Analyzing Future Complex National Security Challenges within the Joint, Interagency, Intergovernmental, and Multinational Environment

Proteus Futures Workshop: 22–24 August, 2006


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U.S. ARMY WAR COLLEGE
CARLISLE BARRACKS, PENNSYLVANIA 17013

FOREWORD

Dear Colleague:

What follows is the report from the Proteus Futures Academic Workshop: "Analyzing Future Complex National Security Challenges within the Joint, Interagency, Intergovernmental, and Multinational Environment." This academic workshop was the culmination of a year of exploring and building on the applicability of the Proteus Insights for analyzing future national security issues for tomorrow's volatile, uncertain, ambiguous and complex geo-strategic landscape. The Proteus Management Group USA hosted this workshop from 22 to 24 August 2006 at the Collins Center for Strategic Leadership, U.S. Army War College, Carlisle Barracks, Pennsylvania. The workshop provided a forum for academic, interagency, military, and international organizations to exchange the latest information on alternative ways to analyze the future. Specifically, the workshop was designed to promote further discourse, study, and research on the application of Proteus Insights to strategic issues, focusing on the refinement, continued development, and use of the Proteus lenses in future scenarios. It also provided a venue to assist strategic and high-operational level decision makers, planners, and analysts in creative consideration and critical analysis of national security, military and intelligence issues within the Joint, Interagency, Intergovernmental, and Multinational environment.

Representatives from U.S. government agencies, think tanks, academia, and international organizations participated. The workshop participants exchanged information regarding ongoing efforts to analyze future complexity. This report reflects their thoughts.

We thank each participant for their time, efforts, and ideas, which made this a successful workshop. The ideas expressed in this report will greatly assist future analysts and decision makers as they look at the complex challenges that face the international community.

Sincerely,

Ms. Linda Williams and Mr. William Waddell
Co-Chairs, Proteus Management Group


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EXECUTIVE SUMMARY

Background: From 22 to 24 August 2006 the Proteus Management Group USA hosted an Academic Workshop to bring together specialists from academia, the defense community, and civilian organizations to share information and insights on analyzing future complex national security challenges.

Format: The workshop format included a series of keynote presentations, panel presentations, and a demonstration of the Protean Media.

Participants: There were sixty-three workshop participants from a broad spectrum of organizations involved in examining future complexity. The exchange between individuals representing many diverse organizational cultures ensured a rich and lively discussion of alternative ways to analyze the future.

Keynote Presentations: The workshop included a series of keynote presentations to provide a broad context within which to examine the applicability of the Proteus Insights. The presentations included the following topics:

- Proteus: The Genesis, Then and Now –Mr. Chris Schroeder, Northrop Grumman Corporation
- Mapping The Global Future: Seeing over the Horizon –Mr. Kenneth Knight, Office of the Director of National Intelligence
- National Security Management in the Age of Complexity –Mr. Leon Fuerth, Elliot School of International Affairs, The George Washington University
- Critical Thinking, Relative Perspective, and the Proteus Canada Connection –Mr. Jack Smith, National Research Council, Canada
- Israel's Future Security Environment in the Wake of the Israel-Hezbollah War? –Dr. Joshua Teitelbaum, Moshe Dayan Center, Tel Aviv University
- Future Conflicts: Values and Paradoxes –Dr. John Alexander, Senior Fellow, Joint Special Operations University

- Possibilities and Prospects for Political Liberalization in the Persian Gulf Region –Dr. Joshua Teitelbaum, Moshe Dayan Center, Tel Aviv University
- The Sunni-Shia Divide: Is a Coalition Viable in the Islamist Camp? –Dr Ely Karmon, International Institute for Counterterrorism, Israel

Panel Discussions: There were five panels which addressed specific aspects of looking at alternative futures:

- Geo-strategic Policy and Strategy
- Psychological, Religious, Social, and Cultural Complexity in Future Policy and Strategy Formulation
- Future Strategic and Operational Intelligence Challenges
- Future Technology
- Future Modeling, Simulation and Gaming Technology in Strategic and Operational Analysis, Decision Making, and Experiential Education

Protean Media: Mr. Bill Waddell and Dr. David Harries demonstrated the Protean Media application, which is an educational role-playing simulation that incorporates the use of the Protean Insights. The demonstration provided workshop participants an opportunity to examine the results of human interactions and subsequent reactions, convergence and divergence, and conflict and agreement.

INTRODUCTION

Overview

From 22 to 24 August 2006 the Proteus Management Group USA hosted an Academic Workshop to bring together specialists from academia, the defense community, and civilian organizations to share information and insights on analyzing future complex national security challenges.

Background

The Proteus project originated as an advanced concepts research initiative at the U.S. National Reconnaissance Office in 1999, employing commercially proven scenario-based methodology. In the course of exploring alternate future scenarios and considering possible national security issues, the project team published their interim results in the book Proteus Insights from 2020. This book has been used as a basis to enable further strategic research and inspired the initiative of the international Proteus Consortium U.S. Army War College (lead and Project Manager), National Security Agency, Office of the Director of National Intelligence (Central Intelligence Agency), National Research Council of Canada (Proteus & Foresight Canada), National Geospatial Agency, Naval Postgraduate School, and the National Reconnaissance Office. Today, the Proteus Management Group (PMG) is an international consortium and "think tank" focusing on the refinement, continued development, and practical application of the Proteus' set of established insights. These insights will assist decision makers, planners, and analysts in several ways:

- Present strategic and high-operational level decision makers, planners, and analysts in "outside the box" consideration and critical analysis of national military and intelligence issues within the Joint, Interagency, Intergovernmental and Multinational (JIIM) environment
- Help the strategic decision maker, planner, or analyst to consider values and perceptions of future target audiences by systematically looking "outside" of the values contained in Western civilization

when considering the application of all elements of national power (Diplomatic, Informational, Military, and Economic)

- Identify and consider the second and third order effects and unintended consequences of policy and strategy decisions

Workshop Objectives

The primary objective of the workshop was to bring together specialists from both military and civilian organizations to promote further discourse, study and research on the application of Proteus Insights (PI) to Strategic Issues, focusing on the refinement, continued development and use of the Proteus lenses in future scenarios. The workshop also provided a forum for U.S. government, academic, and private organizations to exchange ideas related to Proteus Insights on how to cope with uncertainty, analyze, and plan for and make decisions on future national security issues in the complex geo-strategic environment.

Workshop Design

The workshop was designed to exchange information on alternative ways to view contemporary and future national security challenges. There were a series of background presentations and five panels that looked at alternative ways to view the future. The workshop also included a demonstration of the Protean Media.

Participants

The sixty-three workshop participants represented a broad spectrum of organizations involved in examining the future through varied lenses. The discussions between individuals representing so many diverse organizational cultures ensured a rich and lively exchange on ways to analyze and interpret future events. The workshop also presented an opportunity to build relationships and deepen the understanding between and among the participants. Each left with a fuller appreciation of the perspective of attendees from other organizations. The interpersonal relationships and contacts created at this workshop will be key elements in maturing the cooperation and exchange of ideas among the membership of the Proteus community.

Report Organization

The following chapter contains summaries of the background briefings and the panel presentations. Chapter Three describes the Protean Media demonstration. This report also contains three appendices. Appendix A is the workshop agenda. Appendix B provides a list of workshop participants. Appendix C contains brief biographical sketches of the workshop presenters.


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PRESENTATIONS

Introductory Remarks

Major General David Huntoon, the U.S. Army War College Commandant, opened the workshop by noting the difficulties of coming to closure on the issues and challenges that the group will be examining. He enjoined the group to shed light on the changes that our nation faces. He emphasized that Proteus would be a useful tool for "preparing for the inevitability of failure." He concluded by stating that all the resources of the Army War College were available to support workshop attendees while here and after they had departed.

Mr. Bill Waddell, Co-Chair of the Proteus Management Group welcomed the participants and introduced the distinguished visitors, guest speakers and panel chairpersons. After introductions, he gave a brief overview of the overall Proteus Management Group effort, followed by the workshop purpose and objectives as described earlier.

Mr. Waddell noted that the Proteus Management Group (PMG) was established in October 2005 at the Center for Strategic Leadership under the sponsorship of the Office of the Director for National Intelligence (DNI). Mr. Bill Wimbish is currently the project coordinator/manager working with the PMG Board of Directors. The PMG is closely associated with Proteus Canada.

He stated that the goal of the PMG is to examine future complex challenges, primarily at the national and strategic levels. The methodology employed utilizes a set of lenses based on "ten future insights and five key planes of influence" developed during a National Reconnaissance Office (NRO) study performed in 1999 and 2000. These lenses provide a nontraditional alternative for viewing the future geo-strategic environment. The methodology also considers the global information grid and advanced technology as key enablers that add more uncertainty, and complexity and provide both threats and opportunities.

He emphasized that the PMG is not in any way advocating replacing current/future intelligence analysis or decision-making processes, but is

suggesting some new angles to be explored as outlined in Proteus. He expressed the hope that the organization will continue to grow and become an umbrella/catalyst to promote related work in this area, and he was pleased that some very positive outcomes to this end had already been achieved. He further hoped that the workshop would not only be a culmination of this year's work, but also a springboard for new and innovative activities in the future. The organization has over two hundred members from across the intelligence community, government, the interagency, Department of Defense (DoD), academia, he business. He concluded by inviting all workshop participants to stay actively involved with this new, emerging effort.

Background Briefings: Tuesday, 22 August

There were two background briefings presented during the opening morning session.

Proteus: The Genesis, Then and Now

Mr. Chris Schroeder of The Analytical Science Corporation (TASC), Northrop Grumman, and former program manager of the original Proteus Study presented an historical overview of the Proteus effort. In 1999, his team was chartered by the NRO's Advanced Systems and Technology Directorate to explore the "Problem Space" for the year 2020 and assist in identifying technology needs for "Systems-After-Next." The approach would be in the form of a Problem Identification and Definition (PID) initiative to create a 2020 Forecast Document and a 2020 Observables Document.

The PID 2020 Forecast Document consisted of Future Intelligence Needs (eight categories), Global Trends (five categories), Probable World Scenarios, "Wild Card" Events, Asymmetric Warfare Concerns and Global Weapon Trends. The Observables Document consisted of Problem Description, Time Phases, Target Types, Data Needs, Data Fusion, Analysts, Software, Warning, Area Coverage, Sensor-to-Shooter and Phenomenology: Macro Infrastructures of Intelligence Targets/ Micro: Signatures that Sensors Detect.

The scenario-based planning group formed a core team, identified mission "drivers" and planning space "dimensions," identified "worlds," and wrote "narrative histories." They then prepared for and conducted a series of workshops and synthesized the findings.

The team developed sixteen scenarios. Each scenario planning space incorporated a varying transnational openness and mobility, global structures of influence, U.S. government global involvement, perceived threats to U.S. quality of life, and U.S. economic position and strength. From these sixteen scenarios, the following five were selected to be the grist for the workshop problem-solving sessions:

- **Amazon Plague:** The world of 2020 looks bleak! Since 2010, the globe has been swept by highly contagious, deadly viruses that flare up, die down, and then return in mutated form. Efforts to contain and counteract the plagues have been only marginally effective. Consequently, the world economy has declined sharply as trade and commerce have dried up.

- **The Enemy Within:** The United States of 2020 looks bleak! Over the past twenty years, the United States has slowly and unexpectedly, but quite dramatically, unraveled. Like other nations at the height of their power, our disagreements, ethnic tensions, and single-issue politics have torn the social fabric. U.S. society is fractured and fragmented politically, socially, and culturally.

- **New Camelot:** Times are good for the United States and most of the world! U.S. citizens enjoy economic growth, international stability, technological progress, and the fruits of an energy breakthrough that promises cheap fuel and a clean environment. Most American citizens sleep soundly, without worries of global conflicts, physical threats, or financial insecurities.

- **Yankee Going Home:** The world of 2020 looks like a confused mess! Little is clear except that the world has

changed in fundamental ways. Who is running things? Why are certain decisions being made? What goals are being pursued? Who are friends, and who are enemies? The United States has withdrawn from the world after a series of terrible foreign policy blunders and after a long-standing and deep recession. The world is heavily influenced by the memories of terrorism, regional war, and worldwide instability that have followed this U.S. isolationism.

- **Militant Shangri-La:** Into this world enters a new, worrisome alliance: South Africa, India, Indonesia, China, and other pariahs to the Western social philosophy of individual liberty and human rights. This alliance operates both legitimately as a block of aligned nation-states and illegitimately as criminal cartels. Their Grand Strategy is to keep the world "on the edge of chaos."

The work groups consisted of "insiders" from the intelligence community and "outsiders" from various academic and scientific backgrounds. The groups' task was to identify threats and problems in each of these scenarios. One of the intriguing findings was that each group had different ideas and experienced varying degrees of difficulty concerning "how" to identify the problem sets and threats. The process also revealed biases that often blinded the intelligence community and precluded creative thought and alternate means of problem solving when confronted with future uncertainty.

The NRO's Proteus study spawned numerous technical and classified products, but most importantly, it generated a set of nine key Insights on "how" to think about the future versus "what" to think. Those insights are described in detail in the original book, *Proteus: Insights from 2020*. The study was the genesis of the initial Proteus consortium and guides the current PMG effort.

Mapping the Global Future: Seeing over the Horizon

Mr. Ken Knight, the National Intelligence Officer for Warning, Office of the Director of National Intelligence, described the National

Intelligence Council's (NIC) 2020 Project: *Mapping the Global Future*. This project looked at the trends that are shaping the world. He noted that Proteus will be a useful tool to help the NIC's long-range analysis. He then described the projects approach, which was to build on previous efforts while incorporating other methodologies and studies. There were some one thousand participants in the approximately thirty national and international conferences that the NIC conducted. They employed a dedicated, sequential scenario-development process. One of the highlights of their approach was to use interactive, web-based tools that enhanced participation and analysis.

Mr. Knight highlighted seven key global themes, while noting that someone else describing the project might highlight others. Transition and Turmoil would continue to be a constant. New Global Players would emerge who would transform the global landscape; at a minimum, these included China, India, and others. The NIC assessment of Europe was that it has enduring advantages but faces significant challenges. Their analysis of Japan in the future was that it would depend on whether Japan decided to "balance against or bandwagon with" China. NIC analysts were divided on whether Russia was an emerging energy superpower or a state in decline. Mr. Knight described Globalization as "ubiquitous, dominant, and still being shaped." The major question was whether anything could derail the globalization trend. The NIC's snapshot of the future identified New Challenges to Governance. These include technology dispersion and globalization, uneven demographic and economic trends, the emergence of identity politics and especially religion, sustaining the democracy "wave," migrant populations, and the need to revamp regional and global institutions. The fifth trend discussed was Pervasive Insecurity resulting from factors such as significant economic, cultural, and political convulsions and an enduring sense of vulnerability. This, perhaps, would lead to "fewer wars but more conflicts." The next trend was Transmuting International Terrorism in which NIC analysts saw the root causes enduring but the threat evolving. Al Qaeda would be superseded by an eclectic array of decentralized groups, cells, and individuals who would be internet enabled. The final trend that Mr. Knight highlighted was the international community's Reacting to U.S.

Power. He noted that there was increasing apprehension about the United States and its role in international affairs.

Mr. Knight concluded his presentation by discussing the policy implications of these trends. He noted that the United States retains enormous advantages, but that we are increasingly challenged in four areas. We are and will continue to be confronted by states, groups, and individuals with significant niche capabilities. The future will hold problems that span political, economic, regional, social, technological, and bureaucratic lines. "Ethical" issues will be prominent. And, finally, the United States will have to deal with the expectations of foreign and domestic populations and leaders.

Luncheon Address: Professor Leon Fuerth

Professor Leon Fuerth from the Elliot School of International Affairs at George Washington University spoke on "National Security Management in the Age of Complexity." Based on his extensive experience in government and his observations from the "Forward Engagement" project, he reviewed the contemporary structure of governance. He noted that the current United States government model was an eighteenth century system designed for deliberation. The challenge was how to adapt it for use in the 21st century. He asked the question "is it possible for democratic governance to survive?" He noted that the current strategy and management systems must be significantly readjusted. While our Cold War world security agenda was essentially confined to a point-source – the USSR – the current pattern is much different. Today's problems are more likely to be approximately equal in magnitude; that is, we cannot afford to divert our attention from any one of them for long and that designating one issue as dominant could be a serious mistake. These problems require broadened expertise. Today, it is necessary to deploy parallel analytic and policy-making resources to deal with concerns such as terrorism. The very concept of national security must be expanded. He noted that with this expansion comes a major challenge to the organizations upon which we rely for management of national policy. National security is now a compound function of how well the United States manages all of its assets in the present and with how much foresight we invest them for our future.

Reflecting on his time in government, Fuerth noted that efforts have been made to create a more integrated approach to governance. The Clinton-Gore team designed the National Economic Council for the purpose of coordinating economic policy among cabinet departments and executive agencies and to help work out difficult trade-offs between domestic and international issues, including many that crossed over into matters of national security. He stated that, although the cabinet appears to be an important locus for policy management, it is more of a photo-op than a governing institution. Its members do not meet for the purpose of creating policy, but only to affirm it. The Executive Branch in its current incarnation is not able to deal effectively with complex, interlocking issues that are major challenges to the future power position of the United States and the well-being of its people.

Professor Fuerth's analysis is that redesigning the national security infrastructure to cope with the new challenges of the 21st century has to start with recognizing how the world has changed. He noted that we are no longer in a period when our most serious security problems were, by nature, "stove-piped," when information about these problems was linear and management was hierarchical. We are now in a period when the problems we face are themselves networked. Information about these problems is marked by complex interaction, and our organization for dealing with them must become flattened and integrated. He felt that the United States needs a form of management that could be called Protean: able to change its shape rapidly to match evolving challenges. He noted that the most promising response to the increased complexity in the problems facing governance is to develop a networked, small, flexible, task-oriented, managerial "supra-structure" designed to be retrofitted to the existing system. Where the bureaucracy creates and defends "stove-pipes" along jurisdictional and substantive boundaries, the new system must allow officials to think and act across them. The cabinet should be reinvented to serve as the primary method for managing-to-task, with different groupings of cabinet officers operating in mission-oriented partnerships for the purpose of attaining deeper coordination. To accomplish this kind of governance, not only new systems, but also a new bureaucratic culture is required. He noted that, from our experience with military reform, networked command and control are essential, but so

too is the culture of jointness—the capacity, based on constant practice, of being able to plan and operate seamlessly across jurisdictional lines.

Professor Fuerth concluded by noting that the challenges of complexity demand that we systematically upgrade self-governance in order to preserve it.

Panel #1: Geo-Strategic Policy and Strategy

Lieutenant Colonel Ike Wilson from the Department of Social Sciences at the United States Military Academy, West Point, chaired the Geo-Strategic Policy and Strategy Panel. He introduced the panelists and moderated the question and answer period.

Combating Complex Irregular Warfare: Grand Strategies and Operational Considerations

Mr. Frank Hoffman, Center for Emerging Threats and Opportunities (CETO), U.S. Marine Corps, reviewed the rise of what some call Fourth Generation Warfare (4GW), or what Mr. Hoffman prefers to call Complex Irregular Warfare (CIW). Today's Long War makes the originators of 4GW more than prophetic. Kaplan's "Coming Anarchy" has arrived with full force, but with more transnational connectivity and political direction. The future portends more lethal strains of system perturbation. While its proponents have done an excellent job of laying out the nature of the challenge, Hoffman stressed the need to move on to prescriptions to combat the rise of 4GW.

Strategic Considerations. In contrast to weighing the traditional strategies of annihilation versus exhaustion, this paper suggests looking at destructive versus constructive strategies. This may be a far better way of examining overall strategies and subcomponents in 4GW or CIW in the future. There are four to five components to each of these fundamental strategic approaches.

The more destructive approaches emphasize kinetic destruction and physical properties. However, the more constructive approaches are needed to respond to a 4GW threat. A constructive strategy seeks to undermine

the true source of strength of the adversary in 4GW, his ideological base, and the attractiveness of his appeal for support, intelligence, or resources. There are a number of indirect approaches within this broader and less kinetic suite of strategies. These two approaches may be also thought of in terms of being "Counter force" or "Counter value." The "Counter value" approach is recommended as the primary strategy.

Operational Considerations. Although there is no prescribed set of phases for the conduct of CIW, it is useful for commanders and their staffs to consider the nominal set of activities listed below. The acronym "MINDOPS" offers a useful device for thinking about the operational efforts needed to successfully thwart a cunning 4GW adversary. This provides a useful grouping of tasks that may allow the commander to envision the application of an interagency task force's efforts in time and place. These activities may be phased but should not be considered sequential. The actual missions and tasks assigned to the Joint Task Force commander may vary this set:

- Mission Analysis
- Isolate Insurgent/Contending Elements from Support
- Neutralize (not destroy) Anti-government Forces
- Develop Host Governance Mechanisms
- Organize Indigenous Security and Intelligence Mechanisms
- Penetrate (if possible)
- Sustain and Reintegrate

Confronted by today's global insurgency, our "third generation" militaries are going to have problems with today's virulent strains of CIW. The conflicts in Afghanistan and Iraq reveal how difficult it is for old habits to die. Defeating 4GW threats will require changes in the way our national security organizations educate their leaders. It will require commanders throughout the military who can work without positional authority, across organizational boundaries, with coalition members, international organizations, and non-military agencies of government.

It requires entirely new forms of operational art and campaign design. It will also require changes in the way military organizations acquire and exploit intelligence and in how they leverage information in their command and control systems. Combating 4GW threats is ultimately an intellectual challenge, certainly one more complicated than a bayonet charge (as T. E. Lawrence suggested). The "MINDOPS" framework was purposely constructed to reinforce the cognitive requirements levied by the rise of 4GW/CIW.

Proteus Insights and the Future of Global Jihadism

Ms. Aidan Kirby and Mr. Shawn Brimley addressed how Proteus Insights can help guide analytical thinking about the current state and future of transnational jihadist terrorism. Ms. Kirby presented first and noted that strategic thinking and planning aimed to confront this international security challenge is currently hampered by reliance on paradigms that are rapidly becoming inaccurate. She pointed out that Proteus Insights provide an effective framework for assessing the changes that radical Islamic terrorism has undergone in recent years and for reasonably predicting the core lines along which its evolution is likely to proceed in the coming years.

While all of the Proteus Insights offer some value to understanding the changing nature of the global jihadist movement, six insights are particularly useful. The presentation used the following six insights as analytical lenses to bring into focus current trends in transnational jihadist terrorism and used those trends to map out potential futures.

Herds: Our success in combating the radical Islamic movement will greatly depend on the extent to which we can decipher the movement of these ideas and answer vital questions such as, what are most important channels for the spread of radical ideologies? Also, what are the lines along which geographically disparate believers align themselves? Some of the most important issues to examine through the concepts of herds have much to do with globalization and the flow of information and how these factors have changed the definition of communities. The Herd insight is apparent in Olivier Roy's concept of the 'deterritorialized'

Muslim community. This lens can help clarify the dynamics between local grievances and the global movement.

Parallel Universe: The significance of the Internet for both radical Islamic movements and specific terrorist networks such as al Qaeda has been profound. Its impacts have been both ideological and operational. Since Afghanistan was lost as a physical sanctuary and headquarters, al Qaeda has effectively exploited the Internet for purposes of recruitment, planning, training, and indoctrination, while Western intelligence agencies have struggled to respond. We lack many of the crucial tools necessary to confront our adversaries in the world of cyberspace. While the global jihad becomes increasingly more accessible to interested parties, the sanctuary that terrorists and Islamic radicals have found in the Internet remains almost impenetrable to those seeking to challenge them. The Parallel Universe insight can be used to help conceptualize the strategic significance of the Internet in the Global War on Terrorism (The Global War on Terrorism is also referred to as The Long War).

Threat/Opportunity Continuum: Analysts interested in how organizations change and adapt in the face of significant pressure would do well to examine how both the United States government and our enemies have dealt with these issues. For every successful adaptation or innovation by the U.S. or its allies, al Qaeda and its affiliates have created and implemented a corresponding innovation. From implementing a more extensive cellular structure, to depending on self-starter networks, to facilitating the influx of foreign jihadists into, and out of, Iraq, and to utilizing the internet as both a strategic and tactical tool, the global jihadist movement is capable of rapid and effective organizational change. Moreover, the dynamics of these transnational networks is more the result of evolutionary trends, than effective hierarchical leadership. The mechanics of these organizational evolutions offers insight into the threat/opportunity continuum we are likely to encounter in the future.

Ms. Kirby also addressed a theme of their paper, specifically how the "al Qaeda" brand was evolving. Al Qaeda is just part of a broader jihadist movement. Some questions include, can al Qaeda control the direction of the jihadist movement? Will it be able to take control of local conflicts

and re-brand them with its own name? And lastly, among which groups is it likely to exert its influence? The evolution of al Qaeda in Iraq is an interesting case study. Ms. Kirby opined that al Qaeda was contending with other organizations who are resonating better with various Iraqi entities. The al Qaeda brand name may very well be resonating better with groups outside the Muslim world.

Mr. Brimley then addressed three Proteus Insights.

Starlight: Much of the Global War on Terrorism has been characterized by retrospective insights. The introduction of new policies and the efforts to reorganize the government over the last several years have largely been guided by a desire to prevent a reoccurrence of a 9/11-style attack. Key examples of this pattern include the various efforts made to strengthen airline security and the bureaucratic reshuffling of the intelligence community in 2004. Furthermore, the understanding of the nature of the threat often reflects a snapshot of al Qaeda taken almost five years ago. Measurements of progress in this war have too often been defined by the capture of 'key' individuals. This approach does not adequately take into account the dynamic and fluid nature of the radical Islamic threat. Through the spectrum of Starlight one can better distinguish between retrospective insights and strategic foresight.

Sanctuary: While al Qaeda proved its spectacular capability on September 11th 2001, it displayed its truly revolutionary nature by virtue of its survival following the loss of Afghanistan as a secure state sanctuary. Analysts need to reconsider the definition of sanctuary as it applies to the future of transnational terrorism. An examination of al Qaeda's relatively secure presence in Europe and Asia as well as its presence in Afghanistan and Iraq defies the current operating paradigm that sees bin Laden and his followers as perpetually on the defensive. Moreover, the movements of jihadists need to be more closely examined, as analysis based solely on origin and destination miss an important dimension of counterterrorism. Sanctuary will have new meaning in the decades ahead, and this lens is critical in examining the current and future dynamics of the jihadist movement.

Power: Five years after the 9/11 attacks, the United States does not appear to have improved its strategic position in the Middle East or with the Muslim world. Recent arrests of al Qaeda-inspired groups from Toronto to Miami and London seem to indicate that the jihadist narrative has increased its influence since 9/11. At the core of the Long War is the fight over the type of power most relevant to twenty-first century conflicts. Has the United States and its allies used their power efficaciously? Do we have the instruments of power necessary to compete with transnational groups?

Mr. Brimley noted that two statements from *Proteus: Insights from 2020* are highly relevant when thinking about the current strategic picture in the context of Power:

- "When Power erodes or it is an inappropriate match to an adversary, the best case is a sort of strategic impotence. The worst case is that you are open to strategic surprise."

- "Failure to understand the full dimensionality of Power risks blindness to instruments of power that can threaten you."

As Hezbollah fighters and supporters emerge from the rubble of southern Lebanon with what appears to be enhanced credibility and influence, the power of this group to affect the strategic landscape grows as well. With access to the technological means to attack a regional power like Israel and the ability to survive any conceivable response, Hezbollah appears to be the best guerrilla force in the world. It appears that Israel's power has eroded after their arguably strategically incompetent response to a strategic surprise. This is not to argue that there were many good options for Israel, but to advance the idea that the lack of available instruments to wage what Frank Hoffman calls 'complex irregular warfare' is a pernicious and common problem among states threatened by non-state terror groups.

The characteristics of power are changing as globalization opens new avenues to those interested in confronting strong regional powers and global hegemons. Western reactions to the provocations of ideologically

motivated non-state actors have not, it seems, been adequate. The Long War will require better strategic thinking and better operational tools.

Mr. Brimley concluded by describing two themes. He noted the development of what he termed "hybrid cells." These next generation cells will contain local radicals plus veterans from other conflicts. The final theme he discussed was the emergence of a Shiite revival. This might cause al Qaeda to adopt a more radical Sunni outlook.

Democracy Promotion and Human Rights Development in the Middle East: A Path Dependency Theory Approach

Ms. Pippi Van Slooten argued that, while the United States is learning the lessons necessary to wage an ongoing battle against al Qaeda and other international terror organizations that seek to destabilize world peace efforts, the United Nations (UN) has already learned the lessons necessary to encourage and promote democracy in the global community. She advocated a division of labor where the United States withdraws from a democracy promotion agenda, which it is not suited for, and that the UN adopt the path dependency approach to democracy promotion as described by Juan Linz and Alfred Stepan in their book, *The Breakdown of Democratic Regimes: Crisis, Breakdown and Reequilibration*. Their approach takes into account the particular nation's start point and guides that nation through the democratic transition process to eventual democratic consolidation.

To explain her argument, she discussed the problems with the U.S. role in democracy promotion abroad and the promise of UN democracy promotion and its contribution to global peace and security. Finally, she provided an analysis of the case of Qatar as a promising example of internal democracy promotion that should be encouraged along its current path of development to democratic consolidation.

Addressing the Curse of the 21st Century: Considerations and Updates to National Strategy for Victory in Iraq (NSVI)

Major Kathleen Meilhan, U.S. Air Force Reserve, discussed the National Strategy for Victory in Iraq (NSVI) and argued that it was

essential to add a fourth track, a "Strategic Influence" track, that includes the counter-insurgency enablers Strategic Insight, Influence and Ideology Management (SIIIM), to the NSVI (in addition to Security, Economic and Political). She stressed that, if the NSVI included a Strategic Influence track, a number of important topics would be taken into account by U.S. government agencies as they addressed the Iraqi conundrum. These topics include tribes and culture in Iraq, history, problems, implications, opportunities, and Islamic conflict management. She noted that, while, as General John Abizaid has said, "the curse of the 21st century is undoubtedly going to be getting diverse people of diverse religions to live together," the problem expands beyond religion. U.S. government leaders must understand the broader cultural context in which they find themselves operating in order to communicate effectively and to appropriately plan for operations. Major Meilhan described a policy paper she wrote entitled, *Iraq Disengagement – Twenty Ten Plan toward a Deliberate, Phased Handover*. This paper highlighted four essential components that were needed ensure success: Security, Diplomacy, Development, and Ethos Development/War of Ideas. However, when the administration developed its policy toward Iraq, it identified only three tracks: Security, Economic, and Political. She believes that the DoD could lead the way by integrating the SIIIM concept into its own strategic policy, increasing operational effectiveness, and providing an example for other U.S. government agencies.

Strength and Honor: The Quest for 'Sustainable Security'

Lieutenant Colonel Isaiah Wilson described his paper as a futures piece and, as such, an exploration in "heresy." His paper reconsidered what we have come to regard as the modern-age of war and considered a new alternative future of war and peace. His specific analytical focus attempts to go beyond the popular contemporary descriptions of the paradox within the American way of war (the tendency to fail to win the peace in spite of unmatched prowess at winning the battles in our warfare) and even beyond the debates over whether or not we are witnessing and experiencing a new era of 4GW. His analysis centers on the how of contemporary U.S./Western intervention practices as a tool of national and 'Westphalian' intervention policy and strategies and particularly as

they relate to issues of security. His analytic focus to is to examine what can be seen in our manner of intervention (how we tend to wage war and wage peace), what we can learn about ourselves in terms of how we "see" war and warfare, and to differentiate these concepts and practices from how we have traditionally tended to view peace and participate in peace operations (peace-fare). The theoretical apparatus that allows for this sort of reconsideration goes well beyond traditional modern-era realists' approaches and explanations to international affairs (which seek answers to the question of why nations conflict and cooperate through the lens of material-based power political relationships) toward critical theory apparatuses – specifically, constructivism. Constructivism allows one to consider – reconsider – the standing notions of war and peace (warfare and peace-fare) in a dynamic and humanist way...as a creation of man and, therefore, malleable and reflective of any particular given time and place in world affairs and human history. In short, this constructivist examination allows the author to propose that War – and Peace – at any given time and place is a sign of the times. As such, the essential question – beyond even the important question of whether or not we today live in an era of 4GW – is the question of whether our current understanding of what constitutes a state, condition, or act of "war" versus peace is an accurate and healthy sign of the contemporary times?

Lieutenant Colonel Wilson noted that there is an essential question: How to Achieve a 'Viable Peace' through Intervention? Getting at this essential question forces one, as a student and as a practitioner of war and peace, to think beyond the modern-age focuses on the instrumentality of warfare and peace-fare and progress toward reflections on the purpose of war and warfare. Refocusing on purpose prior to a consideration of tasks, it is hypothesized in this paper, rightly aligns our thoughts and new practices toward both war and peace in this new century – new thoughts and practices that Colonel Wilson proposes will more effectively and legitimately reflect the challenges and opportunities of the contemporary environment of conduct.

He stated that we now face a global challenge, a challenge faced not only by the United States of America, but by all Westphalian nation-states: how to effectively and legitimately apply power, particularly

military power, in a manner that can ensure a sustainable – and legitimate – security future? His paper offers a new look at some of the traditional ideas about the "power" (strength) and legitimacy (honor) of American "SuperPower," the limits of American power, particularly American military power (and specifically when that power is applied unilaterally) as a cure-all, the rising illegitimacy and illiberalism of the mailed-fist strategic approach to U.S. intervention policy, and how abiding by these traditional doctrinal approaches to warfare "versus" peace-fare are actually feeding international instability and the security dilemmas we face as nation and as a community of nations rather than serving as a solution to these ills. Colonel Wilson's paper ends as any futures piece on war and peace should aspire to end: by offering an alternative conception of and approach to war and peace, a conception that better reflects the realities of today and offers more hope in our capacities to solve the dilemmas of the probable tomorrows we face.

Dinner Address: Mr. Jack Smith

Mr. Jack Smith, Director of Science and Technology Foresight for the Office of the National Science Advisor, spoke on "Critical Thinking, Relative Perspective and the Proteus Canada Connection." Mr. Smith addressed two areas. First he discussed the Protean Insights, their relevance in framing the future, and what challenges he feels we will face in the future. Secondly he recounted the serendipitous events that resulted in the formation of Proteus Canada and went on to to speculate on the relevance of the organization's work to future innovation as Canada and the United States look into the future to address threat and to seize opportunities.

Mr. Smith began with a brief review of the original Protean Insights and the original Proteus study futures scenarios and discussed the significant and relevance of each.

He felt that the ten Insights (the original nine, plus one) point toward a new way of considering unintended consequences and understanding possible cascading effects of strategic decisions: whether commercial, diplomatic, or military. These Insights can be used as a set of lenses to view future issues through a different mindset, to consider issues through

a different value set, and to think creatively, not traditionally. They can be helpful in framing complex strategic problems and developing holistic solution sets, and can assist in understanding the characteristics of the future environment: the actors, their attributes, where they act, and how they interact.

He went on to assert that these Insights serve as guideposts for exploring new ideas, ideas that will be needed to address future threats in an ever-changing world where complex challenges will abound. He addressed these challenges, using a comparative analogy from Neal Stephenson's *Baroque Cycle*, a three volume set of eight novels set in 1665-1715. The first volume described an emergence of complex European national and international systems and the study of the sciences during the period of enlightenment. During the Enlightenment, transition and change accelerated. This period witnessed both the emergence of new sources of authority and the establishment of nation states. These developments had profound effects on western society, similar in scope to the effects we see today.

The second volume addressed confusion and charted the mounting ambiguities of the world at the dawn of the eighteenth century. Again, this is comparable to what we are witnessing in our world today.

Mr. Smith proposed seven sources of ambiguity and strategic challenges that will increase uncertainty and thus will affect the world during the 21st century:

- The rise and continual geometric progression of digital reality and "virtualized everything," rendering replicable our most cherished habits and preferences.
- The suggestion, from Stephen Wolfram, a theoretical physicist and CEO of Wolfram Research, and others, that a new science is emerging, that new insights and new manipulative powers are imminent in terms of physical scale, from "giga" to "nano" – possibly toward understanding what is beyond gravity – and how time, concurrence, and quantum knowledge can be reconciled.

- The centrality of the mind and its science and composition as an advanced electronic system and the growing relationship with knowledge-base machines and artificial life algorithms to mind-brain simulations.

- The emergence of ecosystemic and biosystemic interdependencies in the form of sustainability values and their prospective, convergent impacts on how we live, what we need to respect, and how we as species may be directed, restricted, or unleashed to evolve.

- Global commercial competition challenges arising from the productive and consuming power of large populations such as India, Korea, and China, which are unambiguously seeking to leapfrog into the future and achieve the comforts and benefits that have been accrued by affluent western societies.

- The gestation and inspiration of a more pervasive and deeply rooted fear on the part of many whose sense of complacency and controllable security has been challenged by global terror and its waves of apparent capability.

- The continuing slippage of Newtonian consensus and of the linear, predictive calculus of managed change that has serviced us well since 1670.

He summarized that future change will be rapid, expediential, and that our societies' current confusion on how to approach and keep pace with future challenges facing the United States, Canada, and the rest of the western world is wrought by our lack of knowledge and understanding of other societies and cultures. Therefore, what we may be facing in the future may very well be a "clash of civilizations" as Samuel Huntington suggests. In any case, the fact remains that we will have to look differently at how we proceed in the future to preclude strategic surprise from those who may be able to do our society great harm. This is the importance of looking forward and gaining new insight and methods in order to gain foresight and the requisite knowledge and understanding to overcome these future challenges.

In conclusion, he discussed that they were led to the initial study in 2001 because of its applicability in addressing and solving future technology challenges that his office had been tasked to explore. After some initial fact finding efforts and meetings with NRO to discuss the initial study, the international consortium got off the ground with a group of charter members from Canada and the United States. The Canadian team was invited to the first workshop at the Naval Postgraduate School in 2002. This meeting inspired the Canadian Connection, and with the later introduction of the Protean Media Game, even more momentum was gained. All saw that leveraging the Protean approach as novel and more sensitive to the emerging realities of asymmetric conflict. Over the next several years, the Proteus Canada effort continued to grow, and in 2005, Proteus Canada stood up as a formal organization and hosted its first conference.

Today, Proteus Canada is a nonprofit organization sponsored by the Canadian government and is chartered with developing and expanding new and innovative methods and processes and technology to assist decision makers in gaining foresight and knowledge about threats and seizing opportunities in a future complex world.

Background Briefing: Wednesday, 23 August

Israel's Future Security Environment in the Wake of the Israel-Hezbollah War?

Dr. Joshua Teitelbaum shared his thoughts on possible future directions in the Middle East. He noted that there are currently many questions in Israel in both the military and political circles concerning how the war was conducted. He opined that Israel had suffered a "Katrina-like" disaster. The war was a tactical victory for Israel, but it was a strategic setback because Israel was unable to portray itself as a country able to deter its enemies.

Dr. Teitelbaum stated that in the current environment Israel needed to focus on deterrence and the peace process. He stressed that deterrence is a game of perceptions. Although Israel is widely believed to have nuclear weapons, the high price for employing them negates their use in the types

of localized wars in which Israel finds itself engaged. He noted that the Oslo Accords was a major accomplishment for Yasser Arafat because he was able to bring an armed presence close to the heart of Israel without having to make any major concessions. Israel is now threatened by the Palestinian Authority. Israel decided to unilaterally withdraw from Gaza, as it did from Southern Lebanon. Neighboring states perceive these withdrawals as a sign of Israeli weakness. Israel's timid response to months of attack has been seen as a further sign of its weakness and unwillingness to fully use its military capabilities. The recent conflict can be ascribed to a lack of mutual deterrence. When the war erupted, Israel needed to deal a major blow to Hezbollah, but it ended up seeking to end the war through conflict resolution. The paradox of Israel's willingness to use compromise to solve the situation is that this approach is seen as a sign of weakness by Israel's enemies.

Dr. Teitelbaum described two general approaches to security. The first is the "Axis of Evil" approach that says that Israel's enemies need to be confronted: there needs to be a military action. This is the strategy of the "stick." The other approach, the "Pragmatic or Realistic" approach, sees things in shades of gray. It recognizes the limits of military power. It can be characterized as the strategy of the "carrot." What Israel needs to employ is a strategy that is a mix of deterrence and diplomacy with incentives. Israel needs to be open to new possibilities and alignments. Israel needs to reengage Syria. The international community must remain firm on Iran to include the possible use of a military option.

Panel #2: Psychological, Religious, Social and Cultural Complexity in Future Policy and Strategy Formulation

Ms. Cindy Ayers, National Security Agency Visiting Professor at the Center for Strategic leadership, Army War College, chaired the Psychological, Religious, Social and Cultural Complexity in Future Policy and Strategy Formulation panel. She introduced the presenters and moderated the question and answer period.

A New Angle on the U.S. Military's Cultural Awareness (CA) Campaign: Connecting In-Ranks Diversity to CA

Major Remi Hajjar presented the "cultural imperative argument." He called for a rejuvenated focus in the U.S. military on the fundamental skills needed to effectively process cultural diversity. We are all members of various cultures and subcultures and each of these impacts our world view. These skills include a sufficient understanding of the concept of culture, a person's own cultural memberships and how the most important cultural memberships can cause mental impediments or biases, the need for genuine open-mindedness or cultural relativism while in a professional capacity, and a thirst to appreciate and value diverse others, or at the very least the need to respect diverse people during the conduct of the mission. He examined three concerns within the ranks of the U.S. military to illustrate the importance of the aforementioned fundamentals: spiritual tolerance, women's membership, and anti-homosexual attitudes/conduct. Finally, Major Hajjar argued that building the fundamental skills to effectively process cultural diversity helps the military in all of its missions and situations, not just in enhancing in-ranks' cohesion. Insofar as modern operations require increased emphasis on multinational, interagency, and joint campaigns, and as they highlight the crucial nature of effective interaction with populations (abroad and, as Katrina has shown, at home), these fundamental skills will prove most significant. Furthermore, the U.S. military has an opportunity to bolster these cultural processing skills by addressing some of the internal issues of the force. So, in essence, those in-ranks concerns provide another way to address the transformational cultural awareness initiative of the U.S. military.

Holding it All Together: Present and Future National Cohesion in Saudi Arabia

Dr. Joshua Teitelbaum examined the Saudi system in detail and then presented the various centrifugal forces that are operating in Saudi Arabia today: religious, regional, and tribal. He noted that some of these have developed into an insurgency. In the past, the Saudis have controlled the public space. At one time, it controlled the air waves, including satellite television. Today it no longer controls satellite television and, despite

valiant and expensive attempts at filtering, it cannot control the Internet either. Teitelbaum opined that these developments have the potential to undermine national cohesion.

Dr. Teitelbaum noted that as we look back from the 21st century, Saudi Arabia seems to be a tremendous success story. Awash in oil, selling today at over $70 a barrel, Saudi Arabia is expected to earn about $154 billion in oil revenues in 2006. Each year, it runs perhaps the largest social gathering in the world, the Muslim pilgrimage (hajj), playing host to around two million pilgrims. Foreign companies vie with each other for Saudi contracts. For 2005, the government reported a thirty-fold increase in foreign investment, to the tune of SR200 billion. Mighty nations try to curry favor with it; even the United States, which suffered tremendously at the hands of Saudi citizens in the attacks of September 11, 2001, does little to anger the oil giant. Relations remain good, if slightly strained.

With its money, the country is spending more on education and development, paying down its public debt, increasing security expenditures as a response to domestic terrorism, increasing salaries to the military and the government bureaucracy, and raising payments to the population at large through subsidies for health care, welfare, education, and housing.

However, the Saudi state was established over a diverse people that had no historical memory or much else in common. Over the years, the Saudi royal family has developed a common historical narrative, which it has promulgated through the mosque network, the media, and education, that conflates the royal family and Islam throughout history and up to the present. They become one and the same, mutually reinforcing one another. Over time, this has become a kind of cohesive glue that has kept Saudi society together.

To further bind the people to the state, as personified by the Saudi royal family, an elaborate, cradle-to-grave welfare system was developed. Oil resources were distributed to the populace in exchange for opting out of political representation. There was no taxation, but neither was there representation.

Finally, Dr. Teitelbaum emphasized that the structure of the state drew on tribal values of personal contact and corporate group politics. This made the state an extension of a comfortable and historical system, although this time around the Saudi family was placed at the apex of the putative "tribe."

Profiling International Change Processes

Dr. Gunther Werther introduced and discussed the core parameters of an approach to predicting emerging trends, styles, and patterns of acting with respect to international change, and hence of predicting emerging societal, country, and regional "futures." His paper argues that mathematical modeling, any accretive, parsing, and other externally oriented comprehensive data gathering approaches, and any "rational actor" approaches (including those using biological, chemical, and physical system templates) are fundamentally misdirected as to their predictive orientation if they fail to centrally place a "thinking within bias" focus as their grounding.

Dr. Werther noted that bias is, of course, one way of describing how humans act. Consequently, without centrally and integrally accounting for diverse human, and societally definitive elements of change, no reliable solution is possible when attempting to predict emerging international futures, or methods of moving toward those futures for either societies, countries, or regions.

"Change profiling," by contrast, can better accomplish this predictive task because it is, in essence, a study of conflicting harmonies; it is from the beginning centrally focused upon how humans and societies variously act. Dr. Werther focuses on the "change process" as a dynamically fluid, contextually nuanced "dance" involving internally integrated actors (each acts according to their natures) within their "environment." The metaphor is music (as to intentional harmonies; the "song they sing") and dance (with respect to mutual actions) more than math. The latter, particularly, is endlessly recursive with respect to the expected future actions of the other.

If the above is understood, then a "profiling change processes" analytic is to be viewed as a holistically integrative study of change, not of states. It begins with an inquiry into the socio-psychological nature of things as to their "character" and "species" (their holistically integrated approach, style, and habitual method of achieving goals within their environment) and – if you will – moving thus from this understanding holistically and integratively again toward expected solutions. It may be better to say that one studies and profiles expected patterns and paths of change, endlessly. Another way to view this is as moving from kernel (character, species, nature) toward expanded layers of understanding with respect to projected actions.

National security challenges are, in this century, increasingly about patterns of national and group reaction to international change pressures (development, globalization, and so forth) that are NOT classically military operations or state-state conflicts. Consequently, a "complex" change perspective of the integrative kind just described is better suited to the nuanced task of predicting emerging "futures" than the traditional accretive and math modeling approaches. Profiling change processes is an important analytical perspective useful for improving the ability of organizations and governments to craft wise understandings about emerging international changes in ways that are more accurate and more nuanced than current abilities seem to be capable of.

Luncheon Address: Dr. John Alexander

Dr. John Alexander, Senior Fellow, Joint Special Operations University, and PMG Fellow, discussed what he titled as "Future Conflicts: Values and Paradoxes." The nature of future war has changed at the most fundamental level. There are wars on Poverty, Drugs, Cancer, etc. It seems that the United States has lost the meaning of war along with any understanding of the current and future struggle. The Global War on Terrorism (GWOT) is the "Long War," as current think tanks call it, and will definitely be a sustained, multidimensional conflict of 50 years or more. The question will be: Is the public willing to support this?

He asserted was that Americans will only support such a war only under certain circumstances:

- If they understand our enemy and the threat they poses to the future of America
- If they understand our strategy and how long it will take to complete it
- If they are confident our leaders know what they are doing
- If they know we have what it takes to defeat the enemy
- If leaders communicate U.S. actions plainly and honestly

The difficulty in developing methods to effectively fight and win this complex form of warfare is that, in a global and geopolitical environment, one must deal with the associated conundrums and paradoxes that are created. He went on to outline the following key methods: Alter the Environment, Kill/Capture, Increase Security.

"Altering the Environment," otherwise known as "Draining the Swamp," that breeds terrorism, civil unrest, and conflict, has great merit; however, careful consideration must be made to ensure that alterations do not precipitate unintended consequences. One billion people in the world live on less than $1 a day. The African continent contains over eleven percent of the world's population but less than one percent of the medical funds. There are more than a billion people without safe water. These troubled, under-developed and under-governed areas remain fertile ground for the growth of terrorism. Currently this method is the lowest cost option, but it is still unaffordable. The United States is building an eight trillion dollar national deficit. The questions now are: Are these efforts sustainable in the long term, and, what has to change?

"Kill/Capture" is easier said than accomplished. It is wrought with difficult issues and questions. The keys are who is game (innocent or guilty), how to get the job done, and how much collateral damage to indigenous populations or international and often domestic condemnation are Americans willing to accept? Where do we conduct these operations? Do we go into a sovereign country without permission, as may be necessary

in time-sensitive preemptive operations, or domestically? Lastly, what is the status of captured individuals: POWs, criminals, or terrorists? And, how long does the United States detain such individuals, as exemplified by actions in Guantanamo? What are the legal rights, repercussions, and fallout from such detention, to include different treatment?

Attacking terrorist infrastructure is definitely a challenging area because of America's conflicting values between the "war on drugs" and the GWOT. In his opinion, America cannot effectively conduct both simultaneously, and Americans value winning the war on drugs more that they do the war on terrorism. Although drug trafficking is a chief financial boon for the terrorist, there has been virtually little return on our counter-drug investment. With over a half-trillion dollars spent on the drug war, street value and availability remains the same. Does the United State have it priorities in the right place? Other commodities and financial infrastructures support and assist terrorists, including diamonds, art, and other rare commodities. Other challenges and criminal finance trends, such as international money laundering, are still difficult to trace, even with recent advancements. Currently, money laundering may equal 3-5 percent of global gross domestic product.

"Increasing International and Domestic Security", although difficult and manpower intensive, is feasible, but it comes with the conundrum of impinging on human and individual rights as they are commonly understood. He argued that people who are most affected by an event in time and physical space will be willing to more readily give up rights for security.

He asserted that we have two wars at hand and for the future. The first is "ideological," and the second is "economic." The first was spawned and is being fomented by predominately radical Islam and the global Jihad movement. The second is being exacerbated by America politics and economic policy. The impact of globalization and the rise of the economic prowess of China, India, and others needs close examination to insure the United States' strategic economic sustainability is maintained as barriers to competition and trade continue to break down. For example, China holds 20-25 percent of America's debt, and Indian technology

and intellectual capital is being tapped often at the expense of U.S. employment. Does Tom Friedman have the complete picture?

He also proposed that there are two models on how to conduct future war and that the United States' idea or model is an anachronism. The GWOT lacks specificity. Competing values and a failure to understand biases prevents the United States from winning. America must come to grips with the fact that World War X (WWX) has begun, and it is religious. It is all about divergent ideas and beliefs, or a cataclysmic "clash of civilizations." Most importantly, the media may hold the coin of the future realm; its application, used as a weapon, can and will determine winners and losers, as in the case of Hezbollah in Southern Lebanon. Perception management is and will remain key. Without this knowledge, America does not fundamentally understand the threat.

Today's conflict trends indicate that it will be increasingly harder for the United States to deliver positive outcomes in the future. America's prosecution of future wars will fall into three categories: covert, overt and outsourced. It will be extremely difficult to identify combatants. In the future, there will be more restrictions on use of force and a greater emphasis on outsourcing war for those who can afford it. Shifting social structures will create an abundance of paradoxes and value conflicts in determining if, when, where, and how to prosecute war. American public support will remain paramount to successful outcomes. Public support will be directly correlated to the time and space from known attack, violence of attack, and perception of personal threat.

There are several key issues that will serve as the spark and tinder for future regional and global conflict:

- "Devolution of Nation-State Status," which includes redefining "American" based on new value sets and the formation of competing social organizations based on different hierarchical beliefs as America's ethnic and religious complexion changes. The quest to determine who we are and who we will be will be a challenging journey, as Samuel Huntington suggests.

- "Population Growth Rate" of the third world and the near exponential impact of famine and disease.
- "Politicalization of Educational Systems," which will bring to the forefront key competing and conflicting ideologies and values, especially secular versus religious education.
- "Global Ecosystem Instability," focusing on the magnitude and impact of climate changes (global warming) and water shortages.
- "Philosophical Incompatibilities" of fundamentalism or radicalism (predominantly Islamic) versus the world. The fact is that there may never be compatibility.
- "Unsustainable Legal Constraints." The current national and international systems are anachronistic, ponderous, and incongruent to effectively prosecute criminals and fight the Long War.

In conclusion, he summarized several truisms of future conflict that America must understand and embrace to be successful in the Long War. First, war is about imposing will, not killing. Second, that the nation-state as we collectively know it today, is a failing concept as a result of globalization. Societies and social groups are centered on hierarchical beliefs, not necessarily geography, and many are incompatible. Some problems, like the Arab-Israeli conflict, may be irresolvable. Lastly, we must understand that violence, although prevalent today and for the foreseeable future, is optional.

Panel #3: Future Strategic and Operational Intelligence Challenges

Dr. Dianne Smith, Joint Military Intelligence Traning Center (JMITC), Defense Intelligence Agency, chaired the Future Strategic and Operational Intelligence Challenges panel. She introduced the presenters and moderated the question and answer period.

Failed States and Intelligence Collection Missions

Dr. Ely Karmon, International Policy Institute for Counterterrorism, began by noting that it is his theory that international terrorism since

the 1960's is the result of state support. In his remarks, he discussed a situation where state failure has already happened creating an ungovernable country or territory, and there is the need to evaluate and constantly monitor the threat such a situation represents for the United States and the Western democratic world. He analyzed the intelligence requirements, methods, and resources needed to cover the threats from potential targets: the terrorist and guerrilla organizations, organized crime and narco-terrorism, proliferation of small weapons, and the proliferation of chemical, biological, radiological, and nuclear agents and weapons to terrorist groups. Lastly, he detailed the ideological, geo-political, strategic, and structural environment and the transnational and international relationships between the various actors, including states, non-governmental organizations (NGOs), and international agencies; he then presented some proposals for improvements in the field of intelligence collection and analysis.

Dr. Karmon noted that the question of failed or weak states has been studied by researchers and by U.S. administrations mainly in the attempt to understand the causes of the failure of states and the necessity to prevent or, at the least, to have early warning of what has been defined as "state failure." Dr. Karmon reviewed several of these research efforts.

The CIA's *Worldwide Threat 2001: National Security in a Changing World* asked the international community to help "tame the disintegrative forces spawned by an era of change" and the growth in "potential for state fragmentation and failure." Analyzing the impact of globalization and the emerging security paradigms that resulted from the end of the Cold War, the U.S. Commission on National Security/21st Century identified failed and weak states as specific challenges that the United States will face with increasing regularity in the next twenty-five years.

According to Susan Woodward, Professor of Political Science at the City University of New York, while the culprit for both poverty and violations of human rights since the early 1980s had been the strong state, the problem by the 1990s had become the weak state. She sees a remarkable international consensus in the past two years that all "concrete threats to security, including terrorism, nuclear proliferation,

mass violations of human rights, poverty, armed conflict, and refugees, are viewed as the responsibility of states and the consequence of state weakness."

Before the 9/11 attacks, U.S. policymakers viewed states with sovereignty deficits as of little strategic significance. After the attacks, Secretary of State Condoleezza Rice declared that nations incapable of exercising "responsible sovereignty" have a "spillover effect" in the form of terrorism, weapons proliferation, and other dangers. Al Qaeda's ability to act with impunity from Afghanistan convinced President George W. Bush and his administration that "America is now threatened less by conquering states than by failing ones." Stewart Patrick of the Center for Global Development stresses that the present lacking U.S. strategy toward weak and failing states should be based on a deeper intelligence collection and analysis of the links between state weakness and transnational threats.

According to Ted Robert Gurr, Distinguished Professor at the University of Maryland, the structural model for ethnic war, one of the main reasons for state failure, includes factors reflecting group incentives for collective action, group capacity for collective action, and opportunities for collective action. Gurr proposes principles and priorities for the development of conflict early warning: identifying and monitoring latent and emerging crises well in advance of the outbreak of war; inventory of ethnic, religious, national and political groups at risk; near-real-time tracking of events in unstable (high-risk) areas; close and regular communications between early warning analysts and officials with operational responsibility for preventive action and humanitarian response.

Homeland Security Futures Case Study: Agroterrorism

Lieutenant Colonel Shawn Cupp, U.S. Army Command and General Staff College, described a case study methodology to improve the understanding of a Homeland Security domestic incident during the conduct of consequence management. He presented a future incident that takes place within the USNORTHCOM in which participants are part of a standing Interagency Operational Planning Team (IOPT) within the Joint Task Force-Civil Support (JTF-CS). The participants represent the Department of Homeland Security (DHS), Department of Justice

(DOJ), Department of Agriculture (USDA), Department of the Interior (DOI), Department of Transportation (DOT), DoD and Department of Commerce (DOC) action officers. This case study is conducted within the Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment.

The consequence management case study involves an incident affecting U.S. agriculture. There are several ideas within the case study that have direct connection to the Proteus insights across the planes of influence:

1. Starlight: Insight exaggerating the psychological plane of influence. Leaders must know that the management of the information surrounding an agricultural incident would significantly influence the world's view of the United States.

2. Sanctuary: Insight across the terrestrial and, especially, the psychological planes of influence. The threshold of repercussions is low for agroterrorist acts.

3. Veracity: Insight across the terrestrial, and most definitely the psychological planes of influence. Natural outbreaks mimic actual possible attacks. The simple act of confirming or denying of an incident impacting the food chain would require an emotion-filled and high-stakes decision.

4. Herds: Insights across the terrestrial, virtual, and psychological planes of influence. People will tend to be more sympathic toward the terrorists, since few citizens will actually die in this incident. This reflects the fickle nature of public opinion and how a certain terrorist act may actually cause support for, or at least tacit acceptance of, the attackers and their methods.

5. Wealth: Insight, it's about the economy, not cows. A safe, cheap supply of meat in the United States will not be cheap anymore. The impact on the economy also travels across

> the terrestrial, virtual, and psychological planes of influence. An accidental or purposeful interdiction of the U.S. food supply of a substantial size would create significant and lasting economic impacts.

This case study takes place in the not-so-distant future. However, the case study elements are all based on fact. The locations are real, and the events, and their impact are all possible. All aspects of the U.S. agricultural system, including exports, transportation, genetically modified foods, imports, production, and policies are detailed. Students are given enough information to conduct analysis, and then identify, evaluate, recommend, and discuss implementation of actions based on the case study. The case study begins with the immediate aftermath of the incident and its effects. After thorough discussion, the successive impacts of the second stage and third stage are then introduced. The case study method allows students to evaluate their prior decisions and determine the implications against future events.

Panel #4: Future Technology

Mr. Jack Smith, Office of the National Science Advisor, Industry, Canada, chaired the Future Technology Panel. He introduced the presenters and moderated the question and answer period.

An Unmanned Systems Vision

Captain Rand LeBouvier, U.S. Navy, retired, addressed the future of unmanned systems from both a technological and a humanities perspective. He started with a video-vignette that described a lieutenant operating in a virtual environment. He noted that this vignette was not far from a technical reality. The great hurdle is not encountered in hardware or software, but rather in the lack of a systemic approach to integrating the required diverse technologies and human capabilities. He proposed that any system capable of destruction will continue to require active human oversight and participation; it will require an interdisciplinary approach that combines scientific skill with a philosophical and ethical foundation.

He cautioned that the term "unmanned" needs to be carefully applied. Only a system where no human intervention or oversight is possible might correctly be termed unmanned. He noted that human presence in the decision-making process is an essential part of any system that has the power to destroy. He opined that what is needed is a more systemic approach that would take into account the truly interdisciplinary nature of robotic systems; it must regard and combine the sciences of physics and chemistry – specifically materials – mechanics, electronics, propulsion, computation, sensors, energy, and communications, with the humanities' disciplines of philosophy and ethics. To exert any control over technology, we must know what it is we expect to do with technology. He noted that it is safe to state as fact that technologies created without such holistic considerations have proven to do and affect more than was originally envisioned.

Captain LeBouvier stressed that ethical, legal, and practical considerations should guide the design of the system and its operational concepts. The system described in his vignette compiles input from more than a single sensor, enabling corroboration of target data. With the proper protocols in place, the human, augmented by the computer, could prove to be more reliable than either alone. At the center of it all, the human "component" will need more than mere equipment training to be able to properly use such a complex system. Beside the physical dexterity and mental acuity required, unmanned system overseers will still require the firm ethical grounding required of all our service members.

He noted that no single part of this vision is achievable or practical without consideration for the rest of the system. Each component must be designed with the end in mind: the creation of a human-centered, mechanically and digitally augmented command and control, information gathering and disseminating, and ultimately destructive capability. With a host of sensors and vehicles deployed, the overseer has a wide array of options and backups. In a traditional single-vehicle, single "pilot" paradigm, if any part fails to perform – the vehicle, the sensors, the communications links, the displays, the computer, the interfaces, or, most importantly, the human operator – then the entire system fails. Such a paradigm, so dependent on technology and subject to single-point failure,

offers an ideal target for an asymmetric counter. The envisioned system is far less susceptible than a traditional or even a completely autonomous system that is correspondingly completely dependent on technology. The human overseer and multiple vehicle and sensor configuration thus provide a bulwark against asymmetry.

He concluded by stressing that, as we design, produce, and procure unmanned systems, it behooves us to be prudent to ensure the proper integration and complete understanding of the human factor. This requires more than engineering. It requires a strategic view of our aims for unmanned systems. Above all, it requires a more profound appreciation of the impact of this marvelous technology on us, the humans who will make use of its capabilities and who will form its core.

The Application of Strategic Stress Management in Winning the Peace

Colonel Brian Rees, M.D., United States Army Reserve, addressed the application of Strategic Stress Management (SSM). SSM, in the form of groups of persons practicing a meditative technique called the TM-Sidhi Program, can be applied to reduce hostilities in targeted populations. His underlying hypothesis was that consciousness is a field, and that effects generated in the field of consciousness can affect the brain chemistry, the thinking, and the subsequent behavior of potential belligerents who are not engaged in the practice. Initial research on Transcendental Meditation (TM) focused on physiological and psychological effects. Subsequent research identified beneficial effects in cities where 1 percent of the population practiced TM. He noted that more recent prospective studies of an advanced form of the procedure have documented reductions in combat deaths, crime, and terrorist acts related to the size of the groups practicing the intervention. He described three specific case studies that were published in reputable journals.

The first case study was Jerusalem in August-September 1983 where the independent variable was 65 to 241 participants and the dependent variables were war deaths and intensity. The study found that there was a 76 percent decrease in deaths, ($p = 0.0004$), and a 45 percent less decrease in intensity (Journal of Conflict Resolution, Vol. 32 No. 4, December 1988,

pp 776-812). The second case study was presented in Social Indicators Research (Vol. 47 Iss. 2; June 1999, pp 153-202), and provided insights from a study conducted in June-July 1993 in Washington, DC. There were 4000 participants, and the study organizers predicted that crime (homicide, rape and assaults) would decrease by 20 percent. The study was controlled for weather, daylight, trends, etc. The results were that crime dropped by 23 percent but then rebounded after the intervention ceased. The final case study he cited was conducted in 1983, 1984, and1985, and looked at global terrorism in Iowa, Holland, and Washington D.C. with 8000, 6000, and 5500 participants, respectively. The data came from Rand and from raters blinded to dates. The study showed there was a 72 percent drop in terrorism and 32 percent less conflict (Journal of Offender Rehabilitation, Vol. 36 2003, pp 283-302).

He noted that this approach is suitable, and should have salutary second and third order effects. Data indicate its application as a counterinsurgency tool is feasible, and it is readily distinguishable from other possible courses of action available in the prosecution of the Global War on Terrorism. He concluded by emphasizing that the acceptance of an approach with such an extraordinary theoretical underpinning, with advocates with atypical world views, is an open question.

Relooking the Cyber-Terrorism Threat and Military Support to the National Cyber-Warfare Response

Dr. Richard Kilroy, East Carolina University, addressed the U.S. military response to cyber-warfare and assessed whether the organizational and doctrinal changes made to confront the threat (as well as cultural and career force changes that have impacted forces structures, resources, and the warfighting capability of the armed forces) are appropriate in the context of future cyber-terrorism threats to homeland security. He also addressed the military's role in conducting cyber-warfare within the broader JIIM environment and possible scenarios for evaluating a national response against a cyber-terrorist threat.

He began by noting that he was using Dorothy Denning's definition of cyber-terrorism as the use of computer-based operations by terrorist organizations conducting cyber attacks that "compromise, damage,

degrade, disrupt, deny and destroy information stored on computer networks or that target network infrastructures." In the mid-1990s, the U.S. military recognized a growing threat to its informational architecture and to the nation's critical infrastructure – on which DoD depends – from cyber-warfare.

He next talked to the concept of "The Threat." He noted that the intelligence community determines whether a nation-state or non-state actor poses a threat to the United States based on two variables: capability plus intent. If a nation has a capability to use nuclear weapons, like Great Britain, but does not show the intent to use them against us, it is not a threat. Similarly if a nation does not possess a capability to do us harm, even though their rhetoric indicates a desire to do so, it is not a threat. During the Cold War, the U.S. intelligence community categorized countries by the level of threat (Tier 1, Tier 2, etc.) they posed to the United States, based on these two criteria of capability and intent.

Next Dr. Kilroy addressed what cyber-terrorists could do. He cited a 1996 Rand Corporation exercise in Washington, D.C. that used a scenario developed by David Ronfeldt and John Arquilla called *The Day After in Cyberspace*. The purpose of the exercise was to assess how our national decision makers would respond to a series of acts related to cyber warfare and coming from an unknown source. What began as cyber-reconnaissance, soon developed into cyber-attacks on the nation's banking and financial infrastructure, leading to more targeted attacks on our defense and intelligence communities. The exercise ended with the United States launching a preemptive nuclear strike on China, the supposed source of the cyber-attacks, only to realize afterward that it wasn't China at all, but rather cyber-terrorists, whose goal was to precipitate a global conflict. The exercise raised concerns that cyber-terrorism was real and could lead to horrendous consequences.

He next addressed the U.S. response. The nation's first attempts to protect itself in cyberspace occurred during the final days of the Reagan administration when the defense Advanced Research Projects Agency (DARPA) acted to establish our nation's first national Computer Emergency Response Center at Carnegie Mellon University. Under

the Clinton administration, as a result of the findings published in the President's Commission on Critical Infrastructure Protection (PCCIP), our nation first began to organize its cyber-defenses across various federal government sectors. On the policy side, former President Clinton also took the initiative to establish the office of National Coordinator for Security, Infrastructure Protection, and Counter-terrorism. In February 2003, the Bush Administration issued the *National Strategy to Secure Cyberspace*. The Department of Homeland Security (DHS) now assumes many of the previously disparate cyber-security functions under the National Cyber Security Division (NCSD), which is responsible of the implementation of the President's cyberspace strategy.

Dr. Kilroy went on to discuss the military response. Information Operations (IO) emerged from previous joint doctrine (JP 3-13.1) involving Command and Control Warfare (C2W), based on lessons learned after the first Gulf War and the effectiveness of new information-based technologies for intelligence collection and targeting. IO expanded on the traditional 'pillars' of C2W (Psychological Operations, Military Deception, Electronic Warfare, Physical Destruction, and Operations Security), by adding Computer Network Defense and the two 'related' activities of Public Affairs and Civil Affairs (JP 13, 1998). IO became the means by which DoD elements would conduct cyber-warfare. Although initially focused on defensive aspects of the cyber threat, it was later expanded to include offensive cyber-warfare planning and execution under the broader category of Computer Network Operations (which would also come to include the intelligence gathering required under Computer Network Exploitation in order to actually conduct both offensive and defensive operations). The Army was the first service component to develop military doctrine with regard to IO and the conduct of cyber-warfare. The Army also made organizational changes reflecting the new doctrine and the integration of IO planning into military operations. The Army's Land Information Warfare Activity (LIWA), located with the U.S. Intelligence and Security Command (INSCOM) at Ft. Belvoir VA, was stood up in May 1995. The Army also developed a new career field, Functional Area (FA) 30, Information Operations, for its officer corps.

Dr. Kilroy provided a "Futures Assessment." With regard to the organizational changes that have occurred since the 1990s, particularly within the defense community, to combat cyber-warfare (both offensively and defensively), the question to ask is, are we preparing for the right threat? The main organizational change is the further consolidation of IO mission support under U.S. Strategic Command (STRATCOM). Operational control for all aspects of Information Operations, to include Computer Network Attack and Computer Network Defense, were consolidated into new organizational structures and responsibilities. Also, the new JP 3-13 recognizes the need for combatant commanders to plan for full integration of multinational partners, as well as interagency players, in IO planning and operational efforts. Another change in JP 3-13 is the increased need for broader cooperation for cyber-warfare planning in the JIIM environment.

Dr. Kilroy ended by cautioning that non-state actors use actions in the physical environment to shape perceptions in the information environment, whereas the continuing focus in joint IO doctrine remains the principle that operations in the information environment help shape operations in the physical environment. In other words, many military commanders still see IO as a "means" to the "ends" of better placing "steel on target."

Digital Blitzkrieg: Updating the Pearl Harbor Analogy and Combating Multi–Domain Civilian Red Cells

Mr. Tim Rosenberg, President of White Wolf Security, demonstrated why the Digital Pearl Harbor analogy should be abandoned and replaced with the more accurate "Digital Blitzkrieg." He explored a hypothetical Digital Blitz scenario. He further demonstrated how the creation of government-funded civilian-staffed Red Cell teams can operate with the necessary freedom on U.S. soil to help identify possible Digital Blitz scenarios. These scenarios can then be used for enhanced training operations as well as for assessments that will help secure critical infrastructure. His presentation also included a sample Red Cell team attack plan to demonstrate how a small team of broadly trained individuals can successfully integrate physical and cyber attacks along with offensive information operations into a sustainable multi-domain attack cycle.

The Digital Pearl Harbor has been used as the warning slogan for many. It has many definitions and examples, but most point to a single crippling attack against the Internet. Some have even argued that the structured query language (SQL) Slammer worm (affected ATM machines) and MSBlast worm (possible contributor to the 2003 northeast blackout) are Pearl Harbor-like events. Both of these examples illustrate the flaws of using the Japanese surprise attack on Pearl Harbor as the analogy for a planned Internet attack. In both cases, the attack is a single domain event with collateral damage in only one domain. For the purposes of this presentation, a domain is defined as a sphere of activity concern or function. Attack domains include traditional air, sea, and land-based attacks. Target domains include a collection of like targets, airfields, power infrastructure, personnel, fixed defensive positions, and the like. Domains are also hierarchical. If you are targeting the power infrastructure, you can break it down into sub-domains. High tension electrical cables and towers are a sub-domain of power transmission that, in turn, is a sub-domain, power distribution, which, in turn, is a sub-domain of a single power plant.

Pearl Harbor was a single domain attack both in its delivery and targeting. There was only one delivery vehicle: aerial bombardment from carrier based planes (five midget submarines were launched, but their contribution to the overall attack plan was minimal). The targeting was likewise single in its scope; the target was the fleet in Pearl Harbor (even that was single domain, as the oil fields, machine shops, dry docks, and submarine pens were not harmed). Similarly the SQL Slammer and MSBlast worms were single domain attack/target events. Both were internet worms that only targeted very specific operating systems. Neither was designed to impact the physical world (although some collateral damage occurred). In both cases, the worms and Pearl Harbor, there was no local follow up. The Japanese left Hawaii; the worms were cleaned out. In both cases the damage was repaired and systems returned to mostly normal. In neither case was the damage long lasting or sustainable. Therefore, if we continue in the Digital Pearl Harbor mindset, we will be looking for attacks that, while tactically damaging, are not strategically significant. It is against this backdrop, that Mr. Rosenberg proposes the use of the Digital Blitzkrieg not only as a new analogy but as a way of

looking for and planning against the next Internet-based attack. Not only will this new attack be strategically significant, it will change the way the next war is fought.

When analyzing the blitzkrieg of the German military, it is important to note that this was a multi-domain attack. It was novel in its approach and in its use of new technology. The United States bounced back from Pearl Harbor in less than a year. It took five years to reclaim Europe from Germany. Today, we take integrated operations for granted. However, in 1940, the German combination of infantry, armor, and air power made for a new way of strategic war fighting. Technological advances in aircraft, heavy armor, communications, and weaponry were put to use to support this new war. Airborne, glider, and special operations forces combined with the novel use of shaped charges to take the fortress of Eben Emael, thus enabling the blitz to move west with great speed and little fear of detection. It is this model of multi-domain war fighting combined with new technology that we should be looking for as the source of the next large scale attack on the United States.

He opined that most in the business are familiar with Arquilla and Ronfeldt's concept of swarming – the sustainable pulsing of fire on a target from multiple directions. Building on that background, he described what a multi-domain attack would look like.

Multi-domain attacks take advantage of two primary principles: cascading and degraded operations. Cascading results when an attack on one domain adversely affects another. Degraded operations are those that take advantage of the axiom that a wounded system costs more than a dead one. A multi-domain attack will target a variety of critical infrastructures, such as power, communications, water, and environmental systems. The attack will combine physical and cyber weaponry to degrade and disrupt response operations. Media management and "fear-based" operations will help prolong tensions and anxiety in between inconveniencing attacks that are delivered on a random schedule. The result will be sustainable because any single attack requires very little planning and resources. The result will have strategic impact because the targets and timeline will be designed and managed by a central power

base that understands the nature of American culture and how best to disrupt it over time. The targets will be civilian. There is little to be gained by attacking a hardened military target, and few if any can stand toe to toe with the U.S. military on the battlefield. Therefore, you must choose the one place where the U.S. military has the greatest difficulty in operating: its home field.

The Sword and the Network: Combining Body-Mind-Spirit Technology

Mr. Tim Rosenberg discussed how to bring Computer Network Attack (CNA) and Computer Network Defense (CND) into a martial training and operational setting. Furthermore, once the martial CNA/CND foundation is complete, the traditional aspects of body-mind-spirit (BMS) training will be added into the CNA/CND space for complete integration.

There is much published literature on the benefits of Somatic Training and the blending of body, mind, and spirit into a "fully integrated individual who embodies athletic prowess, emotional maturity, and a spiritual sensibility," as described in Dr. Richard Strozzi-Heckler's 2001 article "Somatics and Cyberspace." There are several avenues that one may take to learn how to live an integrated life. The one this author is most familiar with is the martial arts. Besides teaching you how to work BMS into one, the martial arts also impart useful skills, especially to those in the military. It is against this backdrop, the integrated individual, the high stress, varied mission world of the military, and the martial arts that we now add a new tool – technology.

Technology means different things to different people. To some, it is a way to get their email while hiking; to others, it is precision guided munitions. For the purposes of this paper, the focus is on technology that supports computer network attack and defense. In this sense, technology is the tool or weapon that is used to engage an opponent's technology. It is key to note that this is a unique battlespace in that it matches the same basic technologies on both sides. Tactical air support or strategic missile strikes pit unmatched technologies (e.g. missile versus building and not missile versus missile). This is akin to sword fighting,

in that each opponent has the same weapon, the sword. This match has significant impact on the training and operational characteristics of the battlespace. One of the axioms from the Samurai sword culture is to "fight the person, not the sword." This is important to understand as it brings to bear the truth that cultures fight wars, not swords. Technology (in the CNA/CND context) is a tool for waging war, much like the sword. Understanding the sword culture (yours and your opponents) is imperative if you are planning on meeting it on the battlefield armed with like weapons; CNA/CND is no different. To effectively employ technology against like technology, you must understand its place in the cultures engaged in the conflict. After all, computers do not surrender, people do.

Mr. Rosenberg noted that over-reliance on technology as a culture places the BMS balance at great risk. Technology permeates every aspect of our life. We use it to communicate, pay bills, play and relax, and plan and execute our days, missions and more. When technology fails, it easily upsets our balance because it removes so many pieces of our lives. Given the West's over-dependence on technology (civilian and military), it is crucial that we provide a framework to add technology to the BMS triangle and turn the triangle into a pyramid, one of the most stable of geometric shapes.

There are two key components to bringing technology into the body, mind, spirit triumvirate. The first is finding a basic model for teaching CNA/CND that lends itself to BMS integration. The second component adds the elements of meditation, philosophy, and the 'soft arts' that elevate CNA/CND to an art, turning the BMS triangle into a BMST (body-mind-spirit-technology) pyramid that becomes part of an integrated way of life for the new warrior.

Background Briefing: Thursday, 24 August

The Sunni-Shia Divide: Is a Coalition Viable in the Islamist Camp?

Dr. Ely Karmon, International Policy Institute for Counterterrorism, provided a detailed background and discussion on his studies in the area

of the feasibility and strength of any type of long term Islamic national and/or international coalitions among the varying different sects. His studies have led him to look in detail at previous and current events in Lebanon, Pakistan, Jordan, Iran, Syria, Sudan, Afghanistan, Palestine, Israel, and Saudi Arabia

His basic hypothesis is that terrorist organizations are prepared to cooperate or set up coalitions with organizations in other countries when they feel threatened. The main questions addressed were: what kind of threat determines if one terrorist organization will cooperate with others, and what are the conditions that allow such cooperation to mature?

He stated that his theoretical premise holds true for most of the organizations studied. He noted that Fatah, for instance, decided to help the Red Army Faction when it was suffering from strategic weakness following the Black September attacks and was desperately in need of international recognition.

He noted that much of the impetus for Islamist ideologues and strategists to act in the framework of a broad alliance derives from a genuine perception of threat from internal, regional, and international players or events. After the invasion of Afghanistan by the Soviet Union was repelled, the United States became the main threat on the global arena. But for the Chechens, the threat is represented by Russia; for the Pakistanis and Kashmiris, by India; for the Uighurs, by China; for the Moros, by the Christian Philippine state; etc.

He added that almost all radical Islamic organizations and groups feel threatened by their own national ruling regimes, whether they are Islamic or not. They are broadly categorized and generally viewed as inefficient, corrupt, and oppressive collaborators with the "Zionist Crusaders alliance." As an example, Dr. Karmon cited bin Laden's Declaration of War and its accusations against the Wahhabi regime in Saudi Arabia.

Dr. Karmon reiterated that the war in Iraq has produced a tremendous change in the Middle East and in the Muslim world at large. The West does not yet grasp the full meaning of the Shi'a revival and the potential

for deep change in many of the countries and regimes in the region where Shiites represent the majority or an important minority.

One of the important questions since 9/11, and more so since the war in Iraq, is if the potential for a coalition between radical Sunni and Shi'a forces already active in the region can indeed materialize. Looking at the existing alliance between Iran, Syria, Hizballah, and the Palestinians (Hamas, Palestinian Islamic Jihad, and some elements of Fatah) one could conclude that such an alliance is not only possible, it is already acting successfully against its declared enemies – the United States, Israel, the West at large, and the moderate regimes in many of the Arab countries.

The problem in this case is that the main engines and sponsors of the alliance are two relatively strong states with authoritarian regimes with clear and well-tested strategies of using international terrorism without real punishment. Their position of strength vis-a-vis the client or proxy terrorist organizations and the political, financial, military support and safe haven they give to the minor members of the alliance are vital to maintaining the alliance's operational effectiveness. The historical experience of the last three decades shows that most coalitions between the radical terrorist organizations and groups of all origins, have worked partially at best, and generally only for very short periods of time.

He finished by stating that his provisional conclusion is that the Sunni-Shi'a divide will continue unabated. Although coalitions may be temporarily formed for a general cause, it will remain enormously difficult for religious movements and groups that use terrorism and violence to build the kind of real, long-term coalitions that could lead to the foundation of a united and victorious Muslim Umma. However, tactical coalitions between groups during periods of operational weakness and strong outside pressure or threat could indeed materialize, their main result being the destabilization of weak regimes in the region, of the democratization process in some countries, or of the negotiating process between Israel and the Palestinians.

Panel #5: Future Modeling, Simulation and Gaming Technology in Strategic and Operational Analysis, Decision Making and Experiential Education

Lieutenant Colonel Jon Rodden, Science and Technology Division. Center for Strategic Leadership, chaired the Future Modeling, Simulation and Gaming Technology Panel. He introduced the presentors and moderated the question and answer period.

The Future Conflict Game

Colonel Joe Green, U.S. Army, retired, U.S. Army Training and Doctrine Command, provided an overview of the Far Future Conflict Game. This game is designed to look out up to twenty-five years. He noted that there are a large number of agencies involved to some extent in the development of the game. This game will benefit anyone who is interested in the future, to include business. This game started by looking at trends and forecasts. The game is unclassified and uses twelve variables. The game starts in the world of today with a wide variety of players; it uses a game turn of about twenty years in one year of game play. Players may represent nation-states, organizations, and terrorist/criminal groups. The game is designed to be dynamic and generate a lot of surprises. Gaming conditions constantly shift based on player decisions. Decisions are required in the realms of sociology, governance, economics and resources, science, technology and engineering, military developments, and others. The game is more than kinetics; it includes military conflict as well as natural resource depletion, starvation, scientific superiority, civil unrest and wealth disparity. In sum, the game is about broad competition in a number of realms.

TRADOC's interest in the game is data mining and analysis. They want to understand how conflict occurs, why it occurs, and the specific chain of events that lead to conflict. Colonel Green discussed the unique game characteristics and technical requirements. He summed up by noting that the Far Future Conflict Game will create a live, virtual data warehouse that details competitive environments. The game will have a customized data and story retrieval capability that will enable educational benefits, before, during, and after game play.

New Frontiers in Tactical Terrorism Analysis: An Evaluation of Machine Learning Techniques to Support Counter-terrorism Analysts Decision Making for predicting Culpability in Terrorist Bombing Attacks in Iraq

Mr. Daniel Mabrey, Dr. John Miller and Dr. Chris Hale, all from Sam Houston State University, proposed and evaluated structured analytical models built by applying machine learning classification techniques, specifically decision trees and support vector machines, to tactical data on terrorist/insurgent operations in Iraq from March 2003 to April 2006. Mr. Mabrey began the presentation and noted these characteristics of the Iraqi insurgency:

- Low–Medium Intensity Conflict
- Large Number of Groups
- Targeting/Tactics Changing Very Quickly in Conflict Environment
- Very Difficult to Know Who the Enemy is
- Iraq Insurgency was aided by an information-rich Internet environment

Mr. Mabrey also noted that there was an Internet Jihad to support the insurgency. The Internet allowed the insurgents to make detailed claims of responsibility. The web also provided a modality to share "best practices" and served as a virtual training forum for insurgent tactics. The insurgents used the Internet to widely disseminate propaganda and to recruit new members in several languages.

He stated that his group had developed a massive relational database to capture all data related to a terrorist event. There are over 1,600 variables that the group uses. The data collection effort is a real-time, 24/7 effort that searches open sources. There are over 400 tables with multiple relationships.

Dr. Hale then discussed the data collection effort and noted that they collect against twenty-one incident types: armed assault, arson,

assassination, biological terrorism, bombing, ceasefire, chemical terrorism, civil court proceedings, communication, criminal court proceedings, cyber-terrorism, financing, hijacking, hostage release, hostage taking/kidnapping, military operations, nuclear terrorism, police operations, robbery, trafficking, and vandalism. They collect who, what, when, where, and how. It all comes from open data sources from all regions of the world.

Dr. Miller then discussed how the data is analyzed, in particular the use of computers for data analysis. He discussed the use of "Support Vector Machines" (SVM). He noted that applying new classification and machine learning applications to terrorist incidents in Iraq has shown in early trials to have an encouraging aptitude for identifying culpability. Overall, responsibility for over three-fourths of all incidents can be correctly identified as either al Qaeda or not. All procedures are better able to identify non-al Qaeda than al Qaeda. Advances using more traditional statistical techniques based on tree analysis have shown slightly better performance than the support vector machine advances over neural nets. An additional impediment to SVM's is the difficulty in interpreting the results operationally. Future actions include a major effort after the best predictor model(s) are found to test the 60 percent of incidents that have not had culpability assigned.

Mr. Mabrey concluded by stating that one of the most basic responsibilities of a counterterrorism analyst is to provide policymakers with information about suspected terrorist groups in the immediate aftermath of a terrorist attack. This process of predicting culpability for terrorist attacks is the product of analytical tradecraft that combines analyst intuition with structured analytical technique, although not in equal parts. In reality, most culpability predictions are based largely on analyst intuition because of the lack of sophisticated structured analytical techniques in this area. They selected Iraq for this study because of the high volume of terrorist/insurgent operations that occur there and the fact that there are numerous identifiable groups committing actions there. Seven model scenarios were constructed for building the analytical models, and the performance of each structured analytical technique was evaluated. He highlighted the fact that data for this study was provided

by the Institute for the Study of Violent Groups at Sam Houston State University from a relational database that was built through a grant from the Bureau of Justice Assistance at the U.S. Department of Justice.

Cognitive Assistants for Analysts

Dr. Gheorghe Tecuci from the George Mason University Learning Agents Center, and Ms. Cindy Ayers, National Security Agency Visiting Professor at the Center for Strategic leadership, U.S. Army War College, provided an overview on research into the development of cognitive assistants for use by intelligence analysts. These assistants have the potential to improve analytic capabilities and alleviate many problems faced by analysts in their daily routine.

The cognitive assistant under development is a new type of intelligent agent that can rapidly acquire expertise directly from an analyst. It can subsequently be employed as a tutor for new intelligence analysts, in a manner similar to how it was trained. When used as a career-long assistant, it can help an analyst find solutions to complex analytical problems, share intelligence, collaborate with complementary experts and their agents, and report results of research.

This research continues to be performed in the Learning Agents Center of George Mason University and in the Center for Strategic Leadership of the U.S. Army War College. The research has been supported by several agencies of the U.S. Government, including DARPA, the Air Force Research Laboratory, the Air Force Office of Scientific Research, and the U.S. Army War College

Since its inception, the work at the Learning Agents Center has been a continuing effort to develop cognitive assistants for analysts. Such an assistant is a new type intelligent agent (called Disciple-LTA) that has several capabilities. It can rapidly acquire expertise in intelligence analysis directly from an intelligence analyst. After that, it can train new intelligence analysts in a way that is similar to how it was trained. It can also help analysts find solutions to complex problems through mixed-initiative reasoning, allowing a synergistic integration of a human's

experience and creativity with an agent's knowledge and speed, as well as facilitating collaboration with complementary experts and their agents.

The experimentation environment for the Disciple-LTA cognitive assistants has been the U.S. Army War College course titled "Military Applications of Artificial Intelligence: Intelligence Analysis." This course helps the students to learn about and link Intelligence Analysis concepts with Artificial Intelligence concepts through the use of Disciple-LTA. The students participate in the Disciple-LTA research, both as subject matter experts and as end-users, and provide feedback and experimental data on the use of Disciple-LTA.

It is envisioned that in the future strategic or operational environment, each analyst will be assisted by a personal Disciple agent. The agent will be able to solve problems either through mixed-initiative reasoning with its analyst, autonomously, or in collaboration with other experts and their agents, in a network-centric environment. The Disciple agents will not only assist their human analysts to solve problems, collaborate, and share intelligence, but they will also continuously improve their knowledge by learning from this problem-solving experience.

To solve a task, Disciple-LTA builds a complex task-reduction tree. For instance, the task reduction tree for assessing whether al Qaeda has nuclear weapons has over 1,700 nodes. Special interfaces have been developed to facilitate the browsing and understanding of such trees by the analyst. The task is then decomposed from the initial task into its main subtasks. Each decomposition has an associated question and answer that explains it. To answer or accomplish these types of questions and tasks, Disciple-LTA facilitates the analysis and comparison of multiple hypotheses, and the rapid updating of the analysis based on new intelligence data. For instance, from the earlier example: what factors should one consider to determine whether al Qaeda has nuclear weapons? Then what is the possibility of al Qaeda having nuclear weapons? And what is the current evidence that al Qaeda has nuclear weapons?

Disciple-LTA was trained by expert analysts to solve intelligence analysis problems. Copies of such trained Disciple agents can not only

assist and teach new intelligence analysts in a way that is similar to how they and others have been trained, but they may also be trained to reason as an opponent, by an expert in the opponent's culture

As stressed by Richard Heuer in his book, *Psychology of Intelligence Analysis*, "analysis is, above all, a mental process." Therefore "more training time should be devoted to the thinking and reasoning processes involved in making intelligence judgments."

In conclusion, a Disciple agent can be trained by expert analysts to provide useful analytic assistance and to train new analysts. Army War College students who are intelligence analysts with many years of experience assessed this tool – once it has a rich enough knowledge base – as being very useful to the analysts.

The Future of Joint Modeling and Simulation

Mr. Tony Cerri, Experimentation Engineering Deptartment, U. S. Joint Forces Command (JFCOM), Joint Futures Lab, provided an overview and update of what DoD and JFCOM are doing in order to provide relevant and useful modeling and simulation for future analysts and decision makers.

First, he described how DoD historically has not had corporate (DoD-wide) oversight/ coordination of the billions of dollars spent annually on department and service modeling and simulation (M&S). The current system supports each separate Service's M&S management structure with limited coordination across Services or within communities (e.g., analysis, acquisition, and training). The Defense Modeling and Simulation Office (DMSO) was focused on M&S special projects

Current DoD guidance is that DoD will continue to maintain funding at the level funded for Fiscal Years 2006-2011 and revise DoD Directive on M&S management, which will establish an executive committee to provide oversight of the FY 2006 program, pending approval of a new management approach. The effort will emphasize and support initiatives from the analytic side, adaptive planning, and testing in a joint environment

At the present, a new management approach has been developed by a committee composed of M&S, Test and Evaluation, Science and Technology, Programs and Policy communities within DoD, the Joint Staff, JFCOM, and the Services. The approach, which is pending formal approval by senior management, emphasizes improving integration and coordination of M&S efforts and programs DoD-wide and has incorporated a new DMSO business model that embraces a corporate focus on all M&S practices.

Changing focus, Mr. Cerri laid out what is perceived as future military and interagency challenges that face the analyst, planner, and decision maker in a changed complex world, how the DoD and military is meeting those challenges today, and what JFCOM's M&S community is doing to assist.

He stated that the military and the Nation will face a new, complex hybrid of the past mixed with the new, or fourth generation, warfare. The nature of the threat and the source of friction is non-national or transnational, e.g., ideology, religion, and ethnicity. The operational environment consists of transnational associations, networks of mutual interests that transcend traditional nation-state boundaries and processes. Transnational actors will also operate freely across traditional nation-state boundaries or between the seams in ungoverned processes and spaces.

Loose-knit cells of self-generating action groups having strong ideological convictions will capitalize on weak/failed states' inability to control actions and access to funding, facilities, sanctuary, and weapons. These groups and individuals, empowered by technology, will target political and social institutions, infrastructure, and civilians wherever there is vulnerability. They will operate asymmetrically and exploit the gaps between the capabilities of third generation armies to generate disproportionate effects, both kinetic and non-kinetic, using cultural attacks against all institutions of opposing governments and civil society. They will use terrorism as a main technique, exploit psychological warfare efforts, and use media as terrain to influence public opinion, spread ideology, obtain recruits, and sustain support.

The future of M&S at JFCOM depends on how to holistically address and help solve the difficult, multifaceted equations of this new complex world. The focus must be on understanding the interrelationship of all elements and operational domains: Political, Military, Economic, Societal, Infrastructure, and Information (PMESII). Currently in the field, military; specifically Army units, have reorganized and are planning and conducting operations that holistically consider and use these elements through Effects Based Operations (EBO). The question for JFCOM is how the M&S can support and enhance this effort.

One significant effort is the establishment of a PMESII Center of Excellence (CoE). This effort, approved by the Senate Armed Services Committee for implementation in FY 2007, will do the following:

- Support the warfighter's M&S needs for planning and analysis that reflects the interrelationship of PMESII, DIME, under the auspices of an effects-based approach
- Be globally accessible to all elements of national and coalition powers, from warfighter to agency, in support of unified action.
- Be responsive, with direct and robust analysis ties to planners and operators
- Produce and evolve a tool suite and capability that can be used for adaptive planning, analysis, and training as well as operational support
- Rely on expertise and leadership appropriate for the situation: i.e., NOT always military
- Serve as a rally point for those who have already engaged the problem and have solutions to share
- Serve as an education foundation to bring together an effective and proactive response from those currently engaged and those who will eventually find themselves embroiled

Currently, JFCOM is using Synthetic Environments for Analysis and Simulation (SEAS). This simulation incorporates artificial agents that are programmed with behavioral rules based on "accepted academic

theory" for interacting with each other and the environment and for accumulating information. Additionally, other efforts are underway to develop a course of action (COA) tool for PMESII at the tactical and operational levels, which includes a confederation of tools like SEAS.

He went on to state that one of the key "over the horizon" efforts seeks to create a realistic world synthetic environment. This environment will be designed to replicate and assess real world events and actors in real time: it is JFCOM's ground breaking futures project: Sentient World-Simulation (SWS). This new simulation is aimed at providing the analyst, planner, and decision maker with a near-omnipresent view and understanding of the current environment. It will feed analytical and current intelligence and data in to a super computer by continually incorporating dynamic and updated information from DoD's kinetic simulations, PMESII data, and human behavior models updated by intelligent and software agents worldwide.

Although much work must be accomplished before this system can be fielded, the requirement is realistic. This system is considered vital to the future success of our military in tomorrow's complex world. The bottom line is that unified PMESII action needs to and must incorporate cutting edge M&S to understand the twenty-first century operational environment

Complexity and Future Gaming

Dr. David Harries, Royal Military College of Canada, provided a look at the future complexity and the environment that will demand that our leaders, whether they be civilian or military, think differently and creatively. The question is how do leaders gain foresight, which he described as a way to find "things" you did not know, you may need to have, or to do, or to know" – the ways, means, and mindset. Secondly, he proposed the following truisms or axioms that leaders facing the future must understand:

- A Plan…until the first round is fired
- Hindsight is 2020
- The enemy of my enemy is my friend
- If it ain't broke, don't fix it

He further asserted that the ability to holistically frame the future is key, considering and understanding all aspects of the social, cultural, or religious, psychological influences belief and thoughts. If developed through this set of lenses, our estimates of the future complex operational and strategic environment will allow our analysts, planners, and leaders to the gain the necessary knowledge and understanding to cope with and deal with future geo-strategic challenges.

He followed up with an assessment of, and some cogent perspectives on, the four Protean Media games played by the Canadian diplomatic corps and military over the several years preceding this workshop.

The enduring value of game of this kind is that it forces the players to address multiple levels of complexity simultaneously (as it is in the real world). The game allows the player exposure to complex, dynamic, multi-jurisdictional (violent) environments watched and commented on in real time by the whole world. "Others" – NGOs, UN missions, organizations, institutions, agencies, programs, religions, commercial businesses, security businesses, crime, academia, law, justice, media, individual extremists, S&T communities, militias (warlords), insurgents, civil society – are often key actors now, and will remain key actors for the future.

He concluded that the game has taken on momentum in Canada, and the Canadian armed forces, seeing the value, has promoted this game as a tool to help leaders in making the difficult operational decisions of today and tomorrow. He was encouraged about the potential the Protean Media for educating future leaders.

Workshop Wrap-up

Mr. Bill Waddell, Co-Chair of the Proteus Management Group, thanked the attendees and presenters for coming and for their contributions and support during the past year. He stated that the PMG has laid the initial ground work for a second workshop in August 2007 and encouraged all workshop participants to help by providing input for topic areas and paper for next year's workshop agenda. He further asked each to share their important work and ideas on how to improve the group's effort for the upcoming year.

In conclusion, he provided a recap of the workshop and the way ahead for the Proteus Management Group. He outlined the following FY 07 PMG initatives:

- Intelligence Futures Common Core Curriculum Development. These blocks of instruction will supplement core curricula at National and DoD Intelligence colleges and universities. Modules will be centered on teaching tomorrow's mid- to senior-level analysts and planners how to handle uncertainty and think creatively and critically about future complexity.

- Publication of key Proteus related Topical Works. The goal is to provide leading authors and subject matter experts across the communities an opportunity to publish research on new and emerging futures concepts. These articles, papers and monographs will be featured on the PMG website and included in other professional publications.

- Complexity Gaming Enterprise (CGE). This effort will gather and discuss ideas from the various user communities on the possibility of expanding the use of serious gaming to assist modeling and simulation for intelligence analysis, planning, and decision making and education. As a parallel effort, the PMG is working to further develop the Protean Media and interactive Role-Playing Simulation (RPS) that will provide a wide audience with hands-on opportunities to experience the application of the Proteus Insights.

- PMG Website. The PMG is currently and will continue to collaborate, to post papers and articles, and have links available for Proteus related areas of interest on this site. The newest website upgrade will be implemented soon, and members can register and log on to the site at https://www.carlisle.army.mil/proteus. The PMG website will be fully collaborative and will soon include a blog/bulletin capability. The PMG staff will continue to place helpful links and information, papers, articles, and studies focused on future complexity and geo-strategic challenges. Membership registration is available on the site.

PROTEAN MEDIA DEMONSTRATION

Following the conclusion of the formal portion of the workshop, Dr. David Harries and Mr. Bill Waddell provided a demonstration of the Protean Media.

Protean Media Overview

In 2003, the Proteus consortium sponsored the development of an educational Role-Playing Simulation (RPS) that incorporated the use of the Proteus Insights, allowing participants and players to examine the results of human interaction and subsequent reactions, convergence and divergence, conflict and agreement. Entity players had the ability, within the context of a strategic or operational event or series (contemporary Iraq), to establish goals and develop their own strategies, which could be revealed or hidden, to achieve these goals. Each strategy then could be implemented in adjustable real time.

The Protean Media RPS or "Critical Thinking Game" was developed by Professor John Hiles at the Naval Postgraduate School's (NPS) Modeling, Virtual Environment, and Simulation (MOVES) Institute. Protean Media used for the demonstration is a "light" and low-cost RPS, designed to model complex adaptive systems and naturally evolving events. In the game, participants face ambiguous complexity manifested by others' goals, strategy, and intent. Professor Hiles' goal was "reification," or turning abstract concepts into tangible objects to handle and manipulate. This game is a systems approach to human conflict. The game incorporates tables of mental models/behaviors and shows the interaction of these models through a composite, connecting, moving generation system. Also, the speed at which interactions (virtual and cognitive) occur has been radically increased by information technologies within the game.

Protean Media demonstrated complexity by taking entity knowledge, harnessing it, and letting it manifest itself as tumbling reality. Inputs and direct or indirect actions will often not produce anticipated or expected results; nor will the outcomes be readily mapped into a pattern, or even consistently repeated based on the volatile, continually changing, and

temporal nature of human relationships and interactions among entities and populations. The game is oriented around thought, interplay, and reality. The play is paradoxical in nature and can render valuable insights.

The game environment – essentially entities/groups/factions and their attributes – are "wrappers," and it can be changed depending on the groups or regional areas where conflict or significant events (disaster relief, humanitarian assistance, regional peacekeeping, stability and reconstruction, civil war, etc.) are played out. As currently configured, it replicates the factions/groups within Iraq and is modeled accordingly. The key objective of the game is to find where factions and entities, ideas, and actions converge and either conflict or agree.

Demonstration

The twenty-three workshop participants were organized into "teams" to play the different entities currently represented in the game. The demonstration provided them with an opportunity to examine the results of human interaction and subsequent reactions, convergence and divergence, conflict and agreement. At the conclusion of the demonstration they provided insights into the utility of the game and suggested enhancements.

Protean Media's Current Capabilities and Future Potential

The game's basic backbone architecture has great growth potential. To optimize play, and educational benefit, the game needs to be reconfigurable and upgradeable in order to model additional scenarios, entities, and multiple planes of complexity. Even though the current Iraq "wrapper" models only eight entities – U.S. Coalition, Iraqi Government, Nongovernmental Organizations, Sadr Shi'a, traditional Shi'a, Sunnis, and a general category of "insurgents" – twenty-five entities or actors (and possibly more) can be added with only minor design modifications and at minimal cost.

To better educate the players prior to game execution, they should be provided background data that replicates real world information,

to include country background, regional studies, and specifics on state and non-state actors' intent, goals, and strategies. Information on any active international and nongovernmental organizations, describing their characteristics, capabilities, and attributes, would also be desirable. Additionally, the game's overall execution methodology (administration, moderation, data collection, After Action Reviews, etc.) should be designed not only to look at cognitive interaction and convergence but to better understand the results of unintended/intended outcomes and/or second and third order effects.

The Protean Media Game, although currently configured as an educational tool to reinforce student experiential learning, has the potential to be redesigned as a decision support tool (using expert agents for planning, rehearsal, or generating outcome models) if used in consonance with other cognitive assistants and learning agents (e.g. Disciple). If used in this venue, the tool should be initially utilized by strategic or operational field experts, analysts, and/or regional planners from military and/or interagency organizations. Validity of outcomes should be based on decisions and actions of experts who are competent to portray the many attributes particular to an actor/group/entity. Such a configuration will take significant effort; however, it is feasible with additional time and funding. Although the game has a "closed" versus an "open" architecture, it still is relatively easy to develop a series of different "wrappers" that can be applied to most real world or future scenarios using the basic architecture currently on hand. Finally, the NPS MOVES Institute is examining the use of robots/smart agents to play game entities in future versions. Such an application of artificial intelligence could dramatically change the cost, nature, and functionality of the Protean Media Game and other future games.

Summary

The Protean Media Game is not a total panacea for gaming or modeling complexity; however, it establishes a foundation for others to build upon. The PMG's ultimate goal is to develop a "scalable variable wrapper, agent based interactive," experiential education, planning, and implementation game or tool that identifies cascading second and third order effects and unintended consequences in complex environments by

incorporating the complex, temporal, and changing effects of human-behavior/belief systems and socio-cultural dimensions across the "planes of influence." Integration of advances in R&D from gaming theory, human factors analysis, influence, perception, and cognitive modeling, and other complex, nonlinear programming efforts must continue in order to create the ultimate "paradoxal" game.

APPENDIX A – AGENDA

Proteus Futures Academic Workshop

Analyzing Future Complex National Security Challenges within the Joint, Interagency, Intergovernmental and Multinational Environment

Time	Event
Tuesday, 22 August 2006 – Collins Hall	
0830–0840	Commandant's Welcome. Major General David Huntoon, USAWC
0845–0900	Admin and Proteus Workshop Overview. Mr. Bill Waddell, Proteus Management Group
0900–0945	"Proteus: The Genesis, Then and Now" Mr. Chris Schroeder, Northrop Grumman. Corporation/TASC
0945–1000	Break
1000–1100	"Mapping The Global Future: Seeing over the Horizon" Mr. Kenneth Knight Jr., National Intelligence Officer for Warning, Office of the Director of National Intelligence
1130–1300	Lunch, "National Security Management in the Age of Complexity" Professor Leon Fuerth, Elliot School of International Affairs, The George Washington University (Ardennes Room)
1300–1700	Panel #1: Geo-Strategic Policy and Strategy, Chair: Lieutenant Colonel Ike Wilson, PhD., Policy and Strategy Department, United States Military Academy (USMA) • "Proteus Insights and the Future of Global Jihadism" Mr. Shawn Brimley and Ms. Aidan Kirby, Center for Strategic and International Studies

Time	Event
	• "Democracy Promotion and Human Rights Development in the Middle East: A Path Dependency Theory Approach" Ms. Pippi Van Slooten, Department of Political Science, University of Nebraska
	• "Addressing the Curse of the 21st Century: Considerations and Updates to National Strategy for Victory in Iraq (NSVI)" Major Kathleen Meilahn
	• "Strength and Honor" Lieutenant Colonel Ike Wilson, PhD
1800–2100	Cocktails and Dinner " Critical Thinking, Relative Perspective and the Proteus Canada Connection" Mr. Jack Smith, Office of the National Science Advisor, Industry, Canada (Letort View Community Center)

Wednesday, 23 August 2006 – Collins Hall

0800–0850	"Israel's Future Security Environment in the Wake of the Israel-Hezbollah War?" Dr. Joshua Teitelbaum, Moshe Dayan Center, Tel Aviv University
0900–1120	Panel #2: Psychological, Religious, Social and Cultural Complexity in Future Policy and Strategy Formulation: Chair, Ms. Cindy Ayers, NSA Visiting Professor, CSL, USAWC
	• "Profiling International Change Processes" Dr. Guntram Werther, Western International University
	• "A New. Angle on the U.S. Military's Cultural Awareness (CA) Campaign: Connecting In-Ranks' Diversity to CA" Major Remi Hajjar, Foreign Military and Cultural Studies University
1130–1300	Lunch, "Future Conflicts: Values and Paradoxes." Dr. John Alexander, and Senior Fellow, Joint Special Operations University (JSOU) (Ardennes Room)

Time	Event
1300–1430	Panel #3: Future Strategic and Operational Intelligence Challenges: Chair, Dr. Dianne Smith, JMITC, Defense Intelligence Agency • "Homeland Security Futures Case Study: Agroterrorism" Lieutenant Colonel Shawn Cupp, U.S. Army Command and General Staff College (CGSC) • "Failed States and Intelligence Collection Missions" Dr. Ely Karmon, The Institute for Counterterrorism, Israel
1440–1745	Panel #4: Future Technology: Chair, Mr. Jack Smith, Office of the National Science Advisor, Industry, Canada • "The Application of Strategic Stress Management in Winning the Peace" Colonel Brian Rees, USAR, MD, MPH, Commander, 349th Combat Support Hospital • "Relooking the Cyber-Terrorism Threat and Military Support to the National Cyber-Warfare Response" Dr. Richard Kilroy, East Carolina University • "Digital Blitzkrieg: Updating the Pearl Harbor Analogy and Combating Multi–Domain Civilian Red Cells" Mr. Tim Rosenberg, White Wolf Security • "The Sword and the Network: Combining Body-Mind-Spirit Technology" Mr. Tim Rosenberg, White Wolf Security

Thursday, 24 August 2006 – The Collins Hall

0800–0850	"The Sunni - Shia Divide: Is a Coalition Viable in the Islamist Camp?" Dr. Ely Karmon, The Institute for Counterterrorism, Israel
0900–1430	Panel #5: Future Modeling, Simulation and Gaming Technology in Strategic and Operational Analysis, Decision Making and Experiential Education: Chair, Lieutenant Colonel Jon Rodden, CSL

Time	Event
	• "New Frontiers in Tactical Terrorism Analysis: An Evaluation of Machine Learning Techniques to Support Counter-terrorism Analysts Decision Making for predicting Culpability in Terrorist Bombing Attacks in Iraq" Mr. Daniel Mabrey, Dr. John Miller and Dr. Chris Hale, Sam Houston State University
	• "Cognitive Assistants for Analysts," Dr. Gheorghe Tecuci and Ms. Cindy Ayers, George Mason University Learning Agents Center and the National Security Agency
	• "The Future of Joint Modeling and Simulation " Mr. Anthony Cerri, J9, Joint Forces Command
	• "Complexity and Future Gaming" Dr. David Harries, Royal Military College of Canada
1430–1500	Panel Wrap-up Ms. Linda Williams, and Mr. Bill Waddell, PMG
1500–1700	Protean Media Demonstration (Optional) Mr. Waddell, Mr. Wimbish, PMG and Dr. David Harries, Royal Military College of Canada (22nd Infantry Room)

APPENDIX B – ATTENDEES

Proteus Futures Academic Workshop

Analyzing Future Complex National Security Challenges within the Joint, Interagency, Intergovernmental and Multinational Environment

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Dr.	Alexander, John	Joint Special Operations University (JSOU), Senior Fellow	nonlethal2@aol.com	(702) 255-7177
Ms.	Allwein, Kelcy	Defense Intelligence Agency (DIA), (JWS-7) Advanced R&D Projects Officer	kelcy.allwein@dia.mil	(202) 231-5958
Mr.	Auger, John	U.S. Army War College, CSL, BAH Project Manager	auger_john@bah.com	(717) 245-4284
Ms.	Ayers, Cindy	U.S. Army War College, CSL, Information Warfare Group, NSA Visiting Professor	cindy.ayers@us.army.mil	(717) 245-4472
Mr.	Barnes, Robert	U.S. Army War College, CSL, Command & Control Group, Robotics Director	robert.c.barnes@us.army.mil	(717) 245-4277
Mr.	Brimley, Shawn	Center for Strategic and International Studies, Research Associate	sbrimley@csis.org	(202) 775-3204
Mr.	Cerri, Anthony	U.S. Joint Forces Command (JFCOM), Experimentation and Engineering (J9), Director	anthony.cerri@je.jfcom.mil	(757) 203-3184
Mr.	Christensen, Steffen	Proteus Canada - Senior Research Consultant	contact_stef@rogers.com	(613) 237-7031
Dr.	Chouinard, Paul	Dept. of National Defence (R&D), Canada, Manager Security Operations Research	paul.chouinard@drdc-rddc.gc.ca.	(613) 944-8164

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
LTC (USA)	Cupp, O. Shawn	U.S. Army Command and General Staff College, DSMO Instructor	orville.cupp@leavenworth.army.mil	(913) 684-2983
Mr.	Doll, William	Joint Forces Command (JFCOM), Joint Warfighting Analysis Center, Futures Initiatives	bdoll@jwac.mil	(540) 653-5068
LTC (USA)	Elfendahl, Mark	U.S. Army Training and Doctrine Command (TRADOC), Army Capabilities Integration Center, Future Warfare Officer	mark.elfendahl@monroe.army.mil	(757) 788-4173
Dr.	Ellsworth, James	U.S. Naval War College, Professor	james.ellsworth@nwc.navy.mil	(401) 841-2215
Mr.	Fogie, Seth	Security Guide, InformIT.com, Editor/ Writer	seth@fogieonline.com	(717) 629-3858
Prof.	Fuerth, Leon	The George Washington University, Elliot School of International Affairs, Professor	esialsf@gwu.edu or HDPF@msn.com	(202) 994-8921
Dr.	Groh, Jeff	U.S. Army War College (USAWC), Department of Distance Education, Professor	jeffery.groh@us.army.mil	(717) 245-3587
Mr.	Glenney IV, William	Naval War College, CNO Special Studies Group, Professor	william.glenney@nwc.navy.mil	(401) 841-7572
Mr.	Green, Charles J.	U.S. Army Training and Doctrine Command (TRADOC), Director of Intelligence, Office of the Deputy Chief of Staff for Intelligence	charles.j.green@us.army.mil	(757) 788-5405

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Ms.	Griffin, Whitney	Defense Intelligence Agency (DIA), Intelligence Analyst	whitney.griffin@dia.mil	(703) 907-0509
MAJ (USA)	Hajjar, Remi	U.S. Army Training and Doctrine Command (TRADOC), Foreign Military and Cultural Affairs University, Professor	remi.hajjar@us.army.mil	(913) 682-1924
Dr.	Hale, W. Chris	Institute for the Study of Violent Groups, Sam Houston State University, IT Director	chrishale@shsu.edu	(936) 294-4790
Mr.	Hamby, Larry	Booz Allen Hamilton 122 N. Second St., Leavenworth, KS 66048	hambyl@bah.com	(913) 682-3316
Dr.	Harries, David	Royal Military College, Canada, Executive Director, Master of Arts Program in Defense Management and Policy	david.harries@rmc.ca jdsharries@aol.com	(613) 545-0306 ext. 3703
Mr.	Hobbs, Dwight	White Wolf Security/Associate	dwight@whitewolfsecurity.com	
Dr.	Hill, Sarah	Dept. of National Defence, Canada, Defence Scientist	hill.sa@forces.gc.ca	(613) 992-8689
Mr.	Hoffman, Frank	U.S. Marine Corps, Center for Emerging Threats (MCCDC), Research Fellow	frank.g.hoffman.ctr@usmc.mil	(703) 784-0451

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Dr.	Karmon, Ely	The Institute for Counter-Terrorism, Interdisciplinary Center (IDC), Israel, Senior Research Fellow	ekarmon@idc.ac.il	972-52-265-3306
Dr.	Kilroy, Richard	Department of Political Science, East Carolina University, Visiting Assistant Professor	kilroyr@ecu.edu	(252) 328-2349
Ms.	Kirby, Aidan	Center for Strategic and International Studies, Associate	akirby@csis.org	(202) 741-3927
Mr.	Knight, Ken , Jr.	Office of Director of National Intelligence (DNI), National Intelligence Officer for Warning	kenknight2@cox.net	(703) 482-7301
Dr.	Kujawa, Aili	Applied Physics Lab, John Hopkins University, Research Fellow	aili.kujawa@jhuapl.edu	(443) 778-6522
CAPT (R)	LeBouvier, Rand	Bluefin Robotics, Business Development Manager	rlebouvier@bluefinrobotics.com	(401) 662-1665
Dr.	Linehan, Thomas	Institute for Interactive Arts and Engineering, University of Texas, Dallas	thomas.linehan@utdallas.edu	(972) 883-4379
Mr.	Luman, Ronald R.	Johns Hopkins University/Applied Physics Lab (APL)	ronald.luman@jhuapl.edu	(240) 228-5239
Mr.	Mabrey, Daniel	Sam Houston State University, Director, Institute for the Study of Violent Groups	mabrey@shsu.edu	(936) 294-4875
Ms.	MacNulty, Christine	Applied Futures, Inc., CEO	christine.macjulty@gmail.com	(703) 528-5771

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Mr.	McIvor, Anthony	Black Swan Advisors	mcivor.anthony@kingfisher-sys.com	(703) 971-6429
MAJ (USAFR)	Meilahn, Kathleen	U.S. Central Command (CENTCOM), J5 Staff Officer	kmeilahn@alumni.utexas.net	(206) 388-6243
Dr.	Miller, John	Dept. of Economics & International Business, Sam Houston State University, Assistant Professor	eco_jmm@shsu.edu	(936) 294-1293
Prof.	Murphy, Dennis	U.S. Army War College, Center for Strategic Leadership, Director, Information Warfare Group	dennis.murphy@us.army.mil	(717) 245-3937
LtCol (USAF) / Dr.	Murphy, Timothy	Joint Military Intelligence College (JMIC), NRO Space Chair	timothy.murphy1@dia.mil	(202) 231-8698
Mr.	Nolan, William	Kencrest, Executive Director	ssimmons@kencrest.org	(610) 825-9360 ext. 203
Mr.	Pattak, Paul Byron	Pi2 Strategies, LLC, CEO	paulbyron@pi2strategies.com	(703)750-1610
Mr.	Poole, Kenneth	Joint Special Operations University (JSOU), Strategic Studies Division, Director	kenneth.poole.ctr@hurlburt.af.mil	(850) 884-3908
COL	Rees, Brian	349 Combat Support Hospital, Commander	brian.rees@us.army.mil	(805) 781-0525
Mr.	Rosenberg, Tim	White Wolf Security, CEO	tim@whitewolfsecurity.com	(717) 898-9654

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Mr.	Schroeder, Chris	Northrop Grumman, Technical Analysis Support Center, Program Manager	chris.schroeder@ngc.com	(703) 633-8300 ext. 4713
Capt (R) (USCG)	Seebald, Raymond	Seebald & Associates, Senior Associate	rseebald@yahoo.com	(716) 572-1072
Dr.	Smith, Dianne	Defense Intelligence Agency (DIA), Joint Military Intelligence Training Center	dianne.smith@dia.mil	(301) 638-3858
Mr.	Smith, John (Jack)	Office of National Science Advisor Industry, Canada	smith.jack@ic.gc.ca	(613) 943-7589
Mr.	Smyth, Edward	John Hopkins University / Applied Physics Laboratory (JHU/APL), National Security Analysis Dept., Director	ted.smyth@jhuapl.edu	(443) 778-6342
Mr.	Stuart, Chris	Defense Communications Agency (DCA), Defense Warning Office	christopher.stuart@dca.mil	(703) 901-0287
Dr.	Tecuci, Gheorghe	Learning Agents Center, George Mason University, Director	tecuci@gmu.edu	(703) 993-1722
Dr.	Teitelbaum, Joshua	Moshe Dayan Center, Tel Aviv University, Israel, Senior Research Fellow	teitelba@post.tau.ac.il	972 3-640-6448
COL (R)	Tripp, Howard	Retired	hst@10comcast.net	580-333-1542
Ms.	Van Slooten, Pippi	University of Nebraska, Doctoral Student	pvanslooten@excite.com	(402) 742-7716

TITLE	NAME	ORGANIZATION	EMAIL ADDRESS	WORK PHONE
Mr.	Waddell, Bill	U.S. Army War College, CSL, Director, Command & Control Group	william.waddell@us.army.mil	(717) 245-4222
Dr.	Werther, Guntram	Western International University, Professor	gwerther@excite.com	(480) 671-1304
Ms.	Williams, Linda	National Intelligence University, DNI, Vice Chancellor	lindabw@dni.gov	(703) 482-6127
LTC (USA) / Dr.	Wilson, Isaiah	U.S. Military Academy, Dept. Social Sciences, Future Warfare Division, Professor	isaiah.wilson@usma.edu	(845) 938-3894
Mr.	Wimbish, Bill	U.S. Army War College, CSL, Command & Control Group, Proteus Project Manager	william.wimbish@us.army.mil	(717) 245-3366
CDR (USN)	Wohlschlegel, Robert	U.S. Army War College, CSL, Joint / Multinational Group, Director, Naval Operations	robert.wohlschlegel@us.army.mil	(717) 245-4912

APPENDIX C – BIOGRAPHICAL SKETCHES

Proteus Futures Academic Workshop

Analyzing Future Complex National Security Challenges within the Joint, Interagency, Intergovernmental and Multinational Environment

Dr. John B. Alexander, Ph.D.

Dr. John B. Alexander is a senior fellow with the Joint Special Operations University. For more than a decade, Dr. Alexander has been a leading advocate for the development of non-lethal weapons. At Los Alamos National Laboratory, he organized and chaired six major conferences on non-lethal weapons, served as a U.S. delegate to four NATO studies on the topic, and was a member of the first Council on Foreign Relations study that led to creation of the Joint Non-Lethal Weapons Directorate. He wrote many of the seminal articles on non-lethal weapons and was a member of the National Research Council Committee for Assessment of Non-Lethal Weapons Science and Technology.

Dr. Alexander entered the U.S. Army as a private in 1956 and rose through the ranks to sergeant first class. He later attended Officer Candidate School and retired as a colonel of Infantry in 1988. During his varied career, he held many key positions in special operations, intelligence, and research and development. Academically, he holds an M.A. from Pepperdine University, and a Ph.D. from Walden University. He has also attended the Anderson School of Management at UCLA, the Sloan School of Management at MIT, and the Kennedy School of Government general officer program "National and International Security for Senior Executives" at Harvard University.

Ms. Cynthia E. Ayers

Cynthia Ayers is the National Security Agency's (NSA) Visiting Professor of Information Superiority at the Center for Strategic Leadership, U.S. Army War College, where she teaches senior officers of all U.S. military services (reserve and active duty) as well as officers from allied foreign military units. She is currently assisting Dr. Gheorghe Tecuci, Director of the Learning Agents Center at George Mason University, in an effort to develop a cognitive assistant for intelligence analysts. Dr. Tecuci and Professor Ayers co-teach a course entitled Military Applications of Artificial Intelligence: Intelligence Analysis. She also participates in the Army War College's annual Strategic Decision Making Exercise as a counterterrorism subject matter expert. Professor Ayers has had over thirty years of experience in federal service, all within the field of intelligence and mostly overseas, but her most recent assignment prior to her arrival at the Army War College was that of NSA Representative to the Director of Central Intelligence's Counterterrorism Center (2000-2002).

Ms Ayers has a B.S. in Applied Science and an M.A. in Public Administration from Troy State University. She is currently enrolled as a doctoral student at Walden University where she is completing a degree in Homeland Security Policy Analysis, focusing on counterterrorism.

Mr. Shawn Brimley

Shawn Brimley is a research associate in the Center for Strategic and International Studies International Security Program, working on a variety of defense-related projects, including Beyond Goldwater-Nichols and the Project on Special Operations Forces. His current research includes U.S. defense strategy and capabilities, al Qaeda and similar terror networks, the counterinsurgencies in Afghanistan and Iraq, and U.S. intelligence policy. Mr. Brimley has published commentary in the Boston Globe, the Baltimore Sun, the Washington Times, the Toronto Star, and Defense News. He has published articles in the journals Joint Force Quarterly, Parameters, and Armed Forces Journal. He also co-authored a study of Cold War-era U.S. strategic planning for Princeton University's Project on National Security. He is a member of the Canadian Institute of Strategic Studies and the Canadian Association for Security and Intelligence Studies.

Mr. Brimley holds a B.A. in history from Queen's University (Canada), an M.A. in security studies from American Military University and he is pursuing further graduate work in security policy from the Elliott School of International Relations at George Washington University.

Mr. Anthony Cerri

Mr. Tony Cerri is the U.S. Joint Forces Command Joint Futures Laboratory Experiment Engineering Department Lead responsible for the technical support to all J9 experiments and environments. This includes Information Technology, Knowledge Management, Modeling and Simulation (M&S), and Engineering Operations. He is a retired U.S. Army, Infantry, Lieutenant Colonel.

Mr. Cerri is a graduate of the United States Military Academy. He earned masters degrees from Central Michigan University in Administration and from the Florida Institute of Technology in Management. His military awards include the Legion of Merit and the Bronze Star.

Lieutenant Colonel O. Shawn Cupp, USA

Lieutenant Colonel O. Shawn Cupp is an Assistant Professor in the Department of Logistics and Resource Operations at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas. He is finishing a six month Research Fellowship on "Assessing the Threat of Domestic Terrorism in Support of Homeland Defense." LTC Cupp just developed and is the course author for A430 "Responding and Supporting Domestic Incidents." He recently returned from a deployment to Djibouti, Africa, where he served as the CJ-4, Deputy Director for Logistics for the Combined Joint Task Force – Horn of Africa.

LTC Cupp is a graduate of the Virginia Polytechnic Institute and State University (Virginia Tech) with a B.S. in Agricultural Education and a M.S. in Vocational and Technical Education. His military education includes the U.S. Army Command and General Staff College, from which he also earned a Master of Military Art and Science degree. His awards and decorations include the Legion of Merit, the Bronze Star, and the Defense Meritorious Service Medal.

Professor Leon Fuerth

Professor Leon Fuerth is now serving as a research professor at George Washington University, leading a program entitled "Forward Engagement," for the study of long-range policy analysis. Professor Fuerth's career in government spanned thirty years, including positions in the State Department, on the House and Senate staff, and in the White House. His most recent government service was as Vice President Gore's National Security Adviser for the eight years of the Clinton administration, where he served on the Principals' Committee of the National Security Council, alongside the Secretary of State, the Secretary of Defense, and the President's own National Security Adviser. After retiring from government service, he served as the J.B. and Maurice C. Shapiro Professor of International Affairs from January 2001 to January 2003. He is also a member of the Council on Foreign Relations; a member of the Board of Directors of the Atlantic Council; an adviser to Manatt Jones Global Strategies, LLC; and a Senior Associate at the Center for Strategic and International Studies.

Professor Fuerth holds a bachelor's degree in English and a master's degree in history from New York University, as well as a master's degree in public administration from Harvard University.

Colonel Joe Green, USA (Retired)

Colonel Joe Green is currently serving as the Director of Intelligence, Headquarters, U.S. Army Training and Doctrine Command, Ft. Monroe VA. He is actively engaged in development of Army Modular Force Concepts and definition of future threats. His office has been responsible for shaping the Joint Operational Environment against which the future Modular Force is framed, and is involved in ongoing wargaming and analysis of force requirements. The directorate is also heavily engaged in ongoing requirements associated with operations in Afghanistan, Iraq, and elsewhere. Prior to his retirement from the United States Army, COL Green served in a variety of command and staff assignments in infantry, armor and military intelligence. He led the Chairman's Haiti and Iraq Intelligence Task Forces in 1994, commanded V Corps' 205th Military Intelligence Brigade in Bosnia-Herzegovina and Germany from 1995-97,

and served as G-2, III Armored Corps from 1998-2000, during which he deployed to both Bosnia and Kosovo. COL Green has participated in Operation Iraqi Freedom as an observer of Coalition and U.S. Forces in both Kuwait and Iraq.

COL Green holds B.A. and MBA degrees from Texas A&M University, as well as an M.A. in Strategy and National Security Studies from the U.S. Naval War College. His military education includes the U.S. Army Command and General Staff Officer's Course and the Senior Course at the Naval Command College, U.S. Naval War College.

Major Remi Hajjar, USA

Major Remi Hajjar is a student at the University of Foreign Military and Culture Studies – Red Team University, Fort Leavenworth, Kansas. His next assignment is at the U.S. Army Intelligence Center at Fort Huachuca, Arizona, where he will work in support of the new TRADOC Culture Center and expects a deployment in support of the GWOT. He previously served as an assistant professor in the Department of Behavioral Sciences and Leadership at the United States Military Academy, where he researched, published, and taught classes with a focus on sociology, military sociology, culture, bureaucracy, education, and leadership. His field assignments include military intelligence assignments in the 3rd Squadron of the 4th Cavalry; platoon leader, Executive Officer, and Company Commander in 125th Military Intelligence Battalion; and assignments in the 111th Military Intelligence Brigade.

MAJ Hajjar is a 1993 graduate of the U.S. Military Academy, in Leadership Studies, and he earned an M.A. from Northwestern University in Sociology in 2002. His military education includes attendance at the Military Intelligence Basic and Advanced Courses and the United States Army Command and General Staff College. His personal decorations include multiple awards of the Meritorious Service Medal.

Dr. William C. Hale, Ph.D.

Dr. Chris Hale is Technology Director of the Institute for the Study of Violent Groups in Huntsville, Texas. His research interests include terrorism, counterterrorism intelligence and computer crime. He is

the Chief Architect and Database Administrator for a federally funded Terrorism Database tracking more than 1800 global and domestic extremist groups. He is also a Clinical Assistant Professor in the College of Criminal Justice at Sam Houston State University where he teaches various crime analysis and other computer-related courses. His most recent work, entitled *Information Versus Intelligence: Construction and Analysis of an Open Source Relational Database of Worldwide Extremist Activity,* can be found in the upcoming Winter 2006 issue of the International Journal of Emergency Management.

Dr. Hale received a B.S. in Psychology from Kansas State University. He earned his M.S. degree in Experimental Psychology from Emporia State University and his Ph.D. in Criminal Justice from Sam Houston State University.

Dr. David Harries, Ph.D.

Dr. David Harries is the Executive Director of the Master of Arts Programme in Defence Management and Policy at the Royal Military College of Canada. Based in Kingston, Ontario, his current major activities include research, curriculum development, post-graduate teaching and consulting in the fields of Strategic Foresight, civil-military relations, Asia Pacific security, and human security engineering. He has been engaged with Proteus activities since 2002 and has played all games to date.

Dr. Harries has a B. Eng (Engineering Physics) from the Royal Military College of Canada, and both an M. Sc (Nuclear Engineering) and Ph.D. (Nuclear Engineering) from the University of London, United Kingdom. He has worked in the public and private sectors as a military officer, a consultant or a volunteer on engineering, personal, and corporate security, humanitarian aid, post-conflict, and post-disaster response and recovery, university education, and executive professional development. He has lived in nineteen countries and paid between one and twenty visits to another ninety-two.

Lieutenant Colonel Frank Hoffman, USMC Reserve (Retired)

Lieutenant Colonel Frank G. Hoffman is a Research Fellow at the Center for Emerging Threats and Opportunities (CETO) in Quantico, VA, and is a non-resident Senior Fellow of the Foreign Policy Research Institute. His military career includes twenty-four years as a Marine infantry officer and several tours at Headquarters Marine Corps and the Pentagon. He has served on the staff of two Congressional commissions: the commission on Roles and Missions of the Armed Services, and the U.S. National Security Commission/21st Century (Hart-Rudman Commission). He also served on three Defense Science Boards, including the 2004 Defense Science Board for Post-Conflict Stability Operations.

Lt Col Hoffman is a graduate of the University of Pennsylvania (Wharton School, B.S. Economics, 1978), and George Mason University (M.Ed., 1992). He graduated from the Naval War College with highest distinction (1995). He holds the Navy Commendation Medal (gold star in lieu of second award), Navy Achievement Medal, and the Department of the Navy Civilian Superior Service Medal (1998).

Dr. Ely Karmon, Ph.D.

Dr. Ely Karmon is a Senior Research Scholar at the International Policy Institute for Counter-terrorism, and since 2003, also at The Institute for Policy and Strategy, The Interdisciplinary Center, Herzliya, Israel. From 1970 to 1990 he served as advisor and researcher in international relations at the Prime Minister's Ministry in Israel. He is also an Advisor to the Israeli Ministry of Defense and his fields of research include political violence and extremism; international terrorism; WMD terrorism; ethnic conflicts; anti-Semitism and racism; Middle Eastern security; and Israeli regional strategy. He is a member of the International Permanent Observatory (IPO) on Security Measures During Major Events at the United Nations Interregional Crime and Justice Research Institute (UNICRI), Turin, Italy. He is a member of the Atlantic Forum of Israel. Dr. Karmon is involved in NATO workshops on terrorism and on the Mediterranean Dialogue. Has written extensively on international terrorism and has participated to numerous international conferences. His book, *Coalitions between Terrorist Organizations: Revolutionaries,*

Nationalists, Islamists, was published in May 2005 by Brill Academic Publishers (Leiden and Boston).

Dr. Karmon has a B.A. in English and French Culture from the Hebrew University, Jerusalem. He took a Licence in International Relations from the Institut d'Etudes Politiques, and Licence in Bantu languages from the Ecole de Langues Orientales, Paris. He earned his Ph.D. at the Department of Political Science at Haifa University. His Ph.D. thesis deals with 'Coalitions of Terrorist Organizations: 1968-1990.'

Dr. Richard J. Kilroy, Jr., Ph.D.

Dr. Richard J. Kilroy is Visiting Assistant Professor Political Science and Assistant Director Military Programs at East Carolina University. He has a dual appointment teaching graduate and undergraduate Political Science courses and administering the Military Program Office. His expertise includes: International Relations, National Security Affairs, Comparative Politics: Latin America, and Security Studies.

Dr. Kilroy is a retired U.S. Army Lieutenant Colonel who graduated from Santa Clara University with a B.S. in Political Science: International Relations. He also attended the University of Virginia where he earned both an M.A. and a Ph.D. in Foreign Affairs. His military education includes attendance at the Joint Forces Staff College and the Mexican War College. His many awards and decorations include the Legion of Merit, Joint Meritorious Achievement Award, and the Defense Meritorious Service Award. Dr. Kilroy's final active duty assignment was teaching Joint Information Operations at the Joint Forces Staff College.

Ms. Aidan Kirby

Ms. Aidan Kirby is a research associate in the Center for Strategic and International Studies International Security Program and works on a variety of terrorism-related projects, including the Transatlantic Dialogue on Terrorism and Alms or Arms: The Challenge of Islamic Charities. Her current research interests include al Qaeda and its affiliate networks, the dynamics of radicalization and recruitment, the counterinsurgency in Iraq, and U.S. counterterrorism and intelligence policy. Along with Daniel Benjamin, Ms. Kirby recently coauthored a CSIS report entitled

Currents and Crosscurrents in Radical Islam. Her article, *The London Bombers as 'Self-Starters': A Case Study in Indigenous Radicalization and the Emergence of Autonomous Cliques*, will be published in that April 2007 issue of *Studies in Conflict and Terrorism*. Ms. Kirby has also published commentary in the Baltimore Sun, the Globe and Mail, the Toronto Star and the Washington Times.

Ms. Kirby holds a B.A. in history and philosophy from McMaster University, and an M.A. in international affairs from Carleton University.

Mr. Kenneth L. Knight, Jr.

Mr. Kenneth L. Knight, Jr. was appointed National Intelligence Officer for Warning in August 2004. He is a Defense Intelligence Senior Executive with over twenty-five years of experience at the national, departmental, and theater intelligence echelons and has served in a range of intelligence disciplines in both joint and allied assignments. He served as the Chief of DIA's Defense Warning Office (2002-2004) and as the Defense Intelligence Officer for Global Trends (1992-2002). Prior to these assignments, Mr. Knight served as the Senior Executive Analyst on the Army Staff, where he managed Army involvement in the National Intelligence production process and represented the Army on the Military Intelligence and National Foreign Intelligence Boards. As Deputy National Intelligence Officer for General Purpose Forces on the National Intelligence Council (1993-1995), he directed the planning and production of interagency National Intelligence Estimates on foreign conventional military trends and capabilities. Prior to that, Mr. Knight was the Army's Deputy Director of Foreign Intelligence, where he oversaw the analytic content and managed the planning and execution of the Army Staff's global intelligence production effort. Before that, Mr. Knight spent five years in Europe analyzing Warsaw Pact political and military developments for the U.S. European Command, the U.S. Army Europe, and NATO. He has also served as the Chief of the Army's European Warning Center and as an analyst for DIA, the Army Staff, and the U.S. Navy.

Mr. Knight has a broad background in global security issues and foreign military strategy, capabilities, and operations. He holds a B.A.

in history from James Madison University, an M.A. in security policy studies from George Washington University, and is a graduate of the National War College.

Captain Rand D. LeBouvier, USN (Retired)

Captain Rand D. LeBouvier recently retired from the service as director of the Decision Making and Implementation course at the Naval War College and now works for Bluefin Robotics – the leading maker of Unmanned Underwater Vehicles. He was the first to head the Unmanned Aerial Vehicles Section in the Air Warfare directorate in the Office of the Chief of Naval Operations in Washington, D.C.

CAPT LeBouvier is a 1978 graduate of the United States Naval Academy, and has earned masters degrees from the University of Rhode Island in Marine Affairs, and the Naval War College in National Security and Strategic Studies. His military education includes attendance at the United States Marine Corps Command and Staff College and the Senior Course at the Naval War College. He is currently pursuing his doctorate at Salve Regina University.

Mr. Daniel J. Mabrey

Mr. Daniel J. Mabrey is the Director of the Institute for the Study of Violent Groups (ISVG) at Sam Houston State University. ISVG is a federally-funded terrorism research center that is working to develop web-based analysis toolkits for exploiting open source information on terrorism. His current research focus is terrorism, quantitative methods, transnational crime issues, and the role of intelligence in policing.

Mr. Mabrey has undergraduate degrees from Sam Houston State University in Criminal Justice and Business Administration. He is currently completing his doctorate in criminal justice at the College of Criminal Justice at Sam Houston State University, where his dissertation evaluates the performance of classification techniques that estimate culpability for terrorist bombings in two low-intensity conflicts in the Middle East.

Major Kathleen Meilahn, USAFR

Major Kathleen Meilahn is currently assigned to the J-5, U.S. Central Command. Prior to activation she was the Director of Business Development for Very Important Pilots, LLC, where she had been instrumental in development of the Girls With Wings and Generate LIFT (Lead, Inspire, Fund, Train.) Programs, both designed to encourage today's youth to achieve personal and academic success in Science, Technology, Engineering, and Mathematics (STEM). MAJ Meilahn is a former Army Aviator and current Air Force Reserve C-130 pilot, a combat veteran who flew missions supporting Operations Iraqi Freedom and Enduring Freedom. Her research and publications address security and defense strategy, inter- and intra-state conflict management, Islamic sources of conflict resolution, health-related force protection policy, governance, democratization, development, and various aviation industry issues.

MAJ Meilahn holds a B.S. from the College of Communications at the University of Texas-Austin, and a Master's of International Service from American University, Washington DC. Her military schooling includes the Army's Basic and Advanced Aviation Courses, and she is currently enrolled in the Air Command and Staff College. Among her awards are the Army Commendation Medal and the Air Medal.

Dr. John M. Miller, Ph.D.

Dr. John Miller is an Assistant Professor in the Department of Economics and International Business at Sam Houston State University, where he teaches business analysis and operations research. He is also the president of Benchmark Research.

Dr. Miller holds both a B.A. in mathematics and an M.S. in statistics from the University of Chicago. He earned an M.A. and a Ph.D. in statistics from Rice University. Dr. Miller also earned a Juris Doctorate from the University of Houston Law Center.

Colonel Brian M. Rees, M.D., USAR

Colonel Brian M. Rees is a U.S. Army Reservist. He is a board certified family physician who has also taught the Transcendental Meditation program and researched deployment of technologies of consciousness for reduction of violent conflict. Colonel Rees is the author of *Terrorism, Retaliation and Victory: Awaken the Soul of America to Defeat Terrorism Without Casualties and Heal Your Self, Heal Your World*.

Dr. Rees received his medical degree and master's degree in public health from Tulane University. His military education includes the Army Command and General Staff College and he is currently enrolled in the second year of the U.S. Army War College non-resident course. He has over thirty years of commissioned military service. COL Rees is the commander of the 349th Combat Support Hospital, headquartered in Bell, California.

Lieutenant Colonel Jon Rodden, USA

Lieutenant Colonel Jon Rodden is currently serving as director of the Modeling Analysis Team in the Operations Research Group at the U.S. Army War College. He is an Army Aviator and Operations Research Analyst with twenty-one years serving in various assignments in the United States, Europe and Asia. His ORSA assignments include work in the Studies branch at the Directorate of Combat Developments at Ft Rucker AL; and in the combat modeling division at the TRADOC Analysis Command, Ft Leavenworth, Kansas.

LTC Jon Rodden earned his batchelor's degree in general engineering from the United States Military Academy, and his master's in business from Central Michigan University. His military education includes graduation from the U.S. Army Command and General Staff College. Included in his awards and decorations are multiple awards of the Meritorious Service Medal.

Mr. Timothy S. Rosenberg, JD

Mr. Tim Rosenberg is an information security specialist with a strong legal background. Tim is the President and CEO of White Wolf Consulting, a company designed to produce and deliver Information

Protection training to a wide variety of clients. He has been an Associate Research Professor at George Washington University, where he taught Information Warfare and Computer Security courses, and was an Adjunct for Georgetown University's Security Studies Program. Tim has presented material at a variety of international conferences and has also been a guest lecturer at the U.S. Military Academy at West Point, the Army War College's Center for Strategic Leadership, and the Villanova University School of Law.

Mr. Rosenberg has a B.S. from Indiana University of Pennsylvania and earned a Jurist Doctorate degree from the Villanova University School of Law. He was admitted to the Pennsylvania Bar in 1997.

Dr. Joshua Teitelbaum, Ph.D.

Dr. Teitelbaum is a Senior Research Fellow at Tel Aviv University's prestigious Moshe Dayan Center for Middle Eastern and African Studies, where he studies the politics and history of Saudi Arabia and other Persian Gulf countries, as well as Palestinian issues. He is the author of two acclaimed books: *Holier Than Thou: Saudi Arabia's Islamic Opposition* (Washington Institute for Near East Policy), and *The Rise and Fall of the Hashemite Kingdom of Arabia* (New York University Press), a study of the early modern history of Saudi Arabia. He has published numerous scholarly articles on the modern Middle East and his work has also appeared in The New Republic and The Jerusalem Report. His comments and expertise have been sought by the New York Times, the Washington Post, and the Wall Street Journal.

Dr. Teitelbaum took his B.A. in Near Eastern Studies at UCLA and his M.A. and Ph.D. in Middle Eastern History at Tel Aviv University. He is also a Reserve Captain in the Israeli Army.

Mr. Chris Schroeder

Mr. Chris Schroeder is a section and program manager at Northrop Grumman Information Technology/TASC, where he specializes in foreign denial and deception, threat analysis, mission protection, contingency planning, and related areas. From 1998-2002, he organized and led Proteus, a scenario-based planning effort for the National

Reconnaissance Office's Advanced Systems and Technology Directorate. During a 22-year military career, he held intelligence positions in the Office of the Secretary of Defense, the Defense Intelligence Agency, the Joint and Air Staffs, and U.S. Air Forces in Europe (USAFE).

Mr. Schroeder holds a bachelor's degree in Humanities from the U.S. Air Force Academy and a master's degree in International Public Policy from the Johns Hopkins University School of Advanced International Studies (SAIS).

Dr. Dianne L. Smith, Ph.D.

Dr. Dianne Smith is a Senior Instructor at the Joint Military Intelligence Training Center. Earlier she served as an analyst on Russia for Allied Forces Central Europe. From August 1997 until July 1998 she was the Director of Army Intelligence at the Center for Strategic Leadership. She served as a Strategic Research Analyst in the Strategic Studies Institute from August 1995 to August 1997. Prior to that, she was Team Chief for Central Asia, National Military Intelligence Collection Center, Defense Intelligence Agency. A Military Intelligence officer and Russian Foreign Area Officer, her previous assignments include U.S. Army Exchange Officer to the United Kingdom Defense Intelligence and Security School, Ashford, Kent, United Kingdom; Chief of Strategic Intelligence Branch, Intelligence Division, Allied Forces Central Europe, Brunssum, Netherlands; Counterintelligence Officer, Combined Field Army (ROK-US), Uijongbu, Korea; and Assistant Professor of Russian History at the U.S. Military Academy. Her recent works include, *Muscovite Logistics, 1475-1598* and *From Chattanooga to Durham Station, the Influence of Logistics upon Sherman's Strategy*.

Dr. Smith holds a B.A. in history and international relations from the University of Nebraska and an M.A. and Ph.D. in Russian history from the University of California at Davis. She is a graduate of the U.S. Army Command and General Staff College and the U.S. Army War College.

Mr. Jack Smith

Mr. Jack Smith is Director of Science and Technology Foresight for the Office of the National Science Advisor, part of Industry Canada.

Formerly he was Senior Corporate Strategist and Manager Planning and Assessment for the National Research Council (NRC) of Canada

Mr. Smith brings over twenty years of federal government policy, technology and innovation program development experience to his futures and foresight work. He is or has been a member of the Canadian Futures and Strategies Network (FSN), International Institute of Forecasters (IIF), the Society of Competitive Intelligence Professionals (SCIP) and the Canadian Association of Business Economists (CABE), and the author of articles for R&D Management, Policy Options and the Innovation Journal on technology futures and strategic management. He holds degrees from Queen's University, Ontario and Cornell University, Ithaca, New York.

Dr. Gheorghe Tecuci, Ph.D.

Dr. Gheorghe Tecuci is Professor of Computer Science and Director of the Learning Agents Center at George Mason University. He received two Ph.D. degrees in Computer Science, from the University of Paris-South and from the Polytechnic University of Bucharest, both in 1988. He joined George Mason University in 1990. Between 2001 and 2003 he was also the Chair of Artificial Intelligence at U.S. Army War College. His research is focused on creating and applying a theory for the development of knowledge-based agents by typical users who do not have prior knowledge engineering experience. The envisioned theory will allow these users to develop intelligent assistants that incorporate their problem solving expertise, and will thus contribute to a new revolution in the use of computers where typical users will no longer be just users of programs developed by others, but agent developers themselves. As part of this long-term research effort, he has originated or contributed to several important concepts in intelligent agents, machine learning and knowledge acquisition, including: multistrategy learning, learning agent shell, plausible explanations, plausible version spaces, plausible justification trees, understanding-based knowledge extension, consistency-driven knowledge elicitation, integrated teaching and learning, and mixed-initiative reasoning.

Dr. Tecuci has been awarded grants and contracts by the Intelligence Community, Defense Advanced Projects Agency, Air Force Office of Scientific Research, Air Force Research Lab, National Science Foundation, Army War College, and National Research Council. He was elected member of the Romanian Academy and received several awards, including the U.S. Army Outstanding Civilian Service Medal, the IT&E Outstanding Research Faculty Award, the Best Paper Award at the International Conference on Intelligent Tutoring Systems, the Innovative Application Award from the American Association of Artificial Intelligence, and the Romanian Academy Award for Research Excellence on Learning Systems.

Ms. Pippi Van Slooten

Pippi Van Slooten is a Doctoral Student in Political Science focusing on Comparative Politics, American Government, and Political Communication at the University of Nebraska, Lincoln. She served on active duty with the 25th Infantry Division and as a member of the U.S. Army Reserves deployed in support of Operation Iraqi Freedom. She has presented papers at International Communication Association (Paper: *The Rhetoric of Osama bin Ladin*) and the Western States Communication Association (Paper: *Female Palestinian Suicide Bombers*).

Ms. Van Slooten holds a B.A .with distinction in Telecommunication and Film from San Diego State University and an M.A. in Communication Studies, also from San Diego State. Her military awards include the Army Commendation Medal, Global War on Terrorism campaign ribbon, and the Iraqi Campaign ribbon.

Mr. William O. Waddell

Mr. Bill Waddell is the director of the Command and Control Group in the Center for Strategic Leadership's Science and Technology Division and is also a Co-Chair for the emerging Proteus Management Group. He has been on the faculty of the U.S. Army War College since December 1994, teaching Command and Control systems and applications, Military Crisis Action Planning, Information Operations and Command and Control Warfare, and Network Centric Warfare. He has oversight and maintenance of the Global Command and Control

System at USAWC, the development of the Joint Robotics program, the War College's participation in the Defense Information Systems Agency's Network Centric Enterprise Services program, and the application of collaboration and collaborative systems into the Army War College's academic and exercise program. In his personal life Mr. Waddell is the Northeast Regional Director for the international ALERT Cadet program, dedicated to teaching character to young men ages 8-17.

Mr. Waddell is a retired Naval Aviator. He has a B.S. in Education from the University of Wisconsin, Lacrosse. He earned an M.A. in Strategic Studies from the Naval War College and an M.A. from Salve Regina University in International Relations.

Dr. Guntram Werther, Ph.D.

Dr. Guntram Werther is Professor of International Politics and Economics at Western International University and is newly affiliated with Thunderbird – the Garvin School of International Management. Since 1986, he has studied comparative conflict styles and mirroring management approaches of governments dealing with ethnic national self-determination movements and, since 1992, worked on developing holistically integrative analysis techniques for better predicting emerging trends and patterns of international change. Dr. Werther's "profiling international change processes" approach is an integratively holistic and socio-psychologically grounded approach to understanding how change happens within and among different societies that has been used successfully and extensively within corporate venues.

Dr. Werther earned a B.S. in Wildlife Management from the University of Arizona (Tucson) in 1974. He received his doctorate in Comparative Politics from Washington University in St. Louis in 1990 where his dissertation was defended "with distinction," being also twice nominated as the best work in comparative politics nationally.

Ms. Linda Williams

Ms. Linda Williams is the Vice Chancellor of the National Intelligence University(NIU) and Deputy Chief Learning Officer in the office of the Assistant Deputy Director of National Intelligence for Education and

Training (ADDNI/E&T) and Chancellor of the National Intelligence University. The ADDNI/E&T, on behalf of the Director of National Intelligence, directs the community's office of education and training, and concurrently coordinates the education, training, and related research programs of the United States Intelligence Community as the Chancellor of the NIU. Prior to joining the office of the ADDNI/E&T, Ms. Williams served as the program manager for analytic tools and the Chief Technology Officer for the office of the Assistant Director of Central Intelligence for Analysis and Production (ADCI/AP). She managed the Analytic Tools program, led the Analytic Research Network in developing the Analytic Research Agenda, and coordinated information sharing for the ADCI/AP.

Ms. Williams has served over twenty-nine years in the Intelligence Community in a variety of managerial, budgetary, liaison and technical positions. She is certified as an Intelligence Community Officer. Ms. Williams holds a B.A. in Russian from Florida State University, a B.S. in Computer Science from the University of Maryland University College, and a Masters of Strategic Studies from the U.S. Army War College.

Lieutenant Colonel Isaiah Wilson III, USA, Ph.D.

Lieutenant Colonel Isaiah (Ike) Wilson III is a tenured Academy Professor with the Department of Social Sciences at the United States Military Academy, West Point, New York. He is an Army aviator, military historian, and strategist. His portfolio includes military command in Germany and the Balkans and research and publication in the areas of security and defense strategy, conventional arms procurement and sales (force modernization), and professional military education. LTC Wilson is a combat veteran of Operation Iraqi Freedom, where he served as the chief of war plans for the 101st Airborne Division (Air Assault) in Northern Iraq.

He holds a B.S. in International Relations from the United States Military Academy, Master's degrees in Public Policy and Government from Cornell University, two Master's in Military Arts and Sciences (M.M.A.S.) one from the U.S. Army's Command and General Staff College and the second from the U.S. Army's School of Advanced Military Studies, and a Ph.D. from Cornell University.