, state bodies, investment sources, and technologies. This database will be made available for academic use in 2013.

Explorations in Cyber International Relations

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

Co-PI: **Venky Narayanamurti**, Harvard University Kennedy School

Program Manager: Erin Fitzgerald, Office of the Secretary of Defense, Research & Engineering

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

<http://ecir.mit.edu/>

Research Problem:

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. 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:

By necessity, 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, we must cast a wide multi-disciplinary net to capture the critical building blocks of theory. In so doing, we anchored our research design in “3-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.

We have extended some existing methodologies and developed a set of new ones. ECIR methods include: (1) the *alignment strategy* based on rules for integrating cyberspace and international relations; (2) the development of a method we call “*control point analysis*” to identify actors, actions, and outcomes at critical influence points; (3) extensions of *resilient mechanism design* (i.e., reverse game theory) to

create new theories and approaches to cooperative international cyber-related agreements; (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 *cyberlaw*, from taxonomies to automated learning principles; and (7) field work on *private authority* in cyber management and governance.

Initial Results:

Initial results include: (a) Constructed empirically based *alignment mechanism* 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) Enabled the *power of partnerships* for reducing vulnerabilities to interruptions in essential physical infrastructures for cyberspace; and (e) Generated empirical evidence about the salience of *private authority* in management of cyberspace.

Anticipated Outcomes of Research:

Our goal is to frame an integrated field of “real” and cyber international relations that include research. 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.

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

The project seeks to provide specific methods for (a) anticipating, tracking, and clarifying threats and opportunities in cyberspace for national security, welfare, and influence; (b) providing analytical tools for understanding and managing worldwide cyber transformation and change; (c) constructing methods with ready “hands on” use; and (d) attracting and educating a new generation of researchers, scholars, and analysts.

Select publications through Minerva research, 2012:

A complete list of publications and reports can be found at <http://ecir.mit.edu/>.

1. Choucri, Nazli. *CyberPolitics in International Relations*, MIT Press, (2012, in press).
2. Andreas Henschel, Erik Casagrande, Wei Lee Woon, Isam Janajreh, and Stuart Madnick. “A Unified Approach for Taxonomy-Based Technology Forecasting.” Chapter in *Business Intelligence Applications and the Web: Models, Systems and Technologies*. Editors: Marta E. Zorrilla, Jose-Norberto Mazón, Óscar Ferrández, Irene Garrigós, Florian Daniel and Juan Trujilloto Business Science Reference (an imprint of IGI Global), dated 2012, pp. 178-197.
3. Choucri, Nazli and Daniel Goldsmith. “Lost in cyberspace: Harnessing the Internet, international relations, and global security.” *Bulletin of the Atomic Scientists*, 68(2) 70–77. 2012.

4. Winston, Patrick. "The Right Way." *Advances in Cognitive Systems* 1 (2012) 23–36 Submitted 1/2012; published 7/2012.
5. Winston, Patrick. "The Next 50 Years: A Personal View." Preprint submitted to *Elsevier* August 6, 2012.
6. Vaishnav, Chintan, Nazli Choucri and David Clark. "Cyber International Relations as an Integrated System." Initially prepared for the Third International Engineering Symposium. CESUN 2012, Delft University of Technology, 18-20 June 2012.
7. Choucri, Nazli. "The Convergence of Cyberspace and Sustainability." *e-International Relations*. April 20, 2012.
8. Goldsmith, Jack – "Harvard Launches New Cybersecurity Wiki." Announcement, Science, Technology, and Public Policy Program, Belfer Center for Science and International Affairs, Harvard Kennedy School, August 17, 2012.
9. Kello, Lucas. "Cyber Disorders: Rivalry and Conflict in a Global Information Age." Presentation, International Security Program Seminar Series, Cambridge, Mass. International Security Program, Belfer Center for Science and International Affairs, Harvard Kennedy School, May 3, 2012.
10. Sechrist, Michael. "New Threats, Old Technology: Vulnerabilities in Undersea Communication Cable Network Management Systems." Discussion Paper 2012-03, Science, Technology, and Public Policy Program, Belfer Center for Science and International Affairs, Harvard Kennedy School, February 2012.
11. Goldsmith, Daniel and Michael Siegel. "Cyber Politics: Understanding the use of Social Media for Dissident Movements in an Integrated State Stability Framework." IEEE Proceedings of the 2012 International Conference on Advances in Social Network Analysis and Mining. August 2012
12. Finlayson, Mark (ed). The Third Workshop on Computational Models of Narrative. (CMN'12) 26-27 May 2012.

Sharable data resources to be generated:

- Data Dashboard on Cyberspace (for trends and multivariate correlations cyber security issues)
- Cybersecurity Wiki (resources on diverse features of cybersecurity)
- Automated Taxonomy Generation System (computational tool)
- Knowledge System for Cyberspace and International Relations (cureated system)
- Comparative Tables of National Cyber Security Initiatives (compilation)
- System Dynamics Model for Reducing Vulnerability of Undersea Cables (for policy and contingency analysis)
- Results of ECIR Workshops on Cyber International Relations

Climate Change and African Political Stability

Principal Investigator: **Francis J. Gavin**, University of Texas at Austin

Climate vulnerability research:

Joshua Busby, University of Texas at Austin; **Clionadh Raleigh**, Trinity College Dublin

Climate-conflict research:

Cullen Hendrix, College of William and Mary; **Idean Salehyan**, University of North Texas

Constitutional design and conflict management research:

Alan Kuperman, University of Texas at Austin

Governance research: **Ashley Moran**, University of Texas at Austin

Emergency response research: **Jennifer Bussell** and **Robert Wilson**, University of Texas at Austin

International aid research: **Catherine Weaver** and **Michael Findley**, University of Texas at Austin;

Michael Tierney, College of William and Mary; **J. Timmons Roberts**, Brown University

Project Manager: Ashley Moran, amoran@Austin.utexas.edu

Program Manager: Elisa Bienenstock, Army Research Office

<http://ccaps.strausscenter.org>

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. Program research explores the drivers of climate insecurity, links between climate change and conflict, national responses to shocks and conflict, and the impact of international aid responses. 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, and starting near real-time conflict tracking in Africa. Program case studies are conducting new comparative research on the impact of constitutional design, democracy assistance, and disaster preparedness on building government capacity to respond to climate-related and other stressors in Africa. The program also released an online mapping tool that enables 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 Minerva research:

CCAPS publications identifying chronically insecure regions, climate-conflict trends, and strategies for national and international response are available on the CCAPS website at www.strausscenter.org/ccaps/publications.html.

Sharable data resources to be generated:

The following CCAPS data resources are outlined in more detail in the “Social Science Resources for Academics and Policymakers” booklet:

- *Mapping tool:* The mapping tool allows users to visualize data on climate change vulnerability, conflict, and aid in Africa. Users can select and map any combination of CCAPS data to assess how myriad climate change impacts and responses intersect. The mapping tool is available at <http://ccaps.aiddata.org>.
- *Thematic dashboards:* CCAPS dashboards combine mapping, trends analysis, tabular data displays, and data downloads for a comprehensive view of each thematic area under study on the program. CCAPS has released the first thematic dashboard, focused on aid (<http://ccaps.aiddata.org/aid>) and will release dashboards on conflict, climate, and governance in 2012-13.
- *Climate vulnerability model:* The CCAPS climate security vulnerability model combines data on physical, demographic, socioeconomic, and political insecurities to develop a holistic model of vulnerability, using Geographic Information Systems to locate the confluence of these various sources of vulnerability. Model outputs are available for download at www.strausscenter.org/ccaps/data.html.
- *Searchable online databases:*
 - o *Social Conflict in Africa Database (SCAD)* includes georeferenced data on protests, riots, strikes, coups, communal violence, and other types of social unrest in Africa from 1990 to 2011. www.strausscenter.org/scad.html

- *Armed Conflict Location and Event Dataset (ACLED)* tracks the actions of opposition groups, governments, and militias across Africa. The dataset includes events from 1997 to 2012, updated monthly. www.strausscenter.org/acled.html
- *Malawi Geocoded and Climate Aid Dataset* includes all types of aid for the 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. www.strausscenter.org/aid.html
- *Climate and Security Data Dashboard*: CCAPS is developing an online data portal for program data on climate change vulnerability, conflict, governance, and aid in Africa. It will be available on the CCAPS website in 2012-13.
- *Climate Projection Model for Africa*: CCAPS developed a new climate projection model for Africa that will be available on the CCAPS website in 2012-13.
- *Social Conflict in Africa Database (www.scaddata.org)*: CCAPS compiled and released SCAD, which includes protests, riots, strikes, inter-communal conflict, and other forms of social conflict not systematically tracked in other conflict datasets.
- *Additions to the Armed Conflict Location and Event Dataset (www.acleddata.org)*: ACLED includes armed conflict data for countries worldwide, and CCAPS expanded ACLED to include conflict events in Sahelian and southern African countries.

Modeling Discourse and Social Dynamics in Authoritarian Regimes

Principal Investigator: **Jeff Hancock** (Cornell University),
Co-PIs: **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
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-Matrix* (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-Matrix 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 CohMatrix (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.

Sharable data resources to be generated:

Most of our data resources can be made available to researchers on request where that does not conflict with IRB requirements on personal privacy.

Deciphering Civil Conflict in the Middle East

Principal Investigator: J. Craig Jenkins, Ohio State University, jenkins.12@osu.edu

Ola Ahlqvist, Ohio State University

Hassan Aly, Ohio State University

Zhenchao Qian, Ohio State University

<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:

- 1) 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)
- 2) 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)
- 3) 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)
- 4) 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 second 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?”

We anticipate that our analysis of rentierism and conflict will show that direct forms of rentierism (oil/mineral exports, foreign economic and military aid) have an inverted-U effect on nonviolent protest and civil violence, raising the likelihood of these events at low to intermediate levels while lowering it at medium to high levels. We expect indirect forms of rentierism to have a simple positive effect on civil protest and violence, stemming from the weaker legitimacy and allocative control that these revenues provide.

- 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.

Our second focus has been to examine the organization of Kurdish nationalist groups in cyberspace. These groups are persistent in claiming there is a unified “nation” in their cyberspace activities but our examination of the structure of cybernetworks among these organizations indicates that this is a highly dispersed, fragmented and factionalized set of networks. Despite the

common cyberspace claim of political unity among these Kurdish nationalist groups, in fact these groups appear to be highly factionalized and to have little network integration in cyberspace. This indicates a high degree of “cyber-balkanization” in which the Kurdish nation is an imagined community still in the making rather than an accomplished product.

- 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:

- 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.

Sharable data resources to be generated:

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

Terrorism, Governance, and Development

Principal Investigator: **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

Program Manager: **Joe Lyons**, Air Force Office of Scientific Research

Research Problem:

The Minerva TGD Team's fundamental 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. This project uses 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:

Within our broad agenda, we pursue specific research projects with consideration to: (1) the relevance to national security interests; (2) our ability to secure quality data appropriate for rigorous analysis that identifies causal effects; and (3) the potential for the empirical findings to advance the field and inform theory development. 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 (at least not to high econometric standards), which leaves scholars open to a host of ecological-inference problems. Therefore, we gather high-quality research data through three mutually supporting empirical tracks.

- *Micro-Level Data Collection and Econometric Analysis* Collect, refine, and archive fine-grained geospatial data in a comprehensive open data source to facilitate independent scholarship.
- *Field Research* We use field observations to identify the effects of factors not captured in existing data and to verify that the assumptions inherent in the data collection and econometric analysis are valid. Surveys have been fielded in Northern Ireland and Colombia using Minerva TGD funding and in Pakistan, Palestine, and the Philippines using other funding sources.
- *Field Experimentation* The gold standard for evaluating the causal impact of specific programs is a randomized trial. We have conducted field experiments on this research agenda in Afghanistan and Pakistan using alternative sources of funding and are working to do so in other regions.

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 2011)
- 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 (*Am. J. 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 2011) and USAID (various dates)

TGD publications have been recently cited in key policy documents including:

- May 2011 publication of the NATO Civil Military Fusion Centre.
- June 8, 2011 Foreign Relations Committee Comprehensive Report, entitled, “Evaluating U.S. Foreign Assistance to Afghanistan.”

In addition to published results, we note progress on other fronts.

- *Survey methods.* We have developed a standard set of questions to be used in survey instruments across a range of conflicts and utilized innovative survey methods to elicit sensitive views such as support for armed actors. We are running a domestic survey to compare methods for eliciting such views.
- *Training.* Up to eight post-docs and several graduate students are supported by the grant annually. We have run four workshops to bring scholars and practitioners together for training on how to analyze current and emerging challenges, including one focused on using emerging ICT technologies to combat corruption and enhance governance.
- *Outreach.* Recent briefings include: Chairman of the Joint Chief of Staff (CJCS); Commander, International Security Assistance Force (COMISAF) Afghanistan; Deputy Chief of Staff for Intelligence (J2) ISAF, Afghanistan; Commander, Combined Joint Interagency Task Force Shafafiyat (Transparency/Anti-Corruption) ISAF, Afghanistan; US Forces Afghanistan (USFOR-A); Combined Forces Special Operations Component Command- Afghanistan (CFSOCC-A); Counterinsurgency Training Center (Afghanistan); National Counter Terrorism Center (NCTC); Defense Advanced Research Projects Agency (DARPA); Director of Joint Staff/J-7 Directorate; OSD-Policy; US Department of Treasury Office of Terrorist Financing and Intelligence; World Bank; and USAID.

Anticipated Outcomes of Research:

At the conclusion of our five-year project, we anticipate the following outcomes:

- Publications in peer-reviewed journals will provide new research findings on conflict topics.
- A refined theory of insurgency to serve as an alternative framework to previously under-specified military doctrines. The baseline model has been published in the *Journal of Political Economy*.
- Key leaders in military and aid organizations (in the U.S. and abroad) will have been introduced to new methods of evaluating the effectiveness of their policies.
- The Empirical Studies of Conflict (ESOC) project website will host micro-level conflict data on multiple conflicts for the broader scholarly community.
- A cohort of new scholars with the theoretical tools, data, and contacts to execute fresh research

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 the emergence of new non-state threats. Understanding how to choose and implement governance and development policies is critical.

Recent publications supported by TGD grant:

- Berman, E., Jacob N. Shapiro, and Joseph H. Felter. "Can Hearts and Minds be Bought? The Economics of Counterinsurgency in Iraq." *Journal of Political Economy*. Vol. 119, No. 4, (August 2011), pp. 766-819.
- Berman, Eli, Michael Callen, Joseph H. Felter, and Jacob N. Shapiro. "Do Working Men Rebel? Insurgency and Unemployment in Afghanistan, Iraq and the Philippines." *Journal of Conflict Resolution*. Vol. 55, no. 4, (August 2011), pp. 496-528.
- Biddle, Stephen, Jeffrey A. Friedman, and Jacob N. Shapiro. "Testing the Surge: Why did Violence Decline in Iraq in 2007?" *International Security*. Vol. 37, No. 1 (Summer 2012), pp. 7-40.
- Blair, Graeme, C. Christine Fair, Neil Malhotra, and Jacob N. Shapiro. "Poverty and Support for Militant Politics: Evidence from Pakistan." *American Journal of Political Science*. (Forthcoming 2012).
- Cederman, Lars-Erik, Nils B. Weidmann, and Kristian Skrede Gleditsch. "Horizontal Inequalities and Ethnonationalist Civil War: A Global Comparison." *American Political Science Review*. Vol. 105, No. 03, (August 2011), pp. 478-495.
- Condra, Luke N. and Jacob N. Shapiro. "Who Takes the Blame? The Strategic Impact of Collateral Damage." *American Journal of Political Science*. Vol. 56, No. 1, (January 2012), 167.
- Heger, Lindsay, Danielle Jung and Wendy Wong. "Organizing for Resistance: How Group Structure Impacts the Character of Violence." *Terrorism and Political Violence* (Forthcoming).
- Johnston, Patrick B. "Does Decapitation Work? Assessing the Effectiveness of Leadership Targeting in Counterinsurgency Campaigns." *International Security*. Vol. 36, No. 4, (Spring 2012), pp. 47-79.
- Weidmann, Nils B. "Violence 'from above' or 'from below?' The Role of Ethnicity in Bosnia's Civil War." *The Journal of Politics*. Vol. 73, No. 04, (October 2011), pp. 1178-1190.
- Weidmann, Nils B. and Michael Callen. "Violence and Election Fraud: Evidence from Afghanistan." *British Journal of Political Science*. CJO 2012 doi:10.1017/S0007123412000191. (Forthcoming).
- Weidmann, Nils B. and Idean Salehyan. "Violence and Ethnic Segregation: A Computational Model Applied to Baghdad." *International Studies Quarterly*. (Forthcoming)

Sharable data resources to be generated:

All micro-level data developed in the project will eventually be housed at the Empirical Studies of Conflict (ESOC) project website and made available to the broader scholarly community. These data include all ancillary files (GIS data, labor force surveys, etc.) used in analysis. This will dramatically reduce the fixed-costs of doing micro-level empirical research on conflict.

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

Principal Investigator: Mark Woodward, Arizona State University

David Jacobson, Arizona State University

Hasan Davulcu, Arizona State University

Steven Corman, Arizona State University

Riva Kastoryano, Sciences Po (France)

Muhammad Sani Umar, Northwestern University

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

Program Manager: Harold Hawkins, Office of Naval Research

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

Research Problem:

One way to reduce the threat of extremist violence is to strengthen the voices of the Muslim majority who reject the use of violence. Effective policy initiatives depend on the ability to recognize a broad range of counter-radical voices and the social and intellectual networks and traditions in which they are embedded. This project redresses deficiencies in our understanding of these Muslim-led efforts to combat extremism by tracking and analyzing both publicly observable formal networks and diffused networks operating under the radar screen, with the aim of producing a comprehensive picture of ideas, actors, vehicles, and links of counter-radicalism.

We explore the spectrum of social, religious, and political characteristics of these networks across three critical regions—Southeast Asia, West Africa, and Western Europe—focusing on ideological and religious content and dissemination of ideas. Issues addressed include: the social location and political environments of discourse producers and consumers; relations to radical discourse; 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. As we learn how grass-roots movements use key Islamic values to express international norms about democracy and freedom, the findings of this study can provide the international community important tools to prevent the spread of violent extremism.

Methodology:

The project employs an interdisciplinary methodology combining discourse analysis, ethnographic field research, survey research, and computer web-mining and mapping. The project is characterized by an integrative approach that brings together a broad range of expertise and disciplinary approaches—Islamic and area studies; textual studies; field research and discourse analysis; and computer science and mathematics—and triangulates methods to uncover and model patterns of counter-radical discourse at the local, regional, and global level.

Initial Results:

Based on our earlier finding that the characteristics of counter-radicalism are *context sensitive* and highly dependent on the political, social, and cultural environments and institutional structures within which both radicalism and counter-radicalism are embedded, the team developed and is currently testing and refining a context neutral measurement tool (wisdom gathering tool – WGT) to be used across all countries in the study. The tool measures five continuous variables which are important in understanding radical and counter-radical movements: epistemology (degree to which an organization allows for interpretation of religious texts through the lens of a 21st century perspective and embraces debate about

the meaning of the texts), diversity tolerance (specifically tolerance of religious diversity), change orientation (degree to which an organization aims to change the existing social, political, and/or religious conditions), violence ideology (acceptance or rejection of the use of violence to achieve change including responses to violent rhetoric), and violence engagement (the use of violence). Range, or where the organizations operate, is a categorical variable that is also measured with the WGT.

The WGT provides a way to quantify insights and observations from the ethnographers. The data generated by the WGT can be incorporated into the feature extraction and model fitting techniques developed by the web mining team. Once organizations or individuals are rated, we can mathematically create a variety of two or more dimensional models to compare and better understand them. Merging the web-mining with two or multi-dimensional models produced by the WGT allows us to measure the distance between organizations and their movements on key intersecting characteristics (such as violence ideology and political change). Combining historical webmining data collected over time with WGT assessments facilitates tracking the ways in which movements and organizations change over time and space. Repeated future ratings using the WGT will further enhance tracking.

Survey data was collected from 400 participants each in 7 countries (Senegal, Niger, Nigeria, France, Germany, and the UK). Preliminary survey results indicate that, with a few exceptions, participants in most countries generally appear to have a positive view of western influence in the Muslim world and relatively progressive views about women's roles. Despite a relatively young (average age 37) and financially comfortable sample, the majority do not rely on social media and the internet for information about religion. Instead among those who use media for information the most common medium used is traditional broadcast media. Current survey findings are enhancing ethnographic data collection by suggesting targeted data collection strategies that will be employed in the next year. A second wave of survey data collection will start in early 2013).

Anticipated Outcomes of Research:

Our research provides theoretical insights into the complexities arising from the dynamic interactions of divergent and evolving Islamic radicalisms and counter-radicalisms by capturing their **overlap, movement** and **interactivity**. Based on a portable multi-disciplinary methodology, our project transcends parochial and binary frames about friends and enemies, and it provides a new set of social and computational tools for mapping the trajectories of social movements, and emerging threats and opportunities.

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 that will help the DoD determine whether a particular group qualifies as "moderate," or how to identify the moderates.

Publications through Minerva research:

Overall, the project has produced 15 refereed journal articles, 15 non-refereed significant publications, 7 books or book chapters, 3 technical reports/white papers, and 10 published conference

proceedings. Team members have presented at 46 workshops or conferences and received 1 award.

Selected publications include:

- Tikves, S., Banerjee, S., Temkit, H., Gokalp, S., Davulcu, H., Sen, A., Corman, S., Woodward, M., Rohmaniyah, I, and Amin, A. (in press). A System for Ranking Organizations Using Social Scale Analysis. Invited paper *Social Network Analysis and Mining Journal*, Springer.
- Smith, B. & Woodward, M. (Eds.). (in press). *Gender and Power in Indonesian Islam*. London: Routledge.
- Tikves, S., Gokalp, S., Temkit, M., Banerjee S., Ye, J., Davulcu, H. (2012, August). Perspective Analysis for Online Debates. *Proceedings of International Symposium on Foundation of Open Source Intelligence and Security Informatics (FOISINT-SI 2012)*, in conjunction with 2012 *IEEE/ACM Int. Conference on Advances in Social Networks Analysis and Mining*.
- Jacobson, D. (2012). *Of Virgins and Martyrs: Women's Status in Global Conflict*, Baltimore: Johns Hopkins University Press.
- Rohmaniyah, I. & Woodward, M. (2012, May 21). Wahhabi Perspectives on Pluralism and Gender: A Saudi – Indonesian Contrast. (Report # 1201). Tempe, AZ: Consortium for Strategic Communication, Arizona State University. available from <http://comops.org/article/128.pdf>
- Pieri, Z. P. (2012, March) Prohibiting Sins and Promoting Virtues in Contemporary Islam: The Case Study of Shari'a Zones in London and Lessons from Further a Field. Paper presented at the *1st Global Conference: Sins, Vices & Virtues*, Prague, Czech Republic.
- Woodward, M. and Rohmaniyah I. (2011, Dec 19) Contesting the New Media: Indonesia and the World Muslim League. *COMOPS Journal: Analysis, Commentary and News from the World of Strategic Communications* retrieved from <http://comops.org/journal/2011/12/19/contesting-new-media-indonesia-vs-the-muslim-world-league/>

Sharable data resources to be generated:

A Real-Time Contextual Mapping and Visualization Dashboard: A real-time online dashboard for tracking and visualizing the longitudinal trajectories of Muslim movements, and organizations on the quadrants model. Online dashboard tracks peaking religious, political, socio-economic, markers driving these movements, their leaders, followers, target demographics, locations and media channels.

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

Pat Barclay, University of Guelph, barclayp@uoguelph.edu

Stephen Benard, Indiana University, sbenard@indiana.edu

Program Officer: Amber Story, National Science Foundation

Research Problem:

Human groups face a tension between within-group competition (investing resources in competing for rank or position within groups) and between-group competition (investing resources in helping one's group compete for success or survival relative to other groups). When faced with external threats or obstacles, human groups tend to become more cohesive, in part because individuals refrain from within-group competition for dominance in order to invest personal effort and resources in promoting group welfare. We investigate whether some individuals exploit this tendency by exaggerating the risk of external threats to the group. Those who exaggerate threats to the group 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 group members.

In an initial study, we found that people are especially willing to pay to manipulate such 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 proposed project investigates the underlying mechanism and how it may vary across different settings and assumptions (e.g. democracies vs. dictatorships; hostile outgroups vs. asocial threats).

Methodology:

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

Our initial study used the methods described above. The follow-up research includes a series of 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 manipulated participants' capacity to detect manipulation; (3) study 4 manipulated the level of power available to the dominant individual; (4) study 5 (in progress) manipulates whether subordinate individuals can supplant the dominant individually, or whether they must form coalitions with other subordinate group members. In addition, we are preparing to conduct two studies in the coming year (1) a study that will manipulate whether the dominant position is attained democratically or through resource-based dominance contests, and (2) a study that

will manipulate whether the nature of the threat is social or asocial (e.g. outgroups versus natural disasters).

Initial Results:

Thus far, our results include the following sets of findings. First, 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 (compared to when rank is randomly assigned). Third, we find that (a) when individuals can more easily 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. Fourth, we find that (a) the effect is robust to whether our definition of the dominant position in the group is relatively high or low in power, and (b) more high-power dominants actually invest more in helping their groups than low-power dominants, but (c) take more than their fair share of the public good.

Anticipated Outcomes of Research:

In our future work, we will examine the effects of democratic versus non-democratic systems on threat manipulation and belief, as well as the effect of social versus asocial threats.

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.

The Evolution of Revolution

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

Laura Razzolini, Virginia Commonwealth University

Program Officer: Jon Leland, 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.

Strategy and the Network Society

David J. Betz, Department of War Studies, King's College London

Thomas Rid, Department of War Studies, King's College London

Richard Overill, Department of Informatics, King's College London

POC: david.betz@kcl.ac.uk

Program Officer: Ivy Estabrooke, Office of Naval Research

Research Problem:

How does the rise of cyberspace and the network society affect the way strategy is formulated, designed, implemented, and assessed? How do classic strategic concepts hold up in this new environment? Does the role of traditional alliances change? The project *Strategy and the Network Society* examines the political, social, and the strategic dimension of cyber security.

Methodology:

The programme's methodological approach is interdisciplinary in character. It combines strategic studies, sociology, political science, history and the history of ideas, organizational studies, legal studies, and computer science. This methodological design reflects the proven multidisciplinary strengths of the War Studies Group at King's College London.

Initial Results:

The project was launched only in the summer of 2011. Among the initial outputs are detailed assessment of the strengths and weaknesses of the concept of "cyber war" and other common analogies. Any act of war, we found, has to be potentially lethal, instrumental, and a political act of force. Not one single cyber offense on record constitutes an act of war on its own. All politically motivated cyber attacks are better described as sophisticated versions of three activities that are as old as warfare itself: sabotage, espionage, and subversion.

Alternatively we explored the concept of a "cyber weapon" in depth. We found that instruments of code-borne attack span a wide spectrum, from generic but low-potential tools to specific but high-potential weaponry. This distinction brings into relief a two-pronged hypothesis that stands in stark contrast to some of the received wisdom on cyber-security. Maximising the destructive potential of a cyber-weapon is likely to come with a double effect: it will significantly increase the resources, intelligence and time required for development and deployment – and more destructive potential is likely to decrease the number of targets, the risk of collateral damage and the political utility of cyber-weapons.

Anticipated Outcomes of Research:

We currently examine the following themes, driven by the rigorous study of case studies as well as strategic theory and history:

- 1) the changing meaning of violence in the context of cyber attacks;
- 2) the potentials and the limits of "pure" cyber espionage;
- 3) the new dynamics of sabotage by computer attack;
- 4) the changing nature of subversive activity, especially under what conditions cyberspace favours the subversives and under what conditions it favours the established powers of the state; and
- 5) the attribution problem in its different dimensions.

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

The project may help align DoD's cyber capabilities with strategic objectives: when grappling with cyber security problems in the network society, military and political decision-makers are often guided by concepts and historical comparisons from the past, for instance the Cold War, cyber-deterrence being an example. Our project tests the strengths and more importantly the weaknesses of such comparisons and suggests more appropriate and more apt conceptual maps and signposts. Secondly, our project aims to spread and synchronize these strategic insights among America's key allies, especially in Europe.

Publications through Minerva research:

- David Betz and Tim Stevens, *Cyberspace and the State* (London: International Institute for Strategic Studies, 2011).
- Betz, David, "Cyberpower in Strategic Affairs. Neither Unthinkable nor Blessed" *Journal of Strategic Studies* (forthcoming 2012)
- Betz, David and Tim Stevens, "Analogical Reasoning and Cyber Security" (forthcoming 2013, under review)
- David Betz, Communications Breakdown: Strategic Communications and Defeat in Afghanistan, *Orbis* (2011), Vol 55, Iss 4, 2011, Pages 613–630.
- Rid, Thomas, "Think Again: Cyberwar," *Foreign Policy*, March/April, p. 58-61
- Rid, Thomas, 2012, *Cyber War Will Not Take Place*, The Journal of Strategic Studies, 2012, vol 35, no 1, 5-32, February,
- Rid, Thomas and Peter McBurney, 2012, "Cyber-Weapons," *The RUSI Journal*, February/March, vol 157, iss 1, p. 6-13
- Rid, Thomas, 2013, *Cyber War Will Not Take Place* (forthcoming book)

Mapping Militants: The Organizational Dynamics of Violent Extremist Organizations

Principal Investigator: Martha Crenshaw, Stanford University, crenshaw@stanford.edu

Program Officer: Amber Story, National Science Foundation

<http://mappingmilitants.stanford.edu>

Research Problem:

How do violent oppositional organizations interact with each other and with the governments they challenge? How do these relationships evolve over time? What are their causes and consequences? Are there common patterns of evolution or organizational genealogies? In the course of a conflict governments typically confront multiple and shifting extremist or terrorist adversaries, but much of the scholarly literature has assumed a monolithic unitary opposition engaged in a static rather than dynamic relationship. Understanding how non-state adversaries form, split, merge, collaborate, compete, shift ideological direction, adopt or renounce violence (especially terrorism), grow, shrink, and eventually decline over time is essential to explaining their behavior and to gauging the impact of government interventions.

Methodology:

The project creates dynamic visual representations of relationships among militant organizations. The maps are not geographical but combine aspects of networks and timelines. They are simultaneously interactive, accessible, clear, and informative. They feature both organizational diagrams that permit visualization of interactions and carefully-researched profiles of individual groups. Each profile follows a standard template with assigned fields and provides citations to the sources used. So far, leadership changes and major attacks can also be displayed. The user can select an individual group to trace (which displays that group and all others with which it has or has had relationships) or see the entire universe of groups over a selected time period. The map is also searchable (e.g., for all profiles that contain a reference to Hamas). There is also a feedback field for comments (which are most welcome because this is work in progress). Currently the Iraq map is accessible to the public at mappingmilitants.stanford.edu. Other maps will be posted as soon as they are completed.

The project uses standard web technologies. During the past year the maps have developed from a simple visual demonstration – really nothing more – into a full-fledged, database-driven web application powered by MySQL, thanks to student research assistant Daniel Cassman. Research assistants write organizational profiles using a wiki program, the text of which is parsed and data abstracted to construct the maps. The abstracted data is copied to a separate database and then converted into the interactive diagram. Javascript Object Notation is used to pass information from the database to the front-end website. The webpage then uses Javascript, HTML, and CSS to create the diagram. The code is licensed open source under LICENSE and can be reviewed at GitHub Repository.

Initial Results:

We are beginning to identify patterns in the evolution of terrorist and other violent extremist organizations, specify their causes and consequences, and analyze the development of Al Qaeda and its cohort in a comprehensive comparative framework. With both graduate and undergraduate student research assistants, the project is producing a set of organizational profiles and a series of dynamic interactive maps of the architecture of violent and non-violent opposition groups interacting in the same

social movement sector or conflict system. Conflict arenas currently being mapped include contemporary Iraq, Afghanistan-Pakistan, the Maghreb, Somalia, Yemen, Israel-Palestine, Turkey, Colombia, Northern Ireland, and Italy in the 1970s and 1980s. We aim to extend this list to other conflicts and will include a global map of Al Qaeda and its affiliated organizations. In addition to identifying common patterns of organizational development or what we might call the architecture of violent extremism (e.g., consolidation, fragmentation, persistent division, and monopoly or primacy), ascertaining the stability of such patterns, and determining their causes and effects, the data will also permit the testing of other explanatory propositions related to interactions among militant groups and their reactions to government initiatives.

Anticipated Outcomes of Research:

The research will yield a set of maps of different types of conflicts, establishing the basis for comparative analysis of the causes and effects of varied patterns of interaction among violent extremist groups involved in armed confrontations with established governments. Other researchers can use the data and employ or adapt the methods used to construct the maps and profiles. For example, government analysts in the intelligence community could populate the profiles with classified information that is unavailable to my Stanford research team.

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

Effective counterterrorism and counterinsurgency strategies depend on understanding the relationships among adversaries. In such conflicts multiple opposition organizations are the rule rather than the exception, and fluidity is the norm. A policy initiative that is undertaken to influence a single actor will invariably have repercussions for other actors in the field, and this project can help anticipate what those consequences might be. The maps also make it easy for analysts to trace the trajectories of individual groups.

Sharable data resources to be generated:

The maps with organizational profiles will be accessible at www.stanford.edu/groups/mappingmilitants.

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

Tanisha Fazal, Columbia University, tmf2001@columbia.edu

V. Page Fortna, Columbia University

Program Manager: 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 will discuss two of our results in this summary.

First, the use of peace treaties in interstate war has seen a real decline over the past two centuries and, in particular, since the mid-20th century (Figure 1). In her book manuscript covering this topic, Fazal argues that the declining use of the formalities of war – such as peace treaties – in interstate war is driven by a concomitant proliferation of formalized *jus in bello*. As peace treaties provide windows of opportunity for accounting and restitution, states would prefer not to put themselves in a formal state of war given that the consequences of opening this window can be increasingly costly, especially in cases where *jus in bello* has been violated. Figure 2 shows the probability of a formal peace treaty being concluded as codified *jus in bello* has proliferated.

Second, we find that trends in the prosecution of civil wars – in particular, the use of guerrilla warfare – have been less driven by the Cold War than current wisdom suggests. Scholars have recently argued that insurgency increased dramatically during the Cold War because of support from the Soviet Union and its allies. Looking farther back than 1945, however, we find that insurgency was on the rise even prior to the start of the Cold War and, moreover, that its demise (as compared to other modes of warfare) may have been somewhat overstated (See Figure 3).

Figure 1: Percent of Wars Ended with Peace Treaties



Figure 2: Probability of Peace Treaty as Jus in Bello Increases (includes confidence intervals)

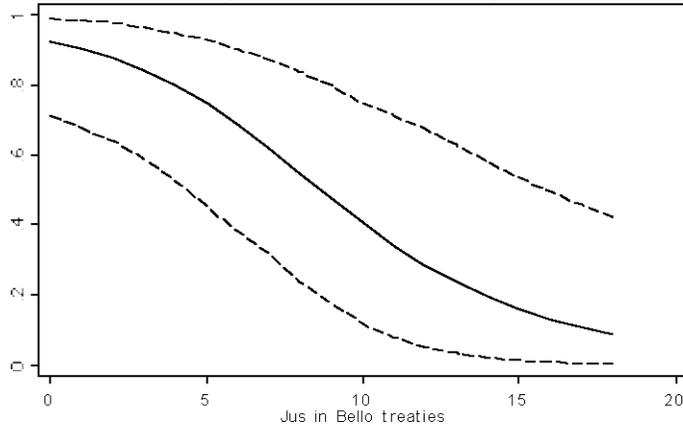
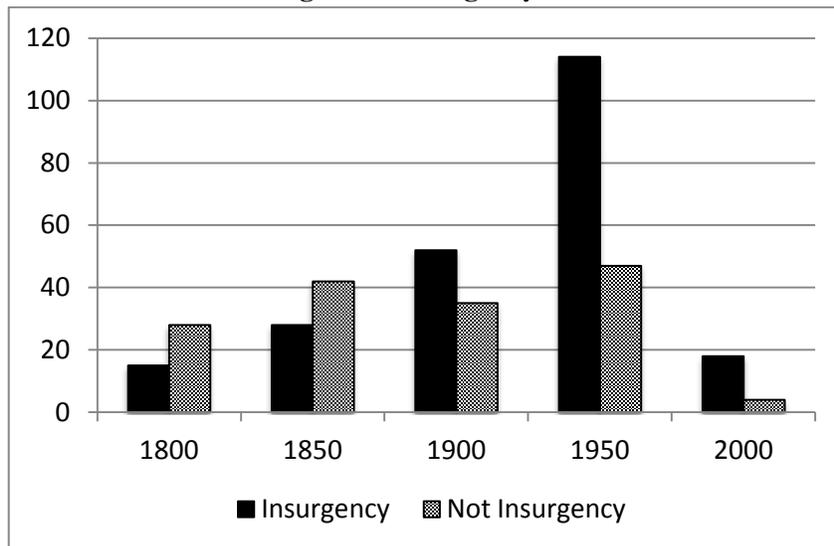


Figure 3: Insurgency Over Time



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." Under review.
- 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 for a Symposium on Goldstein, Joshua *Winning the War on War in Perspectives on Politics*.

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.

How Politics Inside Dictatorships Affects Regime Stability and International Conflict

Principal Investigator: Barbara Geddes, UCLA, geddes@ucla.edu
Co-PI: Joseph Wright, Pennsylvania State University, josephwright@gmail.com
Program Officer: Brian Humes, National Science Foundation
<http://dictators.la.psu.edu/>

Research Problem:

Because we lack adequate information about autocracies, neither social scientists nor policy makers have been very good at predicting the international and domestic policy choices made by dictators or devising effective responses to them. Among the choices of interest to both policy makers and scholars are: how dictators respond to challenges from widespread opposition; decisions about aggressive international behavior; and how foreign sources of revenue, such as oil income and international aid, influence autocratic stability. To understand both the behavior of dictators and effective international responses to their behavior, we need a better understanding of how these decisions are reached, who influences them, and how the dictator's fear of ouster constrains his choices. Country experts have a great deal of knowledge about who the relevant decision-makers are and how the rivalries among them influence policy outcomes in particular countries, but theories of autocratic politics have been posed at an abstract level. We lack the information about elite politics in dictatorships needed to reach general, empirically-based conclusions about political behavior in autocracies.

Methodology:

Our research builds a data set of all authoritarian regimes from 1946 to 2010 that includes historical information on their institutional characteristics and objective indicators with which to assess the bargaining power of elite political actors. In the first part of the project, we code different types of autocratic regime failure, such as whether the regime ouster was violent and whether regime failure leads to a democratic transition or is followed by a subsequent dictatorship. We provide narratives for the political events that mark the beginning and the end of each distinct autocratic regime. A second part of the project codes time-varying characteristics of regimes that capture the relationships between the leader, the support party, and the military. Our data allow us to more accurately capture theoretically relevant concepts such as the size and depth of the ruling group's support coalition and the extent to which the dictator controls the military and/or the support party. A final part of this project examines different forms of political instability in dictatorships – such as the risk of transition to a democracy or to a subsequent authoritarian regime. We provide a guide for using the predicted risk of autocratic instability in applied research.

Initial Results:

Preliminary analysis suggests that the personalization of autocratic rule, by which we mean the concentration of decision making and control of other regime insiders' futures in the hands of one man, increases the likelihood that:

- Dictatorships will be followed by subsequent autocratic regimes rather than democracy
- Ousting dictatorships will be violent
- The regime leader will be punished after a transition to democracy
- International sanctions will be effective in destabilizing autocratic rule

- Military intervention will lead to a subsequent autocratic regime rather than democracy
 - Human rights prosecutions in neighboring countries will deter dictators from leaving power
- In a related paper, we show that oil wealth increases autocratic stability by lowering the risk that the regime is ousted by rival autocrats but that change in oil revenue has little influence on chances the regime will transition to a new democracy.

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

By providing yearly assessments of a relatively large number of characteristics in all autocracies we make possible a first step in advancing “evidence-based” policy towards dictatorships. We have begun the analysis of the effects of oil wealth, foreign aid, economic sanctions, military intervention, and human rights prosecutions on autocracies with different specific traits. Such policy interventions can be targeted more effectively once we better understand in which kinds of dictatorships these policies are most likely to be effective.

Publications and manuscripts under review through Minerva research:

The data have been used in the following studies:

- Wright, 2009. “How Foreign Aid Can Foster Democratization in Authoritarian Regimes.” *American Journal of Political Science*
- Escribà-Folch and Wright. 2010. “Dealing with Tyranny: International Sanctions and the Survival of Authoritarian Rulers.” *International Studies Quarterly*
- Wright and Escribà-Folch. 2012. “Authoritarian Institutions and Regime Survival: Transitions to Democracy and Subsequent Authoritarian Regimes.” *British Journal of Political Science*
- Frantz and Stein. 2012. “Comparative Leadership in Non-Democracies.” in *Comparative Political Leadership*, Ed. Ludger Helms. London: Palgrave MacMillan
- Wright, Frantz, and Geddes. 2012. “Oil and Autocratic Regime Survival.” paper under review
- Geddes, Wright, and Frantz. 2012. “Autocratic Regimes: A New Dataset.” paper under review
- Escribà-Folch and Wright. 2012. “Foreign Pressure and the Politics of Autocratic Survival.” book manuscript under review
- Escribà-Folch and Wright. 2012. “Human Rights Prosecutions and Autocratic Survival.” paper under review
- Garrido. 2012. “Does Poor Economic Performance Explain the Breakdown of Dominant Party Regimes?” paper under review

The updated data set has been used in presentations for: (1) Political Instability Task Force meetings; (2) a United Nations project on foreign aid and democracy in sub-Saharan Africa.

Sharable data resources to be generated:

- The data set that includes regime beginning and end dates, subsequent regime type, mode of transition, and regime start and end narratives is publicly available.
- Estimates of the predicted risk of different types of autocratic stability, calculated using our data, and the accompanying paper will be available in spring 2013.
- The time varying regime characteristics should be completed in summer 2013.

New Armies from Old: Merging Competing Militaries after Civil Wars

Roy Licklider, Rutgers University, licklide@rci.rutgers.edu
Program Officer: Brian Humes, National Science Foundation

Research Problem:

Until the end of the Cold War it was conventional wisdom that civil wars necessarily ended in military victories. Nonetheless, over 20 negotiated settlements of civil wars have been reached since 1989 in places as disparate as El Salvador and South Africa. Some of these compromise settlements have ended civil wars and resulted in postwar regimes that are substantially more democratic than their predecessors; some have collapsed back into civil war.

These settlements have usually involved power sharing among the former contestants and other sectors of society. Many of these agreements have, as a central component, provisions to merge competing armed groups in a single national army. How can people who have been killing one another with considerable skill and enthusiasm be merged into a single military force? We know very little about the process of military integration. Why has it been used? What strategies have been most effective? Does military integration help prevent renewed civil war?

Methodology:

The PI prepared a common set of questions for case study authors. Country specialists for eleven countries in which military integration has been attempted (Sudan 1971, Zimbabwe, Lebanon, Rwanda, Philippines, South Africa, Mozambique, Bosnia-Herzegovina, Sierra Leone, Democratic Republic of Congo, and Burundi) wrote chapters responding to these questions. In addition several comparative specialists were asked to prepare cross-case papers. The initial drafts were presented at a conference in 2010 at the Peacekeeping and Stability Operations Institute of the U.S. Army War College. It became clear that the initial questions had not focused sufficiently on how, if at all, military integration was expected to make renewed civil war less likely. The PI developed a set of five possible causal paths. Case authors were asked to revise their papers in response to specific comments about each and to include a section on whether and how each of the causal paths applied to their case. Cross-case authors also revised their papers.

Results:

- Military integration is not a technological substitute for politics. By itself it cannot prevent a renewed civil war, but if completed successfully it can be one element in this process.
- Military integration can be completed under a variety of government types and after civil war victories as well as defeats.
- There was very little violence during training that mixed former adversaries.
- Outside support is helpful but does not guarantee success and is not always necessary.
- The symbolic role of the new force is often more important than its coercive capacity.
- Few fighters are actually taken off the streets because the forces tend to be small; integration and downsizing take place at the same time.
- Cases with integrated rather than segregated units were more numerous and more successful.
- Quotas were often used successfully.
- There was very little screening for human rights violators and no obvious bad consequences.

- Integration in practice usually meant bringing rebels into an existing government army, often in high positions; there were no really “new” armies.
- A common enemy facilitates integration.

A book-length manuscript has just been submitted to two publishers. The PI intends to produce at least two journal articles, one aimed at academics and the other at a policy audience.

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

Civil wars remain a significant American foreign policy issue in places as widely divided as Mali and Syria. As shown by Iraq and Afghanistan, efforts to resolve such conflicts are likely to involve Americans encouraging military integration. Both policymakers and people on the ground need better information on when this process is likely to work and what strategies seem to be useful.

Emotions and Intergroup Relations

Principal Investigator: **David Matsumoto**, San Francisco State University, dm@sfsu.edu

Co-PI: **Mark G. Frank**, SUNY Buffalo

Program Manager: **Joseph Lyons**, Air Force Office of Scientific Research

Research Problem:

A crucial component of any group is the emotions that its members have about themselves, their ingroups, and their outgroups. Group emotions are incredibly important in the creation and maintenance of group identity, solidarity, and overall functioning. Although group emotions have become an important area of study in the past decade, the field still lacks basic information concerning the role of specific emotions in groups. The overarching goal of this five-year project is to examine the role of emotions, and specifically anger, contempt, and disgust, in facilitating the build up to aggression and violence. This work fills this void in our knowledge by testing 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.

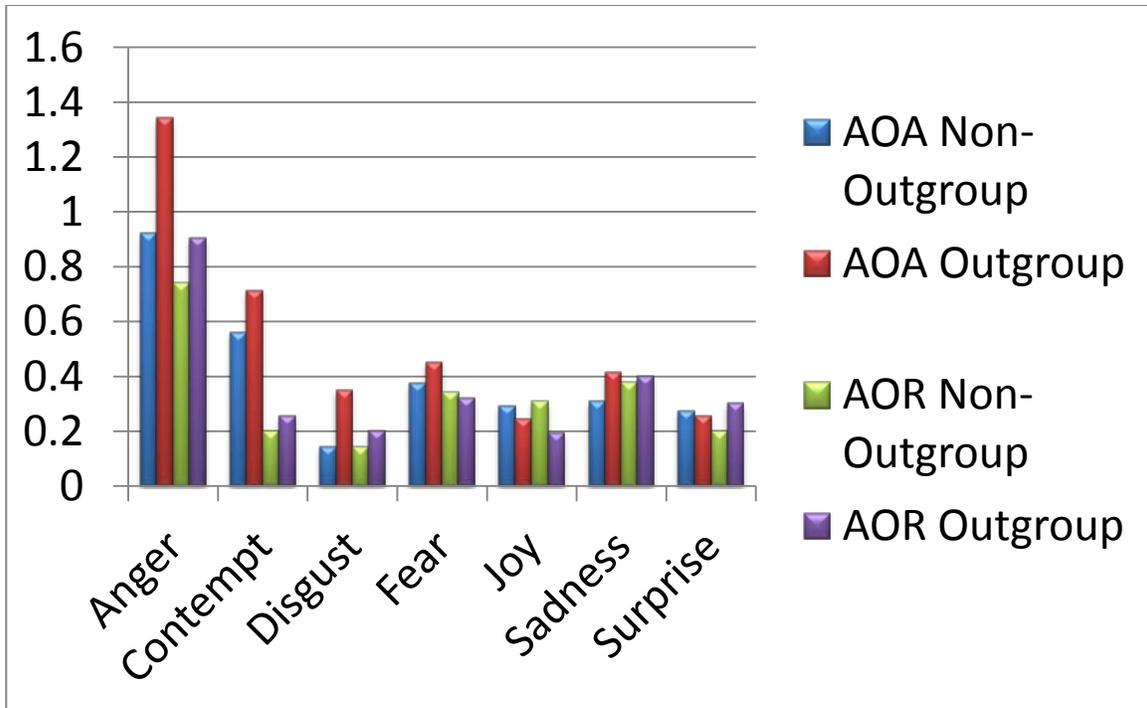
In the first year of this project we tested these ideas in a study examining the role of emotion in leading to and justifying hostile acts in ideologically-based groups. We obtained historical archives of world leaders and leaders of ideologically-based groups justifying acts of war and hostility against other nation states or groups. We isolated parts of their speeches in which they spoke about the outgroups they despised, at three different times before an identified act of aggression. We coded the emotional content of these identified statements using two different teams of emotion annotators using two independently derived annotation systems. As a comparison, the speeches of leaders of ideologically-motivated groups that did *not* escalate to violence were also analyzed. Analyses of both sets of codings indicated support for the hypothesis that anger, contempt, and disgust escalated in the months immediately prior to aggression in the groups that committed such an act; but those same emotions did not change for the groups that did not commit an act of aggression.

Methodology:

In the second year of the project we tested these same ideas by analyzing the nonverbal expressions of emotion in videotaped speeches of leaders of ideologically motivated groups as the groups moved toward either committing an act of violence or not. We obtained source records of videos of such leaders that met our experimental criteria, transcribed the speeches, and annotated the parts of the speeches that directly referenced outgroups (and those that did not). A separate set of coders then coded the emotions expressed in the videos of the speeches. The emotions coded were anger, contempt, disgust, fear, joy, sadness, and surprise.

Initial Results:

Speeches associated with acts of aggression (AoA) had significantly greater expressions of anger, contempt, and disgust than did speeches associated with non-violent acts of resistance (AoRs). More importantly, there were greater expressions of anger, contempt, and disgust when the outgroups were mentioned, compared to the non-outgroup topics, but only for AoAs and not AoRs (see Figure). These differences were not associated with differences in the emotional meaning of the words used in the speeches, thereby implicating the nonverbal expression of emotions.



Anticipated Outcomes of Research:

Positive findings from the five-year project will document the importance of the role of emotions in intergroup relations, with a special focus on anger, contempt, and disgust. The findings will have broad implications for basic scientific knowledge about emotions and violence, as well as potentially meaningful applications.

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

Monitoring the expression of emotions by group leaders may provide not only early warning mechanisms of impending possible aggression, but also a method to gauge the effects of one’s own group’s actions on other groups. Developing systems to assess emotions among members of groups, and at different levels within the groups, may provide a way to gain insights about the degree to which emotion sharing may occur within groups, which may be important for political justification of leader decisions. Such systems may be akin to rumor-monitoring systems that are useful in assessing counter-insurgency operations in many areas of the world, where the battle concerning knowledge and information is as important as kinetic operations.

Publications through Minerva research:

- Matsumoto, D., Hwang, H. S., and Frank, M. G. (in press). Emotions expressed in speeches by leaders of ideologically motivated groups predict aggression. *Behavioral Sciences of Terrorism and Political Aggression*.
- Matsumoto, D., & Hwang, H. S. (in press). The language of political aggression. *Journal of Language and Social Psychology*.

Fighting and Bargaining over Political Power in Weak States

Robert Powell, UC Berkeley, rpowell@berkeley.edu
Program Officer: Jon Leland, National Science Foundation

Research Problem

In weak states, the central government, if there is one, lacks an effective monopoly over the use of force. Opposing factions bargain over political power and economic resources in the shadow of the threat of force. Any faction dissatisfied with the outcome reached at the negotiating table can resort to force to try to affect a more favorable outcome. Why do some agreements – be they truces, treaties, or constitutions – hold while others do not?

This project studies the way that shifting power affects the chances that competing factions will cut deals and when they will fight.

Methodology

The project studies the equilibria of a stochastic game in which two factions try to divide a flow of benefits in a setting in which the distribution of power is shifting.

Initial Results

The project has so far led to two working papers (available on request): “Persistent Fighting and Shifting Power” and “Monopolizing Violence and Shifting Power.” The first considers exogenous shifts in power; the second endogenizes these shifts.

The main result when shifts in power are exogenous is that large or rapid shifts in power lead to fighting. Factions cut deals and avoid fighting when the shift in power is slow.

When shifts in power are endogenous, the probability that competing factions fight depends on the size of any “contingent spoils.” These are benefits which will only begin to flow once the level of state consolidation has reached a high enough level that the state can provide security and protection. These benefits include the returns on domestic and foreign investment as well as reconstruction and development aid. More conceptually, contingent spoils are the added gain that a state reaps from the additional commitment power it attains by being able to ensure security by disarming an opposing faction rather than only agreeing with that faction to stop fighting. If these are small, a dominant faction will buy off the opposition and consolidate slowly. Fighting occurs when the contingent benefits are large.

Potential Impact on DoD Capabilities and Broader Implications for National Defense

I hope this work will provide a deeper understanding about how shifts or anticipated shifts in power may induce fighting. A clear application would be highlight the way that reconstruction aid given to a village affects the distribution of power among the village leaders and, as a result, may lead to fighting that destroys the benefits of the aid.

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

Principal Investigator: **Sandy Spector**, Monterey Institute for Policy Studies, lspector@miis.edu
Ibrahim al-Marashi, California State University San Marcos

Amy Smithson, Ray Zilinskas,
Center for Nonproliferation Studies, Monterey Institute of International Studies
Program Officer: **Elisa Bienenstock**, 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:

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; 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 Iraq's security organizations 1990-2003. Other sources have attempted to second-guess the motivations. The release of the documents adds an entirely new dimension not only to the study of the Gulf War but also to contemporary Middle East history.

Anticipated Outcomes of Research:

A set of documents on:

- Understanding on the Iraqi Security Architecture, the State and the Iraqi Military
- Political Communication and Rhetoric of the Iraqi State
- Iraqi State and Ba'ath Perceptions of the US
- Iraq's Relations with Terrorist Groups and Non-state actors
- The Iraqi Insurgency

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 so many years in a "Saddam-centric" society, have now re-emerged in a vacuum. 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 that lead to both recent Iraqi wars, and the decision-making in Iraq on WMD and UN inspections, will contribute to effective, sustainable peace-building in the MidEast region.

Publications through this Minerva research:

- Ibrahim Al-Marashi, Editor Barry Rubin. *Iraqi Politics and Control of the Media*, Armonk NY 10504 USA: M. E. Sharpe, 2011
- Ibrahim Al-Marashi, Editor Matteo Legrenzi. *Iraq's Gulf Policy and Regime Security from the Monarchy to the post-Ba'athist Era*, New York USA: Routledge, 2010)
- Amy E. Smithson. *Germ Gambits: the Bioweapons Dilemma, Iraq and Beyond*, Stanford USA: Stanford, University Press, 2011

Adapting to Water Scarcity: River Treaties and Militarized International Conflict

Principal Investigator: Jaroslav Tir, University of Colorado, Boulder

Co-PI: Douglas M. Stinnett, University of Georgia

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:

Our preliminary empirical results are decidedly supportive of our expectations and reveal that highly institutionalized river treaties are indeed effective conflict managers. The findings are robust to whether the outcomes of interest are measured as (a) the prevention of militarized interstate disputes (Ghosn et al. 2004) or (b) extent to which riparian country interactions are steered away from conflictual and toward cooperative behavior (based on the Transboundary Freshwater Dispute Database, Wolf 2008, Yoffe 2001). We are currently further assessing the robustness of our findings by taking into account the processes that lead countries to enter into (highly institutionalized) river treaties (i.e. dealing with potential selection effects) and by process-tracing cases of riparian state interactions.

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.

Engaging Intensely Adversarial States: The Strategic Limits and Potential of Public Diplomacy in U.S. National Security Policy

Geoffrey Wiseman, gwiseman@usc.edu

School of International Relations, University of Southern California

Project Administrator: Erin Barber, ebarber@usc.edu

Program Officer: Jack Meszaros, National Science Foundation

Research Problem:

This comparative and cross-regional project systematically examines the challenges (limits) and opportunities (potential) of U.S. public diplomacy under conditions of restricted U.S. diplomatic relations with ten intensely hostile states – Burma, China, Cuba, Iran, Libya, North Korea, USSR/Russia, Syria, Venezuela, and Vietnam. The cases review the costs and benefits of U.S. engagement – or non-engagement – with the publics of these adversarial states as a way to influence their governments. “Adversarial states” are defined as states where the situation is short of conventional war and where the U.S. maintains limited, reduced, or no formal diplomatic relations with the government. In such circumstances, “public diplomacy” – the means by which a country communicates and engages with citizens in other countries through both official and private institutions and individuals – becomes extremely important for shaping the context within which the adversarial government makes important decisions affecting U.S. national security interests. The cases examine the role of both traditional and public diplomacy with adversarial states.

The main policy claim being examined is that the absence of full diplomatic relations with adversarial states weakens U.S. public diplomacy and ultimately U.S. national security. While there is considerable *prima facie* evidence that conditions of less than full or no official diplomatic relations seriously weakens the U.S.’s capacity to influence publics in adversarial countries, the aim is to assess systematically the evidence via the ten case studies.

Methodology:

The project’s core methodology is the case-study approach. In order to increase overall research compatibility and comparability between the cases written by experts from different disciplinary and regional backgrounds across the humanities and social sciences, the project’s case-study methodology broadly follows the structured, focused comparison research method, which asks the same questions of each case.

Initial Results:

- The U.S. has a tradition of diplomatically isolating for extended periods those nations deemed adversarial and of requiring those nations to meet preconditions before it will engage them diplomatically, placing a heavy burden on the limited, “off-shore” instruments of public diplomacy. However, new social media could alter the balance in some circumstances.
- Official U.S. public diplomacy directed at intensely adversarial states is often counterproductive. Conversely, unofficial cultural and educational exchanges by non-governmental individuals and groups tend to more effective in inducing favorable attitudes towards the U.S. government and society

Anticipated Outcomes of Research:

The main anticipated outcome is an edited collection of policy-relevant cases that will highlight the under-studied nexus between diplomatic relations and public diplomacy. As a whole, the collection will allow readers to make meaningful comparisons among the individual cases, revealing broader patterns and lessons that can be learned from them for the improvement of U.S. policy concerning intensely hostile states. The reader will have a clearer picture of the costs and benefits of officially engaging with adversarial states and their publics, an issue of partisan disagreement in American politics. This project sees diplomacy as offering a wider range of options for developing relations with adversarial states as well as highlighting many different kinds and levels of public diplomacy instruments – from official and “track-two” meetings to cultural and student exchanges, broadcasting, sporting visits, and military exchanges. The evidence is mixed across the cases as to whether the U.S. can only conduct more wide-ranging and effective public diplomacy where it has a diplomatic mission. More specifically, we do not have a consensus from the cases on the relative effectiveness of public diplomacy at different levels of diplomatic representation and engagement: these range from lower levels such as at an interests section hosted in a foreign country’s embassy (as with the Swiss in Havana), a liaison office (e.g., as headed by George H.W. Bush in Beijing in the 1970s), a consular office (such as the one set up in Hanoi by President Clinton in the 1990s), to a full embassy headed by an ambassador (as was mutually agreed by the U.S. and China in 1979).

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

Depending on the international context (increasing or decreasing DoD/U.S. security presence worldwide), each of the cases must be considered on its own merits, including regional variations. However, the condition that links all the cases – historic and contemporary – is the level of U.S. diplomatic presence and what this means for engaging the publics of the adversarial state in question. Understanding this nexus should be a stronger element in U.S. strategic considerations. If U.S. diplomatic efforts are ineffective, then this would likely place a higher burden on DoD resources.

New 2012 Minerva Awards

Strategic Response to Energy-related Security Threats

Saleem Ali, University of Vermont, saleem.ali@uvm.edu
Program Officer: Jeffrey Johnson, 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.

Identifying and countering early risk factors for violent extremism among Somali refugee communities resettled in North America

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

Co-PI: John Horgan, Pennsylvania State University

Program Officer: Harold Hawkins, 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 this proposal 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. The proposed research would build on past research by conducting a longitudinal 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. We will pursue the above objective through a longitudinal mixed-methods interview design that builds on our long-standing research collaboration with the Somali community. Participants for the proposed study will be 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.

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.

Other anticipated research products:

- Establishment of three regional community leadership teams
 - Leadership teams will be embedded within existing community agencies. During the grant period capacity will be built for team members, under the leadership of our identified community consultants, to become knowledgeable collaborators in the ongoing identification, communication and mitigation of risk factors for changes in openness to violent extremism in their respective communities.
- Regional roundtables
 - These roundtables will broaden the discussion of community resilience to violent radicalization beyond the identified leadership team members and will engage community members and stakeholders in working together to identify strategies for addressing, communicating and mitigating risk for violent extremism within specific communities. Identified strategies will be summarized and disseminated to both local and federal stakeholders.
- Policy, Military and Community briefs
 - Briefs will be developed that focus on 1) protective factors within the community and ways to promote these, and 2) specific means of identifying, communicating and addressing risk factors within communities.
- Somali radio addresses and/or website postings disseminating briefs
 - Radio and websites are two of the main communication vehicles within Somali communities. Thus key information contained in the community briefs will also be communicated in these formats to ensure maximal dissemination.

Motivational, Ideological and Social Factors in Political Violence

Principal Investigator: Arie Kruglanski, University of Maryland, arie@psyc.umd.edu

Co-PI: Michele J. Gelfand, University of Maryland

Co-PI: Scott Atran, ARTIS Research

Program Officer: Harold Hawkins, Office of Naval Research

Research Program

The goal of this multidisciplinary effort is to increase understanding of how ordinary people turn to political violence, and what to do about it. This simply phrased objective encompasses complex issues at different levels of analysis: (1) psychological (including motivational and cognitive processes underlying action), (2) socio-psychological (including attributes and dynamics of social networks and processes of persuasion and social influence), (3) cultural-anthropological focused on the unique systems of values and meanings that anchor terrorism-justifying ideologies. Our research is intended to weave them into a coherent whole to gain insights into processes of radicalization and deradicalization. The term radicalization denotes becoming supportive of and/or coming to personally adopt *extreme* goals and means, ones that deviate from the prevalent norms of civilized societies. Deradicalization is a reversal of that process; it represents the pathway of leaving extremism behind. There can be various forms of extremism, differing in their moral basis and their degree of acceptability. The extremism of concern here concerns violence justifying ideologies that promote destruction and terrorism.

Our research strategy combines top-down and bottom-up approaches. The top-down aspect consists of a general model of radicalization and deradicalization grounded in prior theorizing and research. The bottom up aspect consists of gathering field and laboratory data concerning how the postulates of our general model play out in specific socio-cultural contexts, possibly suggesting modifications in the model in response to feedback from the field. Our guiding principle is that valid models of radicalization and deradicalization need to take into account prior relevant knowledge (both theoretical and empirical) and to further it by applying it to the socio-political contexts of terrorism. Our project will closely examine political violence in its specific context. Accordingly, we will build on prior work by ourselves and others to carry out a comprehensive program that will extend from 2012 to 2017. The program will be divided into several individual thrusts, research program addressing a different facet of radicalization and/or deradicalization. We will integrate emerging from this research into a multifaceted understanding of the cognitive, motivational and social processes that lead individuals to, and away from, collective violence. We will use a variety of qualitative and quantitative methods of data collection in field settings, and the various sub-projects will be designed to converge on a fundamental understanding of collective violence and the cultural social and psychological factors that underlie it

The Conceptual Model

The present project assumes that understanding radicalization and deradicalization requires a multi-faceted analysis whose fundamental ingredients are (1) individual psychology (its motivational, cognitive, and affective components) (2) the shared ideological reality prevalent in the social group wherein one is embedded (its norms, cherished values, and acceptable ways and means of goal pursuit). (3) A socially mediated interaction between individual psychology, and collective ideology carried out by the processes of group dynamics, and persuasion where leadership, charisma and friendship networks play an essential role. Accordingly, our proposed work integrates the *motivational, cognitive and social/cultural* levels of analysis, into an overarching framework that lends overall coherence to the multiple studies conducted under its aegis. Our basic premise, stated at the individual level of analysis is that like

most meaningful human behaviors terrorists behavior too is *goal driven*. Thus, terrorism is viewed as a tactic, a *means* through which the individual is pursuing some goal. These motivational components (i.e., a goal and a means) are cognitively represented; they form a part and parcel of the individuals' mental models. That is, the individual believes that a given state of affairs (the *goal*) is worth attaining, and that terrorism is an effective *means* to its attainment. This begs the immediate question of what is the goal that underlies terrorists' behavior. The literature on this issue is extensive; it has identified a diverse list of motives that separately or in combination (as a motivational "cocktail"), define goals possibly involved in terrorist behavior. These motives include: honor, humiliation, heavenly rewards, devotion to the leader, vengeance, group pressure, even feminism. Though all these are valid descriptions of specific cases, at root they appear to represent a more general motivational concern referred to as the quest for *personal significance*. The *quest for significance* refers to a broad motivational force, beyond utilitarian, self preservation concerns (for survival, security, comfort, etc). It has been recognized by leading psychological theorists under diverse labels such as the motivations for competence, effectance, achievement, self-esteem, mastery, or the 'search for meaning'. Crucial about the significance quest is its anchorage in cultural values; such "*sacred values*," define what is worthwhile, moral and admirable, what constitutes the "good life" one ought to aspire to and what behavior it asks of individuals in given circumstances. Especially when it comes to high risk, life threatening behaviors of the kind involved in terrorism (including suicidal terrorism) the quest for significance must be of a sufficient magnitude to subdue and sacrifice other, utilitarian, and self preservation concerns.

We assume, and our preliminary data suggest, that the quest for significance is aroused under conditions of perceived *significance loss* (humiliation suffered by self or by one's group), perceived *threat of significance loss* should one shirk the demanded mission, and/or an opportunity for a considerable *significance gain*, by earning the status of hero or martyr. The significance loss can stem from a variety of circumstances, some of which may represent personal humiliations and dishonors (e.g., the stigma of infertility, divorce, allegation of extra marital relations, or an HIV diagnosis all representing major significance losses in a traditional Arab society), even sinful sexual thoughts, all unrelated to the intergroup conflict in whose name recruitment to violence is carried out. Other possible sources of significance loss may be personal and individual yet related to the context of the violent conflict in which one's group is embedded. For instance, having a fiancé, a husband, or a relative killed by enemy forces (exemplified by Chechnyan Black Widows) may engender in an individual a sense of humiliation and powerlessness, hence a significance loss that begets a quest for significance restoration. Importantly, the significance loss may relate to one's social identity as a group member. Defeat and humiliation of one's group by its enemies even in remote places distant from one's own personal circumstances (e.g. the suffering of Muslims in Bosnia, Kosovo, or Palestine) may be perceived as one's own personal humiliation, especially if one strongly identified as a group member. Invocation of the humiliation of one's fellow group members has been often used by the propagandists of extremist groups like Al Qaeda to instill in the listeners a sense of personal significance loss with the aim of motivating them to join the fight in the interest of significance restoration. Finally, a loss of significance might occur where one's social and political system of meanings may be disintegrating, resulting in what Durkheim (1893) referred to as a state of *anomie*. Under those conditions, arguably represented by the turmoil in several Mid Eastern countries precipitated by the "Arab Spring," individuals may be particularly attracted to alternative meaning systems, in particular those with clear and present guidelines for significance attainment, such as fundamentalist religious belief systems Barbarian assaults were coupled with the rise of a variety of religious cults including Christianity and Judaism.

Research Methods and Venues

Hypotheses will be generated on basis of our overarching conceptual framework for understanding radicalization and deradicalization, : (1) experimentally-designed survey research to elicit mental models and pertinent features of moral decision making that involve various populations within which radical groups are embedded, or which support radical groups to varying degrees, (2) social network analysis of radical groups and subsets of surrounding populations in order to identify likely information pathways and pumps conducive to radicalization (and counter-radicalization), (3) computational models testing hypotheses about the process and evolution of radicalization, which can then be taken back into the field for study. Professor Claudio Cioffi and Professor Andrzej Nowak and their teams will be working on computational models of radicalization, testing hypotheses from Kruglanski's quest for significance model of radicalization and Atran's theory of sacred values.

Beside methodological diversity and convergence, a unique feature of our research program is a focus on controlled *in situ* field studies, both surveys and experiments testing the implications of our models. on a wide range of basic and applied issues in cognitive and social science, including integrated work In this proposal we plan to analyze violent groups that emerged in the Middle East (Egypt) the Maghreb (Morocco), and South and South East Asia (Philippines, Indonesia, Sri Lanka).

Military Transformation and the Rise of Brazil

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

Project Manager: Ana Minvielle, aminvielle@ucsd.edu

Program Officer: Elisa Bienenstock, 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.

Conventional explanations of emerging powers tend to be retrospective and focused on broad indicators such as population and economic activity for identifying potential great powers. While these are useful indicators for identifying some obvious emerging powers, such as France in the 15th and 16th century, they are not the only indicators nor are they the most useful for identifying powers that might unexpectedly achieve disproportionate influence in the international system. For example, few would have expected the Dutch to wield such high levels of influence by the end of the 17th century considering their population size, a traditional metric of military power, but rather it was their trade and financial technology that made them one of the power centers of Europe. Similarly, there was no particular reason to expect that Portugal under Henry the Navigator would make such strides in long-range exploration and trade. The technologies used by the Portuguese to circumnavigate Africa were not unusual in the Mediterranean, but it was Prince Henry that was able to put together a system of innovation, technological development, resourcing of capabilities and political structures that allowed Portugal to have a disproportionate impact on other regions of the world.

The project will use the case of Brazil as a potential great power to generate insights into the relationship among science, technology and military transformation while pushing the boundaries of social science in multiple areas. Brazil is an important case for elaborating and testing these theories and the new data collected will be available for comparative research beyond the Brazilian case. The country has the potential for great power status based on some traditional indicators (economic, population, diplomacy), but there is also the view that it may not be able to put together the big package of technology, intentions and capabilities that would allow it to influence international system in a disproportionate way. Significantly for social science research, Brazil flirted with rising power status in the early 20th century and the 1970s, failing both times. Brazil is also interesting because, based on its existing nuclear program, deep-sea oil exploration, and implementation of large-scale remote sensing networks in the Amazon (SIVAM), is clearly capable of implementing state-led technology projects.

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.

Anticipated Outcomes of Research:

Project report and peer-reviewed articles

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. Unwilling to depend on others for technologies fundamental to its national defense, Brazil requires foreign companies that wish to sell in Brazil to produce in partnership with Brazilian companies, thus ensuring transfer of technological know-how. 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.

Quantifying Structural Transformation in China

Principal Investigator: **David Meyer**, University of California, San Diego, dmeyer@math.ucsd.edu

Co-PI: Victor Shih, University of California, San Diego

Program Officer: Elisa Bienenstock, Army Research Office

The procedures for leadership transitions in China seem to be increasingly institutionalized, but they are still far from transparent. The strengths of China's economy and military, both supported by scientific and technological capabilities on trajectories to becoming world-class, however, make understanding Chinese leadership crucial for US national defense planning. 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. Thus we propose to develop quantitative measures of difference between partial rankings and apply them to the dynamics of the CC and also the party congresses held by all major state-owned units. Once an absolute rate of turnover has been estimated, anomalous turnovers can be identified and then examined as possible indicators for behind-the-scene political conflict.

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, we propose 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 propose 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.

Terrorist Alliances: Causes, Dynamics, and Consequences

Principal Investigator: **Philip Potter**, University of Michigan, pbkp@umich.edu

Co-PI: **Erica Chenoweth**, University of Denver

Co-PI: **Michael Horowitz**, University of Pennsylvania

Program Officer: **Harold Hawkins**, 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 often result in enhanced capabilities for the linked groups, leading to higher casualties when those groups engage in attacks. When and how do terrorist groups ally with one another, states, and other non-state actors?

Unfortunately, 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 track internal terrorist networks—or the relationships within certain groups like Al Qaeda. We believe that a clearer understanding of the implications these relationships will yield significant benefits for those interested in reducing the capacity of these groups to inflict harm.

Methodology

We will begin our dataset construction by generating a list of all terrorist groups known to exist from 1945-present. We can leverage some existing databases to assist in this effort, including the Terrorism Knowledge Base (TKB), a collaborative effort between the Memorial Institute for the Prevention of Terrorism (MIPT) and the RAND Corporation, the START database at the University of Maryland, and the National Counterterrorism Center database. Our data collection effort will focus on 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 intend to adopt a three-tiered data-collection strategy to build on the information available in the TKB and START data. First, we will utilize content analysis of publically available media and scholarly sources to document the validity of these alliances described by prior scholarship 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 intend to 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 intent is to use our data and the resulting research to better understand three issues of key concern to the Department of Defense. 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 also help us to better understand how to prevent indecisive 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. Our hope is these contributions will enable counterterrorism officials to understand and track these linkages. Third, and finally, our project will be the first to systematically study the disruption and breakdown of terrorist alliances. While groups such as al Qaeda have experienced significant setbacks due to American efforts, they still represent a serious threat to American national security. The insights drawn from this study can help design more effective strategies for breaking the links between al Qaeda and its affiliated groups and, as al Qaeda declines, mitigating the risk that jihadis previously associated with al Qaeda could spin off and form new groups, and challenges from non-state actors could develop in new areas.

Anticipated Outcomes of Research

- A data set, which we will make publicly available.
- An interactive website containing the dataset, a resource bibliography, and profiles on each terrorist group alliance, and animated network diagrams.
- 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
 - A 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

Papers Already Generated through Minerva research

- Horowitz, M, and P.B.K. Potter “Allying to Kill: Terrorist Intergroup Cooperation and the Consequences for Lethality” *Journal of Conflict Resolution*, Revise and Resubmit.
- Potter, P. B. K. “Terrorism and Two Chinas” *Asian Survey*, Under Review.

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

Principal Investigator: **Lincoln Pratson**, Nicholas School of the Environment, Duke University,

Co-PI: **Gary Gereffi**, Center on Globalization, Governance & Competitiveness, Duke University

POC: lincoln.pratson@duke.edu

Program Officer: Jeffrey Johnson, Army Research Office

Research Problem:

Recent civil unrest in the Middle East and North Africa (MENA) threatened oil and gas production in Egypt and shut down oil exports from Libya, raising concerns about a broader regional conflict that could affect energy exports from other MENA nations. This has helped drive a global surge in fuel prices, and in turn food prices, prompting worry at the International Monetary Fund that if the spike in food prices continues, hundreds of thousands of people, many of them children, could be at risk of starvation and malnutrition. Such an outcome would not only undermine development gains made over the past decade in MENA, but could further fuel social unrest in the region and potentially lead to war.

Recognizing the global importance of food security in MENA, governments, international agencies and non-governmental organizations (NGOs) are working to mitigate food shortages, high food prices, and price volatility in the region. At present, these groups are attempting to identify countries at risk to high food prices based on chronic food shortages and inflation. Proposals have been made for international reserves combined with a “virtual reserve” system managed through commodity futures and options trading to reduce price volatility. The World Bank, United Nations, U.S. Agency for International Development, and other organizations are giving priority to strategies for improving safety nets and better managing exposure to market volatility, increasing agricultural and water productivity, and reducing vulnerability to international food price shocks through improved grain logistics, storage and handling. MENA’s water problems are making improving irrigation efficiency and managing water scarcity critical to programs as water scarcity is projected to worsen due to climate change and population growth.

Methodology:

We propose to identify the energy-exporting MENA countries whose food staples are at most risk to insecurity. These staples form a major source of the caloric needs for the peoples in this region and include rice, wheat and corn. We will then identify and quantify 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 and geopolitical dynamics with other nations. The analysis will also include the development of a database that will be integrated with GIS so that spatial information on the supply chains can be mapped and analyzed geographically.

With this understanding, specific risks to the supply chains can be determined and explored in scenario analyses, allowing for the development and prioritization of defensive and/or proactive strategies to deal with problems arising from food shortages in these countries. Our approach will also provide a framework for conducting similar security analyses involving food and other types of supply chains elsewhere in the world.

Anticipated Outcomes of Research:

Over the course of this project, we expect to achieve the following results:

- Development of a GIS-based database that characterize the food security of the MENA countries in terms of (1) the availability and affordability of food, (2) the dependency of the countries on imports of various grain staples, and (3) the strength of the supply chain for these imports on the basis of sources and infrastructure for supplying these grains.
- Development of a system for ranking the food security of the MENA countries that involves all three types of criteria contained in the GIS database.
- Creation of a set of maps that (1) depict grain imports to the MENA countries and energy-resource exports from the countries, and that (2) are dynamically linked to the GIS database so that the maps will automatically reflect updates to the database.
- Formulation of a set of detailed GVC models for grain imports to three at-risk MENA countries.
- Creation of a set of maps that depict these GVCs, indicate the entities involved in the GVCs, and show risks at key nodes across the GVCs.
- Development of a time-varying deterministic model of dynamic interactions between the GVCs and environmental variables that can affect the functioning of the GVCs.

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

Our analysis will support the objective of Topic #4 in the Minerva Research Initiative, which is to establish new theories and models of societal resilience and collapse in response to external pressures related to energy, environmental stressors, and resource uncertainty and change. All of these stressors tie to food security, concerns over which can lead to social upheavals that test the resiliency of a society and even lead to its collapse. By developing 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.

China's Emerging Capabilities in Energy Technology Innovation and Development

Edward Steinfeld, Massachusetts Institute of Technology, edstein@mit.edu

Program Officer: Elisa Bienenstock, Army Research Office

Research Problem:

Theories of late development characterize industrialization in the late 20th and early 21st centuries as a process of technology mimicry and reverse engineering. Contemporary industrial development is understood to revolve around not invention or innovation per se, but rather the duplication of mature technologies already mastered by commercial incumbents from advanced nations. Entrants from emerging economies, through knowledge transfer and learning, first mimic and then outcompete their global counterparts. Scholars of present day China, while differing in their assessments of Chinese industrial capabilities, generally assume this framing of late development.

This research project explores an alternative, innovation-centric theory of theory development, one motivated empirically by a recent shift in Chinese development strategy. China for at least two decades has been expanding its national technological capabilities, particularly in the types of manufacturing industries – i.e., electronics, automobiles, information technology equipment – upon which traditional conceptualizations of industrialization have been based. In the last 5 to 7 years, however, China's developmental emphasis has shifted to the energy sector. Leading the world in energy technology investment since 2009, China is now mandating the domestic deployment of new-to-the-world systems in civilian nuclear power, coal gasification, advanced biofuels, renewable (wind and solar) power generation, battery production, and smart grid systems. Chinese commercial players are participating directly in the production of these technologies, few of which can be considered mature or fully commercialized. The question is whether this behavior is different from technology mimicry and reverse engineering.

The working hypothesis of this project is that distinctive features of energy technology -- their high capital costs, low production volumes, long product cycles, and substantial system integration challenges -- translate into an innovation and commercialization process different from that seen in traditional manufacturing industries. The process in energy largely eliminates possibilities for reverse engineering by newly industrializing entrants. However, it affords these entrants opportunities for direct participation in the commercialization process itself, particularly when that process unfolds in the new entrants' domestic market. To the extent they prove capable of grasping such opportunities, these entrants would be engaged not in the reproduction of existing technologies, but instead in the origination of entirely new and globally-leading ones. Given that the phenomenon is unfolding at nationwide scale in China, its observation holds out the possibility for an alternative, innovation-centric theory of late development.

Methodology:

The project is currently proceeding methodologically through firm-based qualitative case comparisons across five energy technology domains: civilian nuclear power, coal gasification, wind turbine manufacturing, solar cell fabrication, and battery manufacturing. Each of these areas involves new technology development and extensive partnerships between overseas and Chinese domestic firms. The areas differ, however, in their degree of standardization, the complexity of the systems integration tasks involved, and their connection to the Chinese domestic market. Data are currently being collected

through semi-structured field interviews conducted in both China and the United States at the firm level. Interviews are being conducted either by the principal investigator individually or by multi-person teams from MIT.

Anticipated Outcomes of Research:

This project aims to develop a fine grained understanding of the actual division of labor between Chinese and domestic firms involved in energy technology innovation, the particular skill sets that participants in these endeavors bring to bear, and the manner by which tasks are integrated and coordinated between them. The project intends to provide an understanding of the current capabilities of Chinese firms, the knowledge associated with energy technology commercialization generally, and alternative theoretical framings of industrialization.

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

Energy technologies, because they potentially reduce overseas reliance on energy sources and offer flexibility in the face of resource and environmental constraints, are strategic by definition. This research, by providing understanding of emerging capabilities in China, will allow for comparisons with existing technology capabilities in the U.S. Many of the energy technology systems undergoing commercialization in China, often with American commercial assistance, are not currently slated for deployment in the U.S. The research will provide an industry-focused perspective on to what extent and how the U.S. can maintain adequate domestic capabilities for energy technology production. Several of the technologies in the study -- including solar cells, new generation batteries, and biofuels -- have clear military applications. The study's findings will have implications for whether US defense-related investment in advanced manufacturing should focus on upstream R&D, commercial scale demonstration, rapid high-volume scale-up, or small batch flexible manufacturing.

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

Leonardo A. Villalón, University of Florida, villalon@ufl.edu
Program Officer: Joseph Lyons, Air Force Office of Scientific Research

Research Problem:

This research project will seek answers to questions about the prospects for stability in a set of six African countries—Senegal, Mauritania, Mali, Burkina Faso, Niger, and Chad—stretching across the arid Sahel region south of the Sahara. 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), the consequences of the collapse of the Qaddafi regime in Libya, and most recently the collapse of the political system in Mali and the occupation of the northern half of that country by radical groups affiliated with AQIM. In addition to these threats, endemic underdevelopment and significant demographic changes have magnified pressures on the states of the region. The proposed research will focus comparatively on the capacity of Sahelian states to manage the current pressures, and hence to maintain stability and ensure social order.

We propose to research this issue via 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 today are still being shaped by those forces. Most importantly, given the large Muslim majority in the region, have been the dynamics of religious change; 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 over a three-year period, by a research team at the University of Florida comprised of the PI and three Graduate Research Assistants (GRAs) recruited from PhD students in Political Science and with expertise on Africa, including students themselves from the Sahel. It builds on the PI’s substantial previous research in several countries of the region, on a strong network of ties developed over the course of that research and more recently via an exchange program focused on elections in all six countries, and on the expertise of the GRAs themselves. A faculty advisory committee will also provide input and guidance on the research.

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 done sequentially in paired sets of countries, over an 18-month period. In the first year of the project substantial documentary

research, the preparation of background papers, consultations with visiting specialists, and development and close analysis of datasets on current events and evolving dynamics in the region will all build a strong foundation for preparing for the fieldwork. Over this period the core team will also meet regularly under the supervision of the PI to develop detailed fieldwork protocols of key questions and issues to be researched. Fieldwork will be based primarily on intensive interviewing of key actors relevant to the questions. The PI will also train and closely supervise the GRAs in interviewing and field data recording techniques. We also propose to organize and host two conferences focused on the research over the course of the project.

Anticipated Outcomes, Resources and Products of Research:

We anticipate a number of significant outputs of both academic and policy interest from the research project. These will include the development of a website on the region to serve as a key resource for academics, policymakers, and journalists, the publication of working papers, articles and book chapters, two edited volumes resulting from the 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.

Autocratic Stability During Regime Crises

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

Co-PI: James Honaker, Harvard University

Program Officer: Ivy Estabrooke/Gary Kollmorgan, Office of Naval Research

Research Problem:

This research project will seek answers to questions about the prospects for stability in a set of six Sahel regions south of the Sahara. The predominately Muslim countries of the Sahel are collectively.

Policy makers need to understand dictatorships better in order to craft effective foreign policy, but systematic research that could result in more reliable predictions about dictatorial behavior in different contexts has been limited by inadequate data. 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 regime change. The databases constructed for this research will have a broad impact for future research on international conflict in non-democracies; foreign relations with autocratic countries; the diffusion of dictatorship across time and space; 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 to be generated

- **Latent Dimensions of Authoritarianism.** Using recently coded, time-varying data on autocratic regime characteristics for all dictatorships since 1946, we will 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.