

F C U S

SPRING
2006

THE POTOMAC INSTITUTE FOR POLICY STUDIES

21st Century Marines in Africa

Africa is a continent simmering with all the ingredients necessary for future conflict. Three times the size of the United States and encompassing some 54 nations, Africa is beset by numerous problems, including armed conflict, poverty, displacement, disease, weak governance, repression, and misuse of resources. These factors will continue to pose a threat to the U.S. security goals, to include regional stability, respect for human rights, and promotion of democratic values.

In January 2006, the Center for Emerging Threats and Opportunities (CETO) hosted a two-day conference, "21st Century Marines in Africa: West and Central Regions," at the General Alfred M. Gray Marine Corps Research Center in Quantico, Virginia. The conference exposed Marine leaders and planners to the continent, placing emphasis on the western and central African regions. Distinguished speakers discussed the implications of Africa on Marine Corps operations, concepts, and capabilities. The aim of the U.S. Marine Corps with regard to Africa will be to produce well trained, culturally agile, and disciplined Marines who are prepared to operate anywhere on the continent.

Africa is the world's second largest continent. Few natural harbors, generally non-navigable rivers, narrow coastal plains separated from interior plateaus by escarpments, and large tracts



of desert, lush tropical jungles, and various types of savannah contribute to the spectacular landscape of Africa. But these geographic characteristics hinder the development of ground and water lines of communications needed to link the different parts of the continent, facilitate human interaction, and exploit its many natural resources. The cultural landscape is just as varied and fractured as more than 800 million people comprise hundreds of distinct ethnic groups speaking nearly as many different languages and follow varying religious practices. Family and tribal loyalties and obligations form the core of African cultural identities. Increasing religious tensions between Christians, Muslims, and traditional beliefs adherents contribute to the conditions of potential future strife.

While sub-Saharan Africa has more than eleven percent of the world's population, it accounts for

less than two percent of global trade. Per capita income is declining as populations grow. Agricultural outputs, as well as social services, have been unable to keep up with the high birth rates across the continent. AIDS and other diseases have ravaged Africa. Most AIDS victims in sub-Saharan are between the ages of 15 to 49—the most able-bodied and economically productive age bracket—who thus contribute less to region's economic productivity. Staggering foreign debt limit allocation of scarce resources to address social and economic needs, as well as discourage steady foreign investment.

(Marines in Africa continued on p.8)

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2006 Navigator Awards

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SAVE THE DATE!

The 2006 Navigator Awards
will be held
Tuesday, June 27th
at the
Willard InterContinental Hotel
in Downtown Washington, D.C.
For more information visit
www.potomac institute.org

The Potomac Institute annually brings together members of the science and technology policy community to honor its outstanding individuals. The Navigator Awards recognize those who have made significant contributions to further science and technology policy development in the United States. The Institute believes that honoring these individuals for their distinguished accomplishments is an effective method to promote understanding of science and technology and its growing impact on government and society. "We hope these individuals inspire others to lead in science and technology," said **Dr. Dennis McBride**, President of the Institute.

Previous awardees include former **Virginia Governor James Gilmore**, **Senator Joseph Lieberman**, **Senator Pat Roberts**, **Senator Jeff Bingaman**, **Congressman Pete Hoekstra**, **Congressman Dana Rohrabacher**, **Congressman Sherwood Boehlert**, **Congressman Tom Davis**, **Dr. Anthony Tether** (Director, Defense Advanced Research Projects Agency), **Dr. Rita Colwell** (former Director, National Science Foundation), **Sean O'Keefe** (former NASA Administrator), distinguished scientist **Dr. Edward O. Wilson**, **John Rennie** (Editor-In-Chief of *Scientific American*), and several other distinguished members of the science and technology policy community. The awards dinner draws a distinguished audience of policymakers and science and technology experts from government, academia, and industry.

Please visit the Potomac Institute website, www.potomac institute.org, for upcoming announcements of this year's awardees and information on tickets and sponsorship. ■

ABOUT THE INSTITUTE

The Potomac Institute for Policy Studies is an independent 501(c)3, not-for-profit, public policy research institute. The Institute identifies and shepherds discussion on key science and technology issues facing our society, providing an academic forum for the study of related policy issues. From these discussions and forums, the Institute develops meaningful science and technology policy options and ensures their implementation at the intersection of business and government. For information, please visit our website: www.potomac institute.org.

FOCUS NEWSLETTER STAFF

Editor: Kathryn Schiller

Contributors: Professor Yonah Alexander, Gabrielle Mazurek, Dr. Stephen Prior, Stephanie Tennyson, Laura Worcester (Winter 2006)

Neurotechnology: New Possibilities

Neurotechnology, a field at the intersection of neuroscience and computing technology, is advancing quickly and making progress in medical and scientific arenas. The potential for this field is enormous, and the Potomac Institute is helping guide its development in cooperation with scientists across the country.

The most common example of neurotechnology in wide use today is neuro-imaging, such as MRI, EEG, and tomography, which can be used to measure activity and find pathology in the brain. Neurotechnology is also currently being used to restore function to damaged nervous systems. Techniques like deep brain stimulation, where tiny wires are used to stimulate the brain, are being used to treat neurological diseases like Parkinson's, epilepsy, and severe depression. Neurotechnology is also helping people who are hearing or visually impaired via cochlear and retinal implants.

Prosthetic limbs are another area in which neurotechnology can improve on existing capabilities. The conflict in Iraq is producing more amputees than previous wars, as more troops survive injuries due to improved body armor and field medical care. To address the needs of returning injured troops, researchers at the Defense Advanced Research Projects Agency (DARPA), the Department of Defense, and the Veterans Administration are working to develop fully functional prosthetics. The goal is to create artificial limbs that are fully integrated into the body's nervous system, and to achieve restored functionality on par with their natural limbs. This technology is moving forward rapidly and has already produced significant results.

The medical possibilities for

neurotechnology are great, especially in tandem with advances in nanotechnology. In the future, it could be possible to regrow neurons or repair damaged brain tissue, enabling treatment or even reversal of a wide range of conditions from neurodegenerative disease to brain and spinal cord injuries.

However, neurotechnology and related fields face a range of obstacles. One of the biggest challenges for neurotechnology is the interface problem, or the connection of a chip or prosthetic to nerve fibers or neurons. But here, again, significant progress has been made. Several researchers have achieved neural control of cursors on computer screens and have recently integrated computer chips and neuron cells. But even if we can repair or replace damaged limbs and connect them to the nervous system, we still have a lot to learn about "retraining" the brain and restoring full functionality. There are many aspects of learning, memory, and brain plasticity that are not yet well understood.

Another basic problem that is slowing the pace of neuroscience research is the limited amount of brain imaging and data available. Since imaging instruments are expensive and specialized, existing research is primarily centered on medical applications. Some research centers, however, are making big strides in neuro-imaging and are moving toward a better understanding of brain function. As imaging and measurement capabilities improve, and as more data is generated and shared among researchers, the field will progress rapidly.

A team of senior fellows at the Potomac Institute recently began a study for DARPA on the future of

neurotechnology. They are examining how the technology is developing, its potential applications, and are making recommendations on how to help the field advance. This neurotechnology project is particularly exciting because it looks at the "big picture" for a new technology and the possibilities it holds.

As part of the project, Potomac researchers are holding workshops across the country in "centers" of activity in neurotechnology. The first was held in Albuquerque, New Mexico, with Sandia National Laboratories, the University of New Mexico, and the MIND Institute, which hosted the workshop. There, experts in various fields related to neurotechnology came together to brainstorm the potential applications of this technology and assess what is needed to achieve future goals. This collaboration resulted in new ideas about how to help this emerging technology develop. Additional workshops are planned in the Boston, San Diego, and Washington, D.C. areas.

The Potomac Institute has several other ongoing projects in the area of neurotechnology. Potomac's support of the "Improving Warfighter Information Intake Under Stress" program at DARPA was outlined in the Winter 2006 issue of *Focus*. Potomac's President, **Dr. Dennis McBride**, recently published *Quantifying Human Information Processing*, on the brain's ability to absorb and analyze data.

These projects all form part of a major research area at Potomac, which is dedicated to ensuring the benefits of neurotechnology for both our troops and the general public, by ensuring the responsible development of science, technology, and policy. ■

Quadrennial Defense Review



When the Pentagon released the Quadrennial Defense Review (QDR) on February 6, 2006, it was the culmination of more than a year's effort by the Department of Defense (DoD). The Potomac Institute contributed to the effort by supporting the Marine Corps' QDR office. Through a partnership with the Battelle Memorial Institute, **Joseph Kelley** and **Gabrielle Mazurek** worked at the Pentagon for nearly a year with the officers of the Marine Corps' QDR Integration Cell to assist senior leaders involved in the Review.

The Marine Corps' QDR Integration Cell was headed by the three-star Deputy Commandant for Programs and Resources. The Cell supported him and the Assistant Commandant, liaised with officials in the Office of the Secretary of Defense and others involved with the QDR, and coordinated Marine Corps QDR activities. As part of the Cell's staff, the Potomac team frequently prepared briefings, compiled data and analyses representing input to the QDR from the Marine Corps, monitored the QDR working groups, and responded to the ad hoc needs of QDR participants. Specific deliverables developed for the Marine Corps by the Potomac team included a playbook on Marine Corps capabilities and an assessment of the Marine Corps'

participation in the Quadrennial Defense Review, including recommendations for how to prepare for the 2009 QDR.

Led by the Secretary of Defense, the Quadrennial Defense Review is a congressionally

mandated assessment of defense strategy and force structure. Established in the mid-1990s, its purpose is to provide Congress a twenty-year vision of the Department's mission, an assessment of its current state, and an explanation of the capabilities and equipment needed to fulfill that vision. The QDR is conducted every four years, coincident with presidential terms of office.

Formal comment on the QDR from the Services is provided by the Chairman of the Joint Chiefs of Staff, whose assessment is attached to the QDR report. The Services also participate in the many QDR issue working groups and the advisory bodies to the Secretary. This process not only engages senior leaders, but also involves the contributions of analysts and technical experts. Coordinating the input of all the Services is complex but critical to the process.

The 2005 Quadrennial Review focused on identifying capabilities that would enable the United States to respond to four strategic problems: building partnerships to defeat terrorist extremism; defending the homeland; shaping choices of countries at strategic crossroads; and preventing the acquisition or use of weapons of mass destruction by hostile states or groups.

In order to meet these goals, the QDR report emphasizes the importance of having the Armed Forces continue to

become more "agile" and "expeditionary." The future of warfare will require the Armed Forces to have the ability to respond to dynamic situations and asymmetrical threats.

Particular areas for further development include: expanding irregular warfare capabilities; enhancing cultural awareness and foreign language ability among troops; strengthening joint command and communications and the fusion of intelligence collection and analysis; developing more persistent surveillance and tracking; improving domain awareness in the air and at sea and the ability to conduct distributed operations; and generating medical countermeasures to protect against natural or genetically modified pathogens. Due to the timing of the report to Congress, some of these aims were incorporated into the budget for Fiscal Year 2007; others will be represented in the DoD's Future Years Defense Plan.

Those familiar with Potomac Institute projects will recognize that we have demonstrated expertise and leadership in many of these areas. The Center for Emerging Threats and Opportunities (CETO) has sponsored conferences on irregular warfare and the future of Marine Corps' involvement in Africa. The National Security Health Policy Center (see p. 7 for information on their current projects) has done extensive work with the Armed Forces in the area of medical preparedness, shipboard health, bird flu, and other initiatives.

Through its QDR work, Potomac gained valuable insight into priorities shaping DoD and driving Marine Corps, Department of the Navy and Joint investments, which will be applied to future work in these areas. ■

Spotlight: Captain Todd Schmidt

Every semester, the Potomac Institute is host to a few of the best and brightest interns from Washington, D.C. and around the country, who want to gain valuable experience in public policy and learn about science and technology policy issues. This spring, the Institute would like to highlight one student whose career in the Army, academic study, public policy, and public service, is truly exemplary.

Captain Todd Schmidt, USA, has spent several years building an Army career that most recently took him to Afghanistan with the 25th Infantry Division. Since his return, he has remained involved with the people of Afghanistan through a charity called “Operation Dreamseed.” This spring, he will complete his master’s degree in public policy at Georgetown University.

During his internship at Potomac, CPT Schmidt conducted research on air security, a topic encompassing issues as diverse as control of the air space over Washington, D.C., flight operations, pilot licensing and passenger safety. Policies affecting the security of the skies involve many agencies and departments, including the Federal Aviation Administration and the Departments of Transportation, Homeland Security, Commerce and Defense. As a result, there are many “seams” at the operational and jurisdictional levels—addressing them will require regulatory, legislative and organizational steps. According to CPT Schmidt, these measures should occur within the context of a comprehensive national air security strategy developed by the Executive Branch.

CPT Schmidt hopes his studies will help him gain a better appreciation



“Operation Dreamseed” distributes backpacks filled with school supplies to students in the Jaguri District of Afghanistan

of Federal policy making. He says he was drawn to the Potomac Institute because of its non-partisan stance and the priority it places on objectivity in its policy analyses. He also looks forward to applying this knowledge when he returns to the Army this summer to work with the Secretary of Defense’s Executive Secretariat.

Despite his Washington focus, CPT Schmidt has kept an eye on Afghanistan. In 2004, he founded a non-governmental organization (NGO) called “Operation Dreamseed” to provide school supplies to children and to restore schools. To date, “Operation Dreamseed” has delivered over 10,000 backpacks filled with pens, rulers, solar calculators and other basic but essential items to schoolchildren. The group also put on an “I Choose Freedom” speech contest that brought together 2,500 students; each of whom received a backpack filled with school supplies at the end of the day.

“Operation Dreamseed” focuses on reading, writing and math skills, and works with a partner NGO charity to provide health and civics education.

An important part of the group’s mission is the renovation or construction of schools. In Afghanistan,

many classrooms have dirt floors, no desks or chairs, and no chalkboards. “Operation Dreamseed” is currently working to revitalize the Kohak School outside Kandahar, which educates 1,100 boys and 300 girls. The group will focus its efforts on supporting Kohak School for two years, in order to hand over a functional school to the Ministry of Education before moving on to their next school project.

“Operation Dreamseed” evolved from projects CPT Schmidt and his fellow soldiers engaged in and the efforts of a network of Americans who sent care packages for the troops. The organization calls the American donors “Heartland Heroes.” They include school groups, individuals and companies, and “Operation Dreamseed” tries to link them directly to the Afghani children they help through pictures and personal stories. The standard donation, a backpack full of school supplies, is sent via APO to the American base at Kandahar, and then distributed to students.

Since CPT Schmidt’s unit left Afghanistan, the work of “Operation Dreamseed” has been continued by an Afghani partner organization and the unit that succeeded CPT Schmidt’s. He hopes that in the long term, “Operation Dreamseed” will be able reproduce its efforts across Afghanistan, and bring hope for democracy and freedom to the next generation of Afghans.



If you would like to learn more about “Operation Dreamseed” or help support their work, please visit their website,

www.operationdreamseed.org. ■

ICTS: Terrorism Studies News

Professor Yonah Alexander, Senior Fellow and Director of the International Center for Terrorism Studies (ICTS) at the Potomac Institute, has continued with numerous academic activities in the United States and abroad during the past several months.

In addition to his role at ICTS, Professor Alexander also serves as co-director of the Inter-University Center for Legal Studies at the International Law Institute and was recently appointed as Senior Fellow at the Homeland Security Policy Institute at George Washington University.

Professor Alexander has lectured on "International Networks of Religious Terrorism" at the University of Haifa in Israel; "Terrorism and the War of Ideas" at the National Defense University; "Terrorism: Will Civilization Survive?" at American University; and "Academic Intelligence on Terrorism" at the annual National Intelligence Conference in Bethesda, Maryland. Among his overseas trips planned for the Summer and Fall of 2006 are doctoral seminars and lectures throughout Spain, Israel, and Bangladesh.

In addition, Professor Alexander has co-chaired several events, including:

- "2006 Middle East Outlook: Terrorism, War, Peace?" featuring the **Honorable Dr. Faruk Logoglu**, Ambassador of the Republic of Turkey, and Ambassador (Ret.) **Phillip C. Wilcox, Jr.**, President of the Foundation for Peace in the Middle East, held at the Potomac Institute on December 11, 2005.

- Distinguished Diplomat's Forum on "Combating Terrorism: Spain's Perspective" with the **Honorable Angel Lossada**, Director



Panel of speakers at the forum "Combating Terrorism: Turkey's Perspective"

General of International Affairs on Terrorism, Non-Proliferation and Disarmament, Spanish Ministry of Foreign Affairs, held on April 20th, at the Potomac Institute.

- Ambassadors' Forum on "International Cooperation in Combatting Terrorism," featuring **Ambassador Mary Seet-Cheng** of Singapore, **Minister Hussein Mubarak** of Egypt, and **Counselor Telmo Baltazar** of the European Commission. This event was held at George Washington University on April 26th.

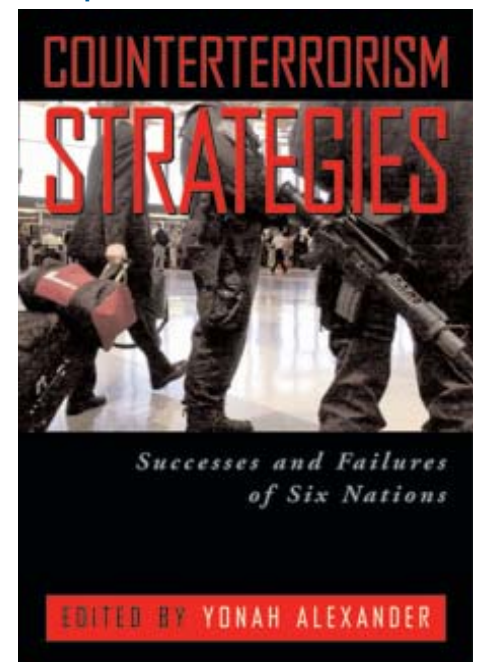
In Washington, D.C., Professor Alexander has met with and briefed academics and government officials from the United States, Germany, Spain, Turkey, and the European Community. Proposals for collaboration and joint research projects are currently being prepared.

Professor Alexander's recent domestic and international media coverage include interviews on television and radio, and published articles in newspapers. He was featured on CNN International and BBC TV regarding ETA's ceasefire in Spain. He also published an opinion article in the *Washington Times* on Iran's nuclear ambitions and potential to pass on nuclear weapons to terrorist groups.

During the spring semester of 2006, Professor Alexander continued to administer an internship program with a group of undergraduate and graduate students representing American University, Georgetown University, Penn State University, Lafayette College, Wheaton College, Rhodes College, Western Illinois University, San Diego State University, and Bradley University. Besides their research in personal areas of concentration, they all participated in long-term ICTS research projects including topics on foreign affinity terrorism and U.S. counterterrorism policy.

Counterterrorism Strategies: Successes and Failures of Six Nations, edited by Professor Yonah Alexander, will be released by Potomac Books in the summer of 2006. The volume examines how six countries have dealt with terrorist groups from the 1970s to the present and gives insight into today's threats. The case studies include the United States, France, Germany, Italy, Egypt, and Sri Lanka.

For additional information on the new volume please visit www.potomacbooksinc.com. ■



National Security Health Policy Center

The National Security Health Policy Center (NSHPC) has continued its work distributing informative posters on bird flu to governments and organizations across the Nation and the world. The poster and accompanying infection control handout have now been translated into Spanish, French, German, Portuguese, Chinese, Japanese, Thai, and Vietnamese—all of which are available for download from the Institute's website, www.potomac institute.org.

There have been some staff changes within NSHPC in the last month. **Dr. David Siegrist** was appointed Interim Director after the departure of **Dr. Stephen Prior**. Dr. Siegrist is a Senior Fellow and was the Director of Studies for Countering



*Dr. David Siegrist,
Interim Director*

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t h e N a t i o n .

For this update, we thought it would be insightful to share some of the activities that NSHPC regularly undertakes to engage a wider audience on issues of national security and health policy. All of the events noted below took place in the last several months,

and each provides a taste of the wide range of health policy issues that the NSHPC is helping to address.

- *“Critical Transmissions: Managing International Communication During a Pandemic Outbreak,” National Press Club, Washington, D.C.*

The International Committee of the Public Relations Society of America sponsored this event on crisis communications. The panel included Dr. Stephen Prior of NSHPC; **Mr. Glen Nowak**, Director of Media Relations, Center for Disease Control; **Dr. Bradley Clark**, National Biosurveillance Integration System, Department of Homeland Security; **Ms. Maggie Fox**, Reuters; and **Mr. Daniel Epstein**, Information Officer, WHO/Pan-American Health Organization. The subject areas of concern that were covered included: If avian flu, SARS, or a modern strain of the 1918 pandemic flu virus broke out tomorrow around the globe, how effectively would government leaders, the media, and professional spokespeople handle the communication flow? Are there plans in place to ensure that medical information reaches those who need it? Could mass panic be avoided? Who would be “in charge”?

- *“Balancing Homeland Security and Civil Liberties,” Martin Luther King Jr. Memorial Library, Washington, D.C.*

A panel program co-sponsored by League of Women Voters of the National Capital Area and the District of Columbia Public Library System, Division of Sociology, Education, and Government. The panelists included **Lisa Graves**, American Civil Liberties Union (ACLU); **Dr. Patrice McDermott**, American Library Association; **Steve O'Brien**, American Red Cross; **Dave Robertson**, Metropolitan Washington



Council on Governments; and **Stephen Maclsaac**, Arlington VA, County Attorney; and Dr. Stephen Prior of NSHPC.

- *“Computational Models of Host-Pathogen Interactions, A Case Study: Inhalation Anthrax,” George Mason University, Fairfax, VA.*

Dr. Stephen Prior and **Professor Ken de Jong**, of the Krasnow Institute at George Mason University, gave a seminar on recent research in computational modeling. They presented the results of a study that explored a computational modeling approach for the specific case of inhalation anthrax, motivated in part by the episode in 2001 involving D.C. area mail carriers and the threat of similar events in the future. The investigators concluded the talk with a brief discussion of lessons learned, and how this modeling approach can be usefully applied to other important pathogens, such as influenza viruses.

As you can see, NSHPC activities encompass scientific discussions, participation in meetings and panels, information exchanges with peer researchers, and publications. These are all tasks that maintain and enhance the support we provide to our customers and clients, including the government and Armed Forces. Most important, of course, is NSHPC's participation in local and national conversations about national security and health policy, and how they affect every one of us. ■

Marines in Africa (continued)

Little effort was made during several hundred years of European colonization to create stable African political and economic institutions. There was no regard to existing tribal, lingual, or political entities when geographic boundaries dividing the continent were drawn at the Berlin Conference in 1884. As a result, post-independence politics are still based on tribal influences and few African evince strong national loyalty. To maintain stability, single party systems have become common as leaders have imposed authoritarian rule rather than institute a system of checks and balances. As a result, corruption has become pervasive and persistent as small elites seek to retain power. The vacuums created by political instability have created voids that are often filled by groups acting in self-interest vice those of the nations and their citizens.

With such deep economic, religious, demographic, and political problems throughout the continent, Africa will require continued awareness and preparedness. As Africa continues to wrangle with internal problems it will become a safe haven for extremists, and will thus become a priority for the United States' *Global War on Terror*. The U.S. Marine Corps must prepare for engagement in the challenging African environment to address a wide range

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The "21st Century Marines in Africa" Conference was sponsored by the Marine Corps Warfighting Lab (MCWL) and Marine Corps Combat Development Command (MCCDC) and the Potomac Institute for Policy Studies. Dennis Thompson of CETO coordinated the conference and wrote the subsequent report. For more information, please see www.mccdc.usmc.mil/FeatureTopics/Africa/contents.htm. ■

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