



NAVAL POSTGRADUATE SCHOOL

IN REVIEW

MAGAZINE

JANUARY 2010

In Defense of Our Country

How NPS Impacts Homeland Security

Inside:

Ops Research Team
Optimizes Semi-Sub Defense

Building Cybersecurity
Awareness and Leadership

International Partnerships
Build Peace Through Prevention



Daniel T. Oliver
Vice Adm., United States Navy (Ret.)
President, Naval Postgraduate School

“I wholeheartedly encourage alumni to take this opportunity to visit the campus again and see the many changes that have taken place ... and there is more to come as the first floor of Herrmann Hall, the old Hotel Del Monte, begins an impressive return to the elegance of its past.”

PRESIDENT'S MESSAGE



The turn of the calendar is a traditional time of reflection, a musing of the year that was and a vision of what is to come. Later this month, the *2009 NPS Annual Report* will be published and distributed, and working on this publication has forced, albeit easily forced, a detailed review of our past year and our many accomplishments and endeavors. This product will tell the story of 2009, highlighting the extraordinary efforts of our students, faculty and staff, and I cannot express how proud I am to be associated with this university – it paints a wonderful picture of our institution.

Shortly following will be the 2009 edition of the *NPS Fact Book*, presenting key facts and figures for NPS ... data on everything from student enrollment to faculty metrics, class sizes, degrees awarded, research and financial summaries, and much more. These two complementary publications will provide a comprehensive overview of NPS, in stunning visuals and in statistical details, and will share our story to the Departments of the Navy and Defense, all of the other services, research partners, potential students and faculty, and countless other constituents.

Looking ahead, the coming year promises to be a very exciting one. NPS will continue to celebrate its Centennial Anniversary culminating on Memorial Day weekend with our reunion, gala and the Concert on the Lawn. Along the way will be the dedication of Centennial Park – the recreation areas surrounding Lake Del Monte – and the rededication of Spruance Plaza outside Spanagel Hall.

I wholeheartedly encourage alumni to take this opportunity to visit the campus again and see the many changes that have taken place. Last year, we completed renovations of the Dudley Knox Library and Glasgow Plaza. Currently, Spanagel and Root Halls are undergoing significant upgrades along with all of the walkways throughout the Academic Quad. By Memorial Day, the campus will have undergone further transformation, and there is more to come as the first floor of Herrmann Hall, the old Hotel Del Monte, begins an impressive return to the elegance of its past.

Also in 2010, NPS will undergo the last phase of its accreditation review with the Western Association of Schools and Colleges. A group of NPS faculty, administrators, staff and students is working toward the completion of the Educational Effectiveness Review. To accomplish this, the group is documenting current assessment practices, recommending improvements and drafting a cumulative, responsive report with a draft submitted for campus review this coming spring. NPS enjoyed a very successful first phase review in March 2009 and we are confident this last phase will be equally positive.

With all that lies before us, I cannot recall a year in recent memory that I have been so eager to get started. We have wonderful changes to look forward to, unknown challenges that will drive us to perform our best, and success stories waiting to happen across every corner of campus. My best wishes to the entire NPS community and our friends for a productive and triumphant New Year.

TABLE OF CONTENTS



Page 8



Page 18



Page 21

NAVAL POSTGRADUATE SCHOOL IN REVIEW MAGAZINE

President

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Features

- 8 OR Team Optimizes Narco Semi-Sub Defense**
Student applies first-hand experience into research detecting semi-submersible mini-subs, estimated to transport nearly 75 percent of all cocaine into the United States.
- 10 Faculty Experts Build Cybersecurity Awareness**
Over the course of one month, faculty and staff from varied disciplines shared their unique expertise in cybersecurity, building awareness and cross-campus collaboration.
- 12 In Defense of Our Nation**
NPS' mission is to improve the national security of the United States, a critical component of which is protecting the homeland. Learn more about how NPS puts its fingerprint on the practice of homeland security.
- 16 Int'l Partnerships Build Peace With Prevention**
The university embarks on an expansive international effort, building partnerships with nations across the world to address society's most important issues.
- 18 Initiative Creates Enhanced Maritime Awareness**
U.S. seaports are some of the busiest in the world, but have also been identified as a potential vulnerability in homeland security. An expanding effort at NPS is playing a key role in securing these critical infrastructures.
- 20 Lecture Series Highlights Today's History-Makers**
A former Ambassador, a New York Times journalist, and a retired Chief of Staff – all three intimately involved with the Iraq War – share their unique and compelling stories to NPS students.

Departments

- 4 University News**
- 6 Faculty Showcase**
- 21 Fall Graduation**



ON THE COVER

The "Tribute in Light" memorial shines high above the New York City skyline in remembrance of those who lost their lives in the 9/11 World Trade Center attacks. The tragic events of that day spawned an entirely new discipline, homeland security, and NPS has played a key role in developing this new element of national security. U.S. Air Force photo by Denise Gould/Released.

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IT Team Opens FAOWeb Early for Warrior-Diplomats in Afghanistan

The Joint Foreign Area Officer Skill Sustainment Pilot Program (JFSSPP) opened a portion of its soon-to-be-launched FAOWeb for Foreign Area Officers (FAOs) stationed in Afghanistan and Pakistan. FAOs are military service members with extensive language training and expertise in the culture, politics and strategic affairs of a specific country or region, and provide guidance to in-country military decision makers.

“Word got out in the FAO community that we were doing this – building FAOWeb,” said Jon Russell, Director of Academic and Media Systems for NPS Information Technology and Communication Services. “One of the FAOs in Afghanistan got in touch with us saying they actually needed it before January.”

Lt. Col. Rich Outzen, Liaison Officer of the Commander of the International Security Assistance Force to the Regional Command Capital in Kabul, requested early access to the site to share lessons

learned and best practices among FAOs in country and to help prepare those slated to arrive shortly in the Afghanistan-Pakistan region.

“We recognized the urgency of the request and were able to push up the release date for a few of its functions,” said Dr. Tristan Mabry, Executive Director of JFSSPP. “This is what FAOWeb is all about – providing critical resources to Foreign Area Officers in the field.”

FAOWeb, opening in full this month, is an online portal that will provide distance learning and community networking for FAOs across the four services – Army, Navy, Air Force and Marines.

CSRS Celebrates Five Years of Global Contributions

The Center for Stabilization and Reconstruction Studies (CSRS) celebrated its five-year anniversary in late October with an evening reception that brought together a diverse group of local leaders and luminaries, current and past CSRS course participants, and NPS faculty, students

and staff.

CSRS was established in September 2004 to provide executive education for the full spectrum of actors involved in stabilization and reconstruction operations, specifically U.S. and foreign armed forces, U.S. and foreign government civilian agencies, non-governmental organizations and inter-governmental organizations.

To date, CSRS has completed 25 educational events for more than 1,200 participants. CSRS has partnered with a wide range of organizations in the delivery of its courses, including the U.S. Departments of Defense and State, the United Nations Development Program, the International Organization for Migration, Save the Children and Global Majority.

Alumnus Helps Local Koreans Clean Popular Hiking Areas

Air Force Maj. David Abrahamson, a 2008 Security Studies (Far East, Southeast, and the Pacific) graduate of NPS, led a team of U.S. servicemen and women and Korean

locals in cleaning graffiti from popular hiking areas near the Yongsan Army Base in Seoul where he is currently stationed.

The effort began when Abrahamson befriended Jeon Jong-cheon, a clerk at the New York Tailor shop just outside the base. Jeon is the leader of a local hiking club, and had long wanted to remove some English graffiti from rocks at nearby Mt. Sapae, and asked Abrahamson for help.

“Jeon had the idea of mopping off graffiti and suggested I join him. I thought it was a good idea,” Abrahamson said. It took three trips in total, but the graffiti from Mt. Sapae is now history, and the major said the effort was very satisfying, especially given the mountain’s high visibility.

“The rock face overlooks the city of Uijeongbu,” he noted, which is a fairly large metro area just north of Seoul with nearly 500,000 residents. “They no longer have to see the graffiti. The Koreans provided wonderful picnic food and took us to a traditional restaurant afterwards. We have become friends, next year we plan to remove some more graf-

NPS Helps Showcase Ultra High-Tech Digital Cinema



Opportunities for partnership with the community come in many forms. In December, NPS helped provide the backbone and technical expertise for a unique display of technology that has the potential to create great change – from how Hollywood makes movies to the way our oceans are researched.

Several organizations, including NPS, the Monterey Bay Aquarium and City of Monterey, participated in Project 4K, a live, streaming of an ultra high-resolution feed from the Aquarium to the California Institute for Telecommunications and Information Technology (CalIT2) on the UC San Diego campus. The broadcast was part of a workshop for CineGrid, a non-profit international organization that connects researchers around the world who are experimenting with next generation digital media.

The demonstration also exhibits how current cyberinfrastructures, such as those at NPS, can be leveraged to provide higher-resolution imagery, better sound as well as more secure and efficient distribution of digital media over photonic networks.

Apollo 11 Hero Regales Space Systems Students, Faculty *By Barbara Honegger*

Neil Armstrong's 'giant leap for mankind' would have turned into tragedy had it not been for the fast thinking and courageous action of a NPS alumnus, retired Navy Capt. Willard Samuel "Sam" Houston, Jr., who returned to his alma mater to give a special guest lecture.

An aerology graduate (1953) and former meteorology instructor, Houston regaled Space Systems students, faculty and staff with highlights of his historic career, with an emphasis on the gravity of decisions those in command can be called on to make, and the responsibility it places on those who advise them.

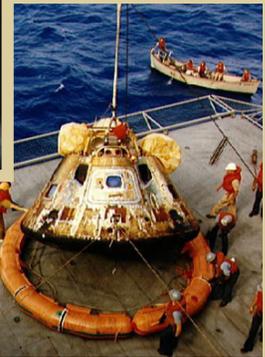
By far the most serious forecast Houston ever made – and acted on – was for the Apollo 11 moon mission. Pulled prematurely from a tour in Rota, Spain, Houston had taken command of Fleet Weather Central Pearl Harbor only one day before the historic moon mission where, fortunately, he still had his clearance as the only Naval officer to work with the Air Force's top secret Corona spy satellite program. As Neil Armstrong and his fellow astronauts were on their way back to Earth, in an abundance of caution, he decided to check the weather at NASA's programmed splashdown location off Hawaii.

"We were in the Cold War and the technology was closely guarded. The Air Force spy satellite program was kept secret from the other branches of government – even my own superior didn't know about it," Houston recalled.

What he learned from the classified images was that a massive 'Screaming Eagle' thunderstorm formation with vertical winds up to 50,000 feet was forming precisely over the watery landing site, which would have ripped the capsule's parachutes to shreds resulting in instant death of the astronauts on impact.

Within minutes, Houston was before Rear Adm. Donald Davis, commander of the task force charged with retrieving Apollo 11's re-entry capsule. Armed with the authority of his certain knowledge that the splashdown location needed to be changed, Houston was able to convince Davis to move the USS Hornet to the new location before receiving official orders to do so. Houston then convinced NASA's top meteorologist, who got a national emergency declared to move the atmospheric entry point, and thus the splashdown location, in the nick of time.

On July 24, 1969, Neil Armstrong's capsule landed in perfect weather in the Pacific, ticker tape fell like rain and America pulled ahead of the Soviets in the Space Race. NASA ordered a weather reconnaissance flight to the original splashdown location in the Pacific "just to see if I had been crying wolf," Houston recalled, and found the violent 'Screaming Eagle' formation he had seen forming – to an even higher 60,000 feet.



The Apollo 11 spacecraft Command Module is photographed being lowered to the deck of the USS Hornet. Thanks to efforts of NPS alumnus Sam Houston, shown inset, the module's landing site was moved, avoiding a severe thunderstorm that almost certainly would have destroyed the module's parachutes and resulted in tragedy. Photo courtesy of NASA.

fiti," he continued.

Abrahamson is an Air Force Northeast-Asia Regional Affairs Strategist. "Basically an Air Force FAO working in the combined/joint headquarters in Seoul," he says. "I work with Korean officers, speaking Korean as well as I can, to produce strategic analysis for our command ... A great job that I would highly recommend."

Navy's Head Oceanographer Kicks Off Climate Diagnostics Workshop

Rear Adm. David Titley, Oceanographer and Navigator of the Navy – and a 1998 doctoral graduate of NPS – was the keynote

speaker for the 34th Annual Climate Diagnostics and Prediction Workshop at the nearby Monterey Hyatt Hotel.

Titley provided a naval perspective on the state of the world's Weather Prediction Task Force, including a special message to scientists urging them to provide increasingly higher resolution models and reliable, relevant information to top decision-makers. "We need to continue to separate facts from folklore by building better weather prediction tools and building on the technical skill sets of our people," he said.

This year's workshop concentrated on the status and prospects for advancing climate monitoring,

assessment and prediction with an emphasis on the societal impact of climate over the western United States.

NPS Hosts California American Physical Society Annual Meeting

NPS opened its doors to some of California's rising stars and most seasoned physicists as the university played host to the California American Physical Society meeting in mid-November.

The meeting included detailed plenary sessions on extrasolar planets, scalable quantum computation, gyroscopes, and a discussion of revolutionary advances in free-electron lasers by NPS' own

Prof. John Lewellen.

The meeting culminated with a special guest lecture by Nobel prize winning physicist Dr. Douglas D. Osheroff, which was open to all NPS students, faculty and staff. Osheroff, now a professor at Stanford University, was awarded the Nobel Prize in Physics along with two colleagues from Cornell University for their discovery of superfluidity in helium-3. The Nobel Prize caps a long list of awards Osheroff has received. A member of the National Academy of Sciences, he has also won the Simon Memorial Prize, the Oliver Buckley Prize, and was named a MacArthur Fellow. Osheroff also won a Walter J. Gores Award for Excellence in Teaching.

FACULTY SHOWCASE



Center of IA Excellence Named in Honor of Distinguished Prof. Dorothy Denning

New Jersey City University (NJCU), designated as a Center of Academic Excellence in Information Assurance by the National Security Agency and Department of Homeland Security, has honored NPS Distinguished Professor Dorothy Denning by naming the center in her honor.



Dorothy E. Denning

Established in 2007, and formally approved in 2009, the *Dorothy E. Denning Center of Academic Excellence in Information Assurance Education* was established by NJCU's Professional Security Studies Department and named after Denning in recognition of her pioneering contributions to the field of information assurance, "during a period in our Nation's history when women were severely underrepresented in the sciences," the Center's Web site notes. Denning presented at the university's Northeast Regional Security Education Symposium in October where the official naming ceremony was held.

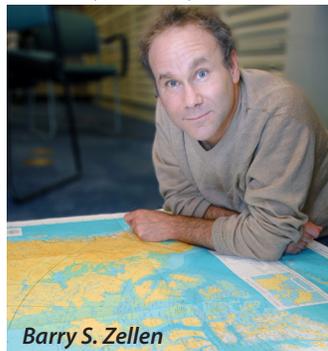
The center is a multidisciplinary, cross-campus effort that supports NJCU's mission as an institution that provides its diverse population of students, faculty and community with scholarship

and pragmatic approaches to the field of Information Assurance. Information Assurance is generally defined to include cybersecurity, cyber forensics, data quality, data completeness, data accuracy, privacy and issues associated with the storage, communication and sharing of data and information. The overall mission of the center is to enhance the security and integrity of information within the geographical region, with future plans to extend nationally and beyond.

The Naval Postgraduate School has also been designated as a Center of Academic Excellence (CAE) in Information Assurance by DHS and NSA, but also has the designation of Center of Academic Excellence – Research through the same program. A CAE-Research designation recognizes academic institutions that actively integrate research into their curricula. Both designations are a mark of true prestige in the IA community.

CCC Researcher Releases Third Book on Geopolitics of Arctic Ice Melt

Barry Zellen, Research Director of the Arctic Security Project through NPS' Center for Contemporary Conflict (CCC), released his third book on the social and political implications of Arctic ice melt in December, *On Thin Ice: The Inuit, the State, and the Chal-*



Barry S. Zellen

lenge of Arctic Sovereignty.

On Thin Ice explores the relationship between the indigenous Inuit peoples and the current state of the vast but lightly populated North American Arctic. It chronicles the aspiration of the Inuit to participate in the formation and implementation of diplomatic and national security policies across the Arctic.

The work comes just a few months after the release of Zellen's second, related book, *Arctic Doom, Arctic Boom: the Geopolitics of Climate Change in the Arctic.*

"*Arctic Doom, Arctic Boom* considers the geopolitical transformation taking place at the top of the world as the polar ice cap thaws and a new sea emerges from beneath the ice pack for maritime commerce and naval activity," Zellen noted. Popular focus is on the progressing extinction of the polar ice cap, which he agrees is very important, but he notes that we must also look past the concept to the possibilities the aftermath might bring.

Zellen possesses a unique level of experience in this remote region. His first book was the result of 12 years of living in the Arctic, where he worked with the indigenous people in language preservation, maintaining their customs and strategizing border-line compromises in the Arctic during the 1990s. He hopes the Arctic becomes an increasing interest to strategic and security studies through his book and that its readers use it as a tool to deal with the challenges of the post-Arctic world and search for solutions to ensure stability and prosperity in this new world.

"I also hope they come away from the book with a renewed

sense of optimism, that the changes unfolding at the top of the world, while epic in scale, are not beyond our means to manage wisely and creatively," he added.

Faculty Honors This Quarter

• **Peter Purdue**, Dean of the Graduate School of Operational and Information Sciences, reached a milestone when he was honored for 25 years of service with the Department of Defense in November. Purdue, who joined the faculty as Professor and Chairman in the Operations Research Department in 1986, was recognized by Exec. Vice Pres and Provost Leonard Ferrari for his leadership and dedication to the university.



Peter Purdue

• Distinguished Professor **Peter Denning**, Chair of the Department of Computer Science, has been named the 2010 recipient of the Lifetime Service Award by the Special Interest Group on Computer Science Education (SIGCSE). The award is given to an individual who has dedicated a lifetime of service to furthering computer science education. SIGCSE is an organization within the Association for Computing Machinery, the world's largest educational and scientific computing society.

• **Dr. Thomas Johnson**, Research Prof. and Director of the Program of Culture and Conflict

FACULTY SHOWCASE



Studies, was recently interviewed about the conflicts in Afghanistan on both PBS NewsHour as well as CNN. Both interviews are available as podcasts on the news organizations' respective Web sites.

• **Dr. Douglas Brook**, Director of the Center for Defense Management Research, hosted a two-

day strategy workshop for Deputy Under Secretary of the Navy (Business Operations & Transformation) Eric Fanning as he establishes the new role of Deputy Chief Management Officer for the Navy.

• In Brussels, Assoc. Prof. **Dick Doyle** of the Graduate School for



Dick Doyle

Business and Public Policy joined the Education Development Working Group, part of NATO's Partnership for Peace Consortium, in planning the 2010 summer workshop in Ljubljana, Slovenia, where Dr. Doyle will speak about distributed learning.

Faculty, Students Apply Expertise from the Middle East Closer to Home

The inland city of Salinas is a mere 20 miles from the campus of NPS, but is a near world apart in many ways. The small city of 140,000, known as the "Salad Bowl of the World" and John Steinbeck's birthplace, is plagued by an extreme level of gang violence that, on a per capita basis, places it as one of the worst cities in the country in regards to gangland activity, in fact three times worse than that of Los Angeles.

NPS Exec. Vice Pres and Provost Leonard Ferrari recognized that the language used in discussions of gang membership and the societal factors leading to it had some parallel with how experts at NPS talk about combating insurgents. Experts at the university use sophisticated computer models to track various societal factors that lead to insurgency, perhaps this could be applied to gang activity. And one of the more well-known strategies to battling insurgency in Iraq and Afghanistan is to engage and win the loyalties of the local communities, another possible parallel. Ferrari asked Defense Analysis Senior Lecturer Hy Rothstein to see if NPS could provide some sort of expertise.

"About a year ago I attended a meeting where Leonard Ferrari asked if the Defense Analysis Department would discuss the possi-

bility of a collaboration with Salinas to assist them in addressing the growing gang problem," Rothstein noted.

"The Provost rightly felt that there might be an overlap between the irregular warfare focus of our department and the problems in Salinas. My initial reaction was positive. Contributing to the community is important. Additionally, I felt that we could possibly learn something new about dealing with insurgencies and civilian populations overseas."

Rothstein says he saw the correlations right away, and as he learned more about the city's issues, the more confident he felt NPS may be able to help.

"From the beginning I felt that there was going to be significant overlap between irregular warfare [and counterinsurgency] and gang violence," Rothstein noted. "My feelings were confirmed by the leadership in Salinas. The fact that Salinas is fortunate to have a dedicated and professional cadre of civil servants makes the collaboration even more worthwhile."

A number of NPS students have joined in the effort as well. Army Maj. James M. Few was an early contributor to the research. Few, who is a three-time veteran of Iraq, said he could sense in the grievances of poor Latinos in Salinas some of the same feelings of disenfranchisement that the Sunnis felt toward the Shi'ite government.

Air Force Maj. Tracy Onufer and Army Maj. Jason Clarke, both in Defense Analysis, prepared a detailed report studying the socio-environmental factors that most directly influenced violent crimes in Salinas. The team analyzed 30 years of crime data in relation to data on the local economic conditions, housing, education, police force, social services and much more.

The report concluded, "Of all of the independent variables tested, education is the most highly correlated with violence ... A higher dropout rate corresponds with an increase in violence."

Salinas Mayor Dennis Donohue has passionately stated that the violence in Salinas is one of his city's most critical issues. As both a mayor and a native resident of the community, Donohue said he is willing to try just about anything to combat the violence. And, if proven successful, Donohue notes, it could be applicable all over the country. "Not only is this a Salinas issue, it's a crisis throughout much of California. And frankly it's a national issue."



Exec. Vice President and Provost Leonard Ferrari, center, discusses the creation of a new partnership with the City of Salinas during a press conference early in 2009 with Mayor Dennis Donohue, left, and local Congressman Sam Farr, right.

Ops Research Team Optimizes Defense Against Narco Semi-Subs

By Barbara Honegger

A Naval Postgraduate School faculty-student team has developed a mathematical model that determines the best combination and deployment of search platforms to detect and classify self-propelled semi-submersible (SPSS) mini-subbs that are estimated to carry up to 75 percent of all Colombian cocaine destined for the United States.

“These stealthy little devils can carry tons of cocaine and are very hard to find because they have low visual, acoustic, radar and infrared signatures,” said Operations Research (OR) Distinguished Professor Gerald Brown. “They also carry the maritime equivalent of fuzx busters, so all the usual means we use to detect enemy craft don’t work well. But we’ve solved the problem.”

Brown is referring to his research group’s defender-attacker models that are changing the way the Departments of Defense and Homeland Security think about defending against narco smugglers, and terrorists. “Terrorists because semi-submersibles that can be used to smuggle cocaine into the country could also be used to smuggle WMD,” Brown explained.

“These are million-dollar, single-use disposable craft that are only 25 to 35 feet long, manned by as few as one person and are manufactured in the Colombian rainforest using quiet fishing vessel diesel engines,” Brown noted. “So the one parallel we have [to hunting them] is the ASW mission of finding quiet diesel submarines, which one of my students – naval flight officer Cmdr. Daniel “Barney” Pfeiff – did in his S-3 Viking before coming to NPS.”

“Each of the types of search platforms – such as maritime patrol aircraft, airborne early warning aircraft, submarines and frigates, or the proposed SeaWeb autonomous network of acoustic sensors – has its advantages and disadvantages, and will be geographically dispersed

and limited in availability,” Brown said. “In the research for his master’s thesis, Commander Pfeiff developed an optimization model which comes up with the ideal cooperative layout of all available search platforms to maximize the probability of finding and classifying these guys.

“The model assumes the semi-submersible attackers are intelligent and have some knowledge – the number and type of defenders they have to avoid – but don’t know where they are,” Brown noted. “Running scenarios for the Eastern Pacific and the Caribbean using five types of search platforms where the attacker has to choose a transit path and the defender has to determine the best use of search platforms to detect and classify SPSSs, we come up with a consistent optimal plan for defenders: use a mixed [probabilistic] strategy to shape the attackers’ routes by positioning search assets to force the vessels into chokepoints where they are more easily spotted, identified and interdicted.”

“Finding a semi-submersible is like finding a needle in a haystack, except the ‘haystack’ is the vast area of the ocean,” said Pfeiff. “And even when you’ve detected one, they’re hard to classify because they look similar to a sailboat on radar, sound like a fishing boat on acoustic sensors, and blend in with legitimate shipping traffic.

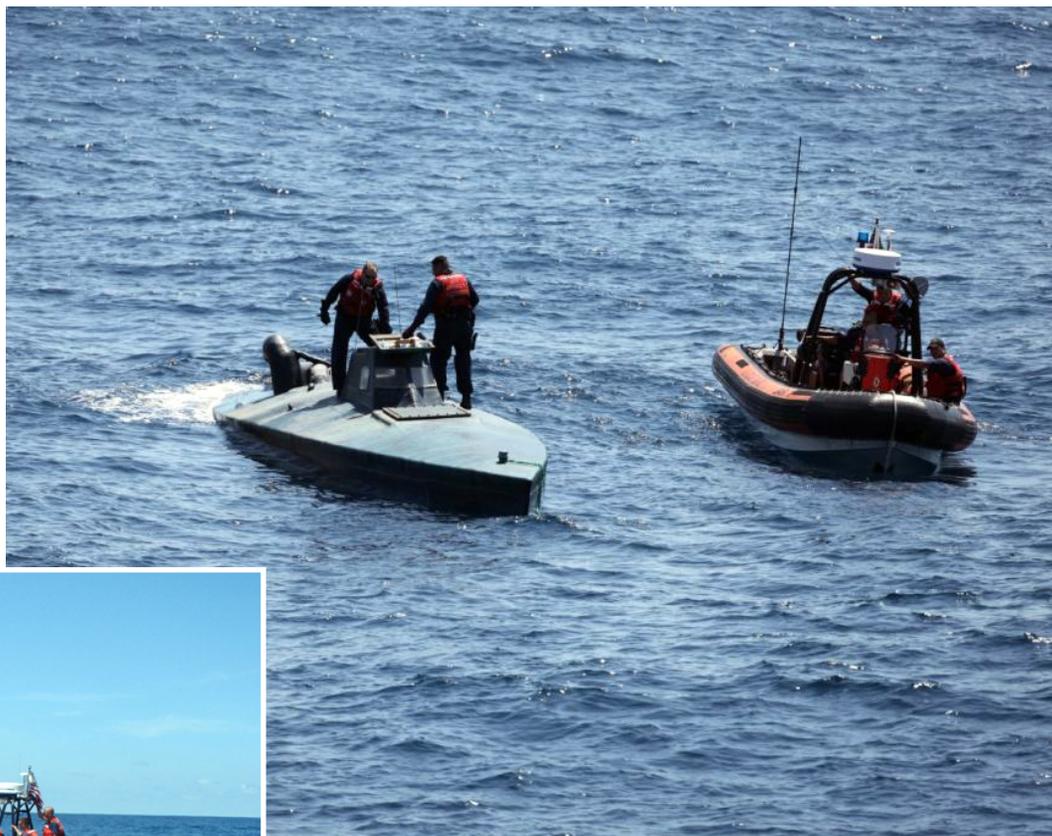
“The model we’ve developed provides useful insights for the allocation of search platforms and works well when their performance varies by geography,” Pfeiff added. “What’s needed now is an operational mission assign-

“This is the only university in the world where bi-level defender-attacker optimization is a standard part of the curriculum to which students bring fresh operational experience directly relevant to real world challenges.”

*Prof. Gerald Brown
Operations Research*



Dr. Gerald Brown, a lifetime member of the National Academy of Engineering, is a world-recognized leader in the development of defender-attacker optimization modeling, such as the anti-narcotics, semi-submersible search model developed by his student Navy Cmdr. Daniel Pfeiff.



Crewmembers from the U.S. Coast Guard Cutter Jarvis board and inspect a Self-Propelled Semi-Submersible (SPSS) during an intercept and seizure off the coast of Central America on Oct. 21, 2009. It is estimated that nearly 75 percent of all cocaine entering the United States is transported by similar SPSS crafts. U.S. Coast Guard Photos by Al Haraf.

ment tool that uses mixed strategy to optimally assign search platforms to missions.”

“Faculty-student synergy like that brought by Commander Pfeiff is absolutely unique to the Naval Postgraduate School,” Brown stressed. “This is the only university in the world where bi-level defender-attacker optimization is a standard part of the curriculum to which students bring fresh operational experience directly relevant to real world challenges, and where faculty are doing advanced research that’s immediately applicable.”

But the NPS team didn’t stop with just finding a better way to locate narco smugglers. OR Senior Lecturer retired Navy Capt. Jeffrey Kline arranged for Pfeiff, upon graduation in June, to brief the actual people in Joint Interagency Task Force South who are tackling the

problem on a day-to-day basis.

Pfeiff’s thesis, “Optimizing Employment of Search Platforms to Counter Self-Propelled Semi-Submersibles,” is focused on detection and classification and assumes that interdiction is possible. He is currently senior analyst with the OSD Capability Assessment and Program Evaluation office at the Pentagon.

In July, a group of NPS students joined senior intelligence analysts from the Office of Naval Intelligence-Kennedy Irregular Warfare Center and Joint Interagency Task Force South to brainstorm innovative solutions to the same SPSS challenge at a Warfare Innovation Workshop held at the school co-sponsored by the Chair of Warfare Innovation, Naval Warfare Development Command (NWDC). At the conclusion, out-briefs were presented to

NWDC’s Assistant Chief of Staff for Concepts, the SES Special Agent in Charge of the Department of Homeland Security Immigration Customs Enforcement, OPR-SAC West, NPS’ co-chairs for warfare innovation and the university’s leadership.

Brown recently received the Distinguished Navy Civilian Service Award from the Secretary of the Navy, and is a lifetime member of the National Academy of Engineering.

This year, the Naval Postgraduate School Operations Research Department was ranked as the top OR department in the nation based on the number of times its faculty’s publications are cited by colleagues.

Brown’s pure and applied research is sponsored by the Office of Naval Research.

Faculty Across Campus Share Expertise During Cybersecurity Awareness Month

By Barbara Honegger

As the Department of Defense works through the establishment of the U.S. Cyber Command, and the Obama Administration selects Howard A. Schmidt as the government's 'cyber czar,' the issue of cybersecurity has never been more critical to national security.

The Naval Postgraduate School has a long history of innovation in this field ... and as a part of its ongoing Centennial celebrations, NPS' Information Technology and Communications Services hosted a rich spectrum of educational events throughout October in recognition of the sixth annual National Cybersecurity Awareness Month.

The month kicked off with a keynote address by Kevin Rowney, head of Symantec's Data Loss Prevention Division, on the topic "Your Role in the Defense Against Data Breach." Rowney's presentation outlined the specific steps end users can take to prevent hacking and other external as well as internal IT system breaches.

The keynote was followed by a series of "brown bag" talks by NPS faculty experts in computer science and information security and assurance: Prof. Simson Garfinkel on "Automated Digital Forensics and Media Exploitation"; Naval War College Prof. Jonathan Czarnecki on "The Illusion of Security: Learning to Defer Rather than to Deter"; Prof. Cynthia Irvine on "Combining Security and Usability"; Senior Lecturer Chris Eagle on "Organizing and Participating in Computer Network Attack and Defense Exercises"; and Prof. John McEachen on "Security Issues in Future Telephony: VoIP and 4G Mobiles."

The capstone event of the month was a Cyber Summit on Oct. 29 hosted by Vice President and Dean of Research Karl van Bibber, Dean of the Graduate School Operational and Information Sciences Peter Purdue and Vice President of Information Resources and Chief

Information Officer Christine Cermak.

"The security, resiliency and reliability of the nation's cyber and communications infrastructure is recognized by the Department of Homeland Security as a crucial element in protecting the public, economy and government services," NPS President Dan Oliver said in his opening remarks, "and it is our responsibility as an institution with a mission of improving U.S. national security to continue to develop our cyber expertise. From your participation here today we know that you understand the importance of this vital mission, and with the new Cyber Command we look forward to your contributions in establishing educational programs for the evolving cyber workforce."

"The Naval Postgraduate School has a long history – almost 50 years – of embracing cybersecurity in a broad and comprehensive way, and this summit provides a sampling of the best research in the field from seven of our departments," Executive Vice President and Provost Leonard Ferrari told the attentive audience of students, faculty and staff. "We thank all of you for sharing your research and hope this event will stimulate further cross-campus collaboration and serve as a catalyst for a major umbrella funding proposal for NPS, as well as opportunities for new cooperative agreements with industry."

Presentations at the all-day Summit included "Grand Challenges in Cyber Security" by Professor of Computer Science (CS) Cynthia Irvine; "Aligning Usability and Security" by CS Associate Prof. Simson Garfinkel; "Can Complexity Science Support the Engineering



Kevin Rowney, head of Symantec's Data Loss Prevention Division, kicked off the month-long cybersecurity awareness campaign with his presentation on how users can prevent hacking and other external as well as internal IT system breaches.

of Network Centric Infrastructures?" by Operations Research Assistant Professor David Alderson; "Threat Level Orange: How Much Can You Count on Your Wireless Mobile Device?" by Associate Professor of Electrical and Computer Engineering (ECE) John McEachen; "Software-Defined Radios for Cyberspace Operations" by ECE Assistant Professor Frank Kragh; "Cryptographic Attacks and Countermeasures: A Mathematical View" by Associate Professors of Mathematics Panta Stanica and David Canright; "American C-power" by Associate Professor of Information Sciences (IS) Ray Buettner; "Test Bed for Self-Organizing Networking and Collaboration" by IS Associate Professor Alex Bordetsky; "Physics Models for Cyberspace" by Physics Department Professors James Luscombe and David Ford; "Cyber Conflict" by Distinguished Professor of Defense Analysis (DA) Dorothy Denning; and "Cyberwar Means More Than Cyberspace" by DA Professor John Arquilla.

"NPS is actively researching the broad spectrum of usable security issues," Garfinkel told the audience during the well-attended event in Ingersoll Hall. "The challenge in achieving this is that computer system users

tend not to use the [security] features they already have and most system designers think of [programming for] security as a secondary task. We're finding it increasingly difficult to design for both end user usability and security not only because of the tradeoffs [between the two], but because experts in the former usually aren't experts in the latter and because adversaries can exploit the features we put in to make a system more user friendly.

"The answer is to 'design in' usable security and psychological acceptability [by end users] from the beginning," Garfinkel noted, "not give users so many [security setting] choices – one system has two to the 64th power possible security state options – and program in better fail safe defaults. We need to do a better job of encouraging vendors to do this.

"To adapt a famous quote from President [Franklin Delano] Roosevelt," Garfinkel concluded, "Those who would give up essential usability to purchase a little temporary security deserve neither usability nor security."

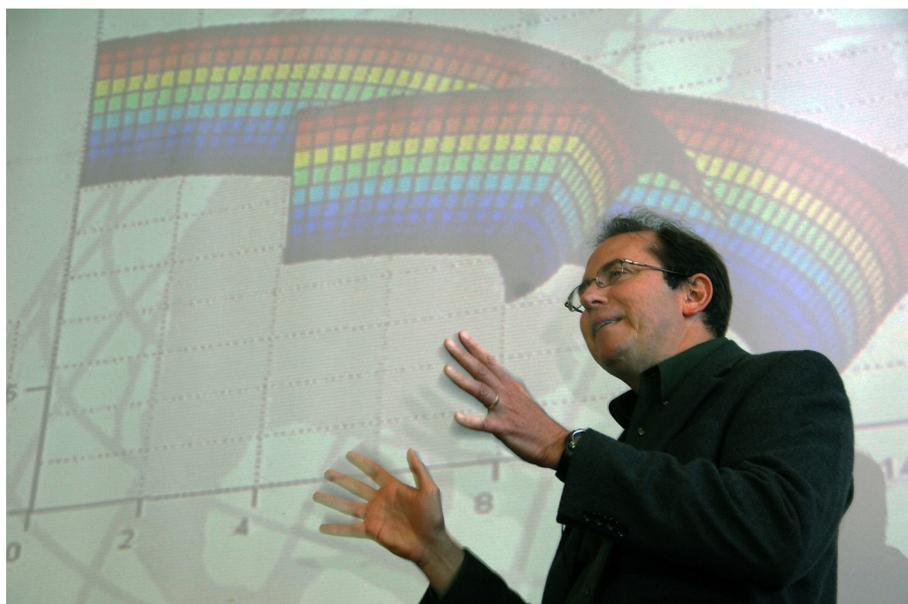
"Wireless matters because that's what the enemy uses," said Kragh, whose presentation focused on the advantages of software-defined

radios for intelligence collection and cyber operations. "Look at almost any jihadi Web site and you'll see photos of terrorists holding cell phones, which can be exploited for detection, geo-location and evesdropping." In his earlier talk, McEachen noted that the first mobile WiMax network was set up not in the U.S. or Europe, but in Pakistan.

All events during the month-long celebration were open to all students, faculty and staff at NPS. The purpose of the "All Hands" forums

was to help participants understand the depth and breadth of Department of Defense cyber-security challenges and learn some of the most promising solutions from top NPS and industry experts in information security and assurance. The lectures also showcased NPS' unique position in both education and research to protect the nation's critical cyber and communications infrastructure and to further develop the university's comprehensive expertise in this critical field.

Associate Professor of Electrical and Computer Engineering John McEachen offers compelling remarks about the security, or lack thereof, with increasingly popular wireless mobile devices. McEachen's talk was just one of several presentations from faculty across seven departments on campus during the all-day Cyber Summit.



Below:

Navy Capt. Eugene Potente, left, asks a question during the all-day Cyber Summit at NPS in late October, part of a month-long series of events in conjunction with National Cybersecurity Month. Potente attended the summit as a representative of the recently formed U.S. Cyber Command.



In Defense of Our Country - How

By Kellie Arakawa, Dale Kuska and Brian Seals

The tragic events of September 11, 2001, are forever etched into the collective conscience of American society. Rising from the ashes left behind was a new discipline in protecting our nation, homeland security, and the Naval Postgraduate School continues playing a key role in advancing this profession.

From the terrorist attacks of 9/11 to the devastation of Hurricane Katrina in 2005, this is the realm of homeland security, a profession that is now the domain of everyone from firefighters to emergency response managers, police officers to the armed forces.

The Naval Postgraduate School has been a leader in national security-focused, graduate-level education and research for more than century, and sensibly, has also been a major player in developing homeland security, providing education and research found nowhere else in the world.

Homeland security (HLS) has evolved over the years to include increasingly varied threats, thus advancements to HLS must be made across a wide spectrum of disciplines in order to mitigate the destruction of each threat.

NPS responded to this call, with many of the school's research programs looking at applications beyond the military arena to provide support for both the war fighters overseas, and first responders on the home front.

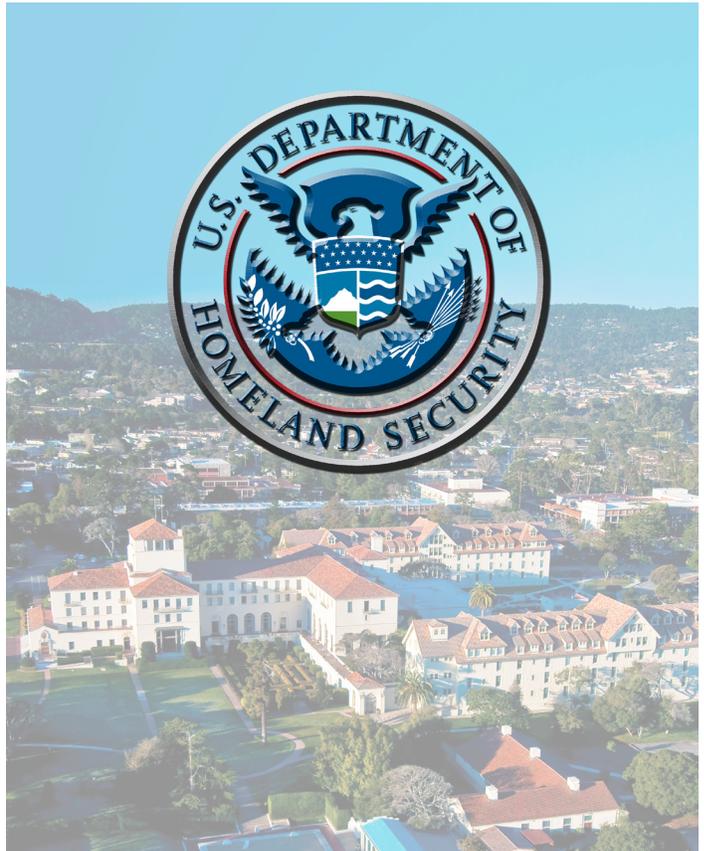
"There is no other institution in the country quite like the Naval Postgraduate School," said NPS Exec. Vice Pres. and Provost Dr. Leonard A. Ferrari. "Our graduate-level research programs have direct applications to the tactical and strategic missions of the Defense Department and Homeland Security, and are invaluable assets to this nation.

"No where else can you find graduate students with operational backgrounds working with some of the top researchers and professors in their fields on defense-related issues," he continued. "Our unique educational and research environment is truly unmatched, and is what has helped make NPS a leader in homeland security research."

Now just over eight years since that fateful day, the results of NPS' efforts are strikingly undeniable. Many of the policy, practice and technological responses to homeland security in effect across the globe since 9/11 have emanated from the university's campus in Monterey.

A New Kind of Security Professional

While NPS' Center for Homeland Defense and Security (see sidebar page 13) has pioneered homeland security educational offerings ranging from master's degrees to several non-degree academic programs, NPS' Homeland Security and Defense curriculum, part of the university's School of International Graduate Studies, takes a rigorous academic approach to homeland security through the eyes and cumulative respon-



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and Provost*

sibilities of the Department of Defense. This degree provides military officers with an in-depth exploration of DoD's role in deterring and preventing attacks on United States soil, and in consequence management should an attack occur, creating a very unique kind of officer graduate.

Put it all together, and you have the creation of a new kind of professional. A diverse group of first responders, military officers, civilians and the like representing an ever-expanding range of organizations and agencies – but all cohesively bound through an advanced education in this developing field.

"I think that's what we have created, it's that cadre of people that didn't exist before," said Dr. Jim Wirtz, Dean of the School of International Graduate Studies at NPS. "They are the ones pushing forward in terms of fu-

How NPS Impacts Homeland Security

sion of data, sharing of information and breaking down barriers so we don't have the problems that plagued us on 9/11. It's really an informal group of people across the United States that will work together to solve problems. That's very positive for the country."

While education is developing this new kind of professional, research efforts into advanced technologies and seamless communications at NPS will ensure they can indeed collaborate and connect. For first responders and government agencies, accurate information and efficient communication across all agencies and levels is critical for cooperative action, especially in times of unexpected crises.

The Hastily Formed Networks (HFN) Research Group played a significant role in providing disaster relief communications following Hurricane Katrina, and supports critical research that is improving the effectiveness and efficiency of disaster relief operations and collaborations between the United States, foreign governments and non-governmental organizations.

One of its resources, a mobile and fully self-contained research platform called Nemesis, is a 33-foot motor coach equipped with satellites, wireless networks and video surveillance. This mobile research facility can deploy across the U.S. in support of field research, disaster relief and security exercises. In fact, when Nemesis was deployed to Mississippi in support of Katrina disaster relief operations, the HFN team had full broadband connectivity available for several public agencies working in the area within five hours of arrival.

Thinking Strategic to Protect the Nation

National infrastructures present an obvious target to terrorists seeking massive disruptions to the daily lives of Americans. Preventing attacks on the nation's most critical infrastructure requires a strategic approach, and NPS' Operations Research (OR) department is playing a key role in developing models to find weaknesses and prevent domestic attacks.

Dr. Gerald Brown, an Operations Research Distinguished Professor, is one of three NPS professors recently elected to the National Academy of Engineering, and regularly advises Congress on matters of his expertise.

But what Brown does on a day-to-day basis is build complex mathematical models of real systems, and uses them to understand how those systems operate and how to improve them. Part of the OR department's research efforts include "red teams" of military officer students who are tasked with gathering knowledge from public sources about a specific infrastructure system, such as the Washington, D.C. Metro system. They are then asked to build a model that represents how its operator would manage it either in normal times or after a signal event, such as a terrorist attack.

"Our operations research program is still the only one on the planet that requires each student to engage in one of these red teams. The optimization modeling we have developed represents these two-sided 'defender-attacker' models, where we have to make our defensive preparations in full view of the attacker, who then gets to choose his course of action," Brown explained.

--continued on page 14

Creating the Center

As the fledgling field of homeland security began to unfold, a core group of visionary leaders across various government agencies, and at NPS, came together with a common understanding that an academic approach to homeland security (HLS) would provide a wealth of benefits to the nation.

Then NPS Professor Dr. Paul Stockton was one of these visionaries. Stockton, who is the current Assistant Secretary of Defense for Homeland Security and America's Security Affairs, knew the intellectual capital at NPS could provide just this kind of approach.

Following several months of intensive work by officials across a number of agencies, including Stockton, the Center for Homeland Defense and Security (CHDS) was established in April of 2002 by an interagency agreement between the U.S. Department of Justice and the Naval Postgraduate School. This agreement envisioned a real-world curriculum that would develop the next generation of homeland security leaders who would be needed to defeat terrorism.

The marching orders for CHDS were quite clear, and fortunately, the Center was at the right place to meet that challenge. "Locating the Center for Homeland Security at the Naval Postgraduate School allows us to tap into a wealth of academic expertise on security issues," said Andrew Mitchell, Director of the Preparedness Coordination Division of the Federal Emergency Management Agency. "That, in turn, positions us to educate the next generation of homeland security leaders."

"There is a wealth of research and education going on across the campus that the Center can tap into," agreed CHDS Director Glen Woodbury. "We can take that research and technology and feed it to practitioners and scholars. We provide a communications point between the two."

With that foundation, CHDS built expertise in the unique issues facing law enforcement, public health, fire service and emergency responders, all of whom work in varied layers of federal, state, local and tribal governments. What resulted was a cohesive study into the practice of homeland security, and a fully-accredited master's degree program that was the first of its kind.

While NPS expertise laid the foundation for CHDS, according to university President Daniel Oliver, the benefits are indeed reciprocal. The Center brings a significant number of civilian students who would not otherwise be here, Oliver noted. In addition, faculty who participate in CHDS academic offerings can bring that expertise back to the NPS classroom.

"Because our faculty is able to participate in these courses, it gives them a depth of understanding and knowledge they can bring back into our traditional curriculum," Oliver said. "I think it fleshes out our portfolio in a very nice way. I'm really proud that we have the Center. I think we're all better off for it."

Not only has CHDS educated homeland security professionals, it offers its curriculum materials to partner universities. "I'm particularly proud of the fact that we are able to export our curriculum to dozens and dozens of colleges and universities around the country so that they can copy what we are doing," Oliver added.

--continued from page 13

"This is an important element of the research, because terrorists will not flip a coin to choose a course of action," he added. "They are intelligent, goal-driven and will choose a course of action that is most advantageous to their perspective."

Developing Cybersecurity

Because the country's infrastructure relies heavily on computer technology, identifying vulnerabilities subject to exploitation from potential attacks is a daunting challenge. NPS has been actively involved in cybersecurity research for more than a decade, and is one of the nation's strongest in information assurance discovery.

Case in point is NPS' Center for Information Systems Security Studies and Research (CISR), one of the country's leading centers for defense-related research and education in trustworthy systems and defensive information warfare. CISR examines malicious software and system subversion, and develops technology to enforce critical security policies.

CISR, and Director Professor Cynthia Irvine, recently led an effort for the re-designation of NPS as a National Center of Academic Excellence (CAE) in Information Assurance Education and designation as a CAE in Information Assurance Research by the National Security Agency and Department of Homeland Security (DHS).

These designations help CISR act as a focal point for the implementation of several scholarship programs designed to bring new life to the nation's cybersecurity workforce. Through these various programs, nearly 70 people have

graduated through the program, and more are in the pipeline now.

"NPS has a reputation for turning out really high-quality students with national security relevant information assurance expertise," Irvine noted. "Now that we have the Research as well as the Education designation, we can expect the combination to be an even better door opener. NPS is now positioned to make even more significant contributions to improve the cybersecurity stance of the U.S., both in terms of the Departments of Defense and Homeland Security and our critical national infrastructures."

The Lesson of Collaboration

One of the homeland security's most critical elements of success is collaboration. It seems a simple lesson – when diverse groups work in cooperation, it yields results – but is far more difficult in practice. Perhaps that lesson is best displayed with NPS' Field Experimentation Program, headed by Dr. Ray Buettner. The program takes several different concurrent research efforts at NPS and binds them into a cohesive, collaborative effort, culminating in a weeklong field experiment at Camp Roberts, Calif., each academic quarter. *In Review* profiled one aspect of the effort in its October 2009 issue.

One of those experimentation programs, the U.S. Special Operations Command-NPS Field Experimentation Cooperative, evaluates and experiments with technologies that are unique, adaptable, and readily available for special operations forces use right now. And its secondary objective is to examine dual-use

"NPS is now positioned to make even more significant contributions to improve the cybersecurity stance of the U.S., both in terms of the Departments of Defense and Homeland Security and our critical national infrastructures."

*Dr. Cynthia Irvine
Professor, Computer Science*

capabilities of these very same technologies for homeland security, reconstruction and humanitarian assistance.

Another effort through the Field Experimentation Program is the Research and Experimentation for Local and International Emergency and First Responders, or RELIEF. Researchers involved in RELIEF are currently leveraging existing technologies to meet the challenges posed by natural and man-made disasters. An important objective of RELIEF is to connect various organizations typically involved in humanitarian assistance/disaster relief – non-governmental organizations; local, state and federal agencies; and the military – and help them achieve common goals for effective recovery.

Collaboration is also proving beneficial in a program led by retired Navy Capt. Jeff Kline, who spent more than 20 years as a Naval officer before joining the Operations Research faculty at NPS. Kline served as Commanding Officer of two ships during his career, including one of the Navy's few Pegasus class hydrofoils.



It may look like an ordinary RV, but it's actually NPS' Hastily Formed Networks group's Nemesis, a self-contained, fully-equipped communications research platform. When deployed to Mississippi in September 2005 in support of Katrina disaster relief, the team had full broadband connectivity available for several public agencies working in the area within five hours of arrival.



DHS personnel join several local, state and federal organizations in an extensive NPS-led maritime interdiction operations (MIO) exercise in the San Francisco Bay. The experiment is just one of a series of MIO exercises held quarterly since late 2004, and continue today.

Kline is one of the nation's foremost experts on border and maritime security, essential to protecting the physical and economic safety of the country. He is head of the National Security Institute's Maritime Defense and Security Research Group (MDSR), an umbrella organization for more than a dozen initiatives at NPS – one of which is the Maritime Information Sharing Taskforce, featured on page 18 of this issue.

MDSR focuses on three core research areas: at sea, in port and field experimentation programs; exploratory research programs; and education and red cell programs.

“Our program explores strategic and tactical issues that range from how boarding teams receive information, to how the national command authority understands the maritime picture,” explained Kline. “MDSR's role is not to just execute this research but to also do so in the most collaborative, interagency way possible.”

MDSR explores projects that are of the highest classification, dealing with the use of national sensors and integrating that information into unclassified sources to provide a better understanding of the maritime domain and awareness picture. Working with both domestic and international partners, MDSR work specifically explores technologies for use with the military, law enforcement and first responders.

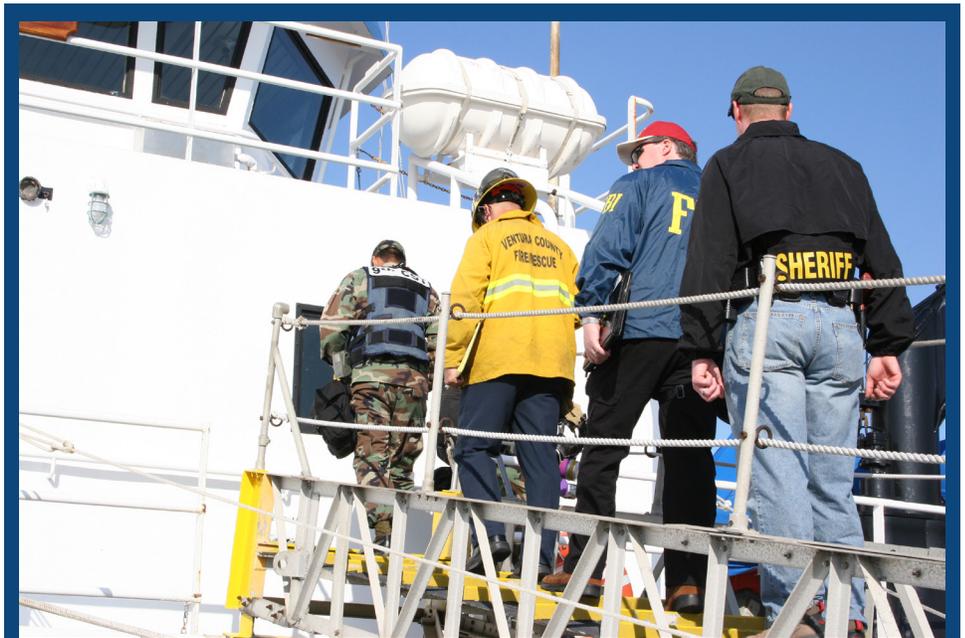
But perhaps what is best of all of these efforts is that students are directly involved in all aspects of them. They take their educations out of the classroom, and into the field where they gain experience in new technologies ultimately where they will be used.

Homeland Security, International Scope

Prior to playing a major role in the creation of CHDS, then NPS Professor Dr. Paul Stockton co-founded the Center for Civil-Military Relations (CCMR) in 1994 with Dr. Don Abenheim. These men knew then that bolstering stability and relations between civilian and military institutions through education would greatly impact combating terrorism.

“The central idea of taking a whole bunch of people who may not normally talk to each other and using advanced education in the pursuit of more effective public policy as our guiding light, that common idea and goal links us together,” Abenheim said.

In addition to instruction on the NPS campus, CCMR also takes its Mobile Education Teams abroad to countries to analyze actual



The National Security Institute's Center for Asymmetric Warfare (CAW) conducts a multi-jurisdictional field exercise at its southern California headquarters. CAW has spent the past decade design and executing various trainings and field exercises that allow to test theories, technologies and training methods. Matched with CAW's ability and expertise to link local, county, state, federal and military entities, the organization provides a critical vehicle in the development of homeland security. It also allows NPS students an opportunity to play a vital role in the development of real-world, homeland security challenges.

threats as well as their underlying causes.

“We have a combating terrorism program,” CCMR Director Richard Hoffman said. “We also address combating terrorism in the broader sense of all threats to security and the roles and missions of security forces. We address with other countries their definition of homeland security, their capabilities for it and their plans for it.”

“I think Sept. 11 forced this country to think once again very fundamentally about citizenship and government, and the ends and means of strategy, in a way that was very much on the minds of Central and Eastern European countries in the late '80s and early '90s, but wasn't very much of an issue in this country,” Abenheim said. “These are classical questions we (the CCMR) have addressed long before Sept. 11, and have addressed quite successfully since.”

Adapting to Evolving Threats

While what actually is homeland security has evolved over the years, what also keeps changing are techniques, technologies, and focal points for study. Over the last few years, significant attention has been paid to the role of humans and the behaviors they exhibit, and what clues to their actions can be garnered

from this. NPS researchers are developing technology systems that assess human and behavioral factors in hopes of early prevention and preparation for threats posed by individuals and groups.

Dr. Rachel Goshorn, a young, up-and-coming member of NPS' Systems Engineering faculty, is leading a group of students in the development of the “Watchman,” a camera network system that utilizes artificial intelligence to monitor and analyze behaviors that could indicate a possible security threat.

Using a combination of fixed and mobile sensors, the Watchman networks visual information to a central command and control center, which then automates any abnormal behaviors that could signal a security threat.

“The future of net-centric warfare and homeland security is going to be this artificial intelligence automation ... and what we're doing is taking two typically independent systems – networked sensors and behavior analysis and artificial intelligence – and bringing them together to create this system,” Goshorn said. “Using sensors and surveillance will help predict potential attacks on the homeland and abroad, but to provide the most efficient protection 24 hours a day, automation is really the key.”

NPS Leads International Partnerships for Building Peace Through Prevention

By Joan Ackerman

Military strategists have long valued the power of maintaining peace through the prevention of war, but perhaps its emphasis could never be stronger than it is right now. Case in point, the *Maritime Strategy for the 21st Century*, a landmark strategic plan aligning the U.S. sea services under a single vision, lists as one of its guiding directives the importance of not just winning wars, but preventing them.

U.S. Secretary of Defense Robert M. Gates reiterated the emphasis of this strategy when, in the January/February 2009 issue of *Foreign Affairs*, he stated that, “Where possible U.S. strategy is to employ direct approaches primarily through building the capacity of partner governments and their security forces ... In this kind of effort, the capabilities of the United States’ allies and partners may be as important as its own, and building their capacity is arguably as important as, if not more so than, the fighting the United States does itself.”

NPS is responding to this priority, aligning several entities to build institutional, cross-campus collaboration and coordination in areas relating to international academic relationships, building partner capacity and analyzing the impact of globalization on our national security policy — with the emphases on prevention of global crises and solutions to critical worldwide security challenges. And the efforts have extended far beyond the campus in Monterey.

“The strategic value of building the capacity of partner nations across the world is clearly evident, it is a national security objective of the

United States,” said NPS Exec. Vice Pres and Provost Leonard Ferrari. “Our university recognized this value, and we have embarked on a worldwide outreach program to invigorate a broad base of global partners in the development of national, homeland and human security capacity building.”

The Global Forums program is an ambitious effort, seeking to create a series of worldwide congregations to address the greatest challenges of the 21st Century. Last September, Ferrari convened a planning group of 60 individuals from the global, non-profit sector — universities, foundations, military, international organizations, the U.N., non-governmental organizations, NATO and governments — at the U.S. Mission in Geneva to plan for the creation of this collection of global forums.

“These forums would focus on the solution spaces to some of our most critical worldwide issues — economic security, energy security, cybersecurity, social change, cultural awareness, human rights and sustainable education for all people everywhere,” Ferrari explained. “Four additional forums have already entered the planning stages and are slated to be held in Geneva, Monterey, Singapore and New York.”

The Global Forums project comes on the heels of two recent endeavors that have played key roles in creating a ‘perfect storm’ for the success of these efforts — the formation of the Global Public Policy Academic Group (GPPAG)

in early 2009, along with several international outreach efforts expanded through strategic partnership activities in Switzerland, Sweden, Singapore, Jordan, Bosnia, Moldova, Egypt and with NATO headquarters in Brussels, Belgium.

A third, and the most developed, component to these outreach efforts was already in place — the May 2004 U.S. State Department designation of NPS as the United States’ Partnership for Peace Training and Education Center (USPTC), the only such center in the country. The USPTC acts as America’s contribution to NATO’s Education for Reform Initiative, Partnership for Peace Program (PfP), and the NATO Defense Institution Building efforts. An outcome of its 50th Anniversary Summit, NATO has been establishing PTCs since 1999 as a part of its Training and Education Enhancement Program, determining that a “network of national facilities — made available to all PfP countries — should emerge as part of a collaborative approach to training and education.”



Brigadier General Michael Lollesgaard, center, then Commandant of the Bosnia-Herzegovina PfP (PSOTC), Alan Howard, second from left, Deputy Program Director of the USPTC, and Visiting Professor Dr. Maria Pineda, far right, join Bosnian officials in kicking-off a discussion of gender issues and humanitarian demining at the PSOTC in November. Photo courtesy Alan Howard.



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and Provost*

Tom Hazard and Alan Howard, Program Director and Deputy Program Director for the USPTC respectively, oversee much of these international outreach efforts, and are leveraging the USPTC to carve out a critical niche in supporting the overall international program. Under their auspices in 2009, GPAG and the USPTC have collaborated on the Afghanistan Theatre Security Strategies Workshop in Monterey; co-sponsored the Forum for Social Change, the Global Security and Stability Roundtable and the Leadership and Collaboration in Complex Operations Program in Geneva, Switzerland; participated in the Viking 11 Planning Workshop in Sweden; the Conference of Commandants Planning Meeting in Turkey; the PTC Commandants' Conference Brief in Austria; and the NATO Training Group's sub group for individual training and education development meeting in Trencin, Slovakia among many others.

Through countless discussions on DoD/DoN challenges and threats to global security and stability, paired with knowledge gathered through meetings with NATO, the U.S. State Department and the U.N. about issues important to each, Hazard says the USPTC program is currently concentrating on three key areas:

integrity, diminishing corruption and graft; and, strategic collaboration and leadership in complex environments.

Several educational efforts are supporting these areas of focus. The USPTC is collaborating with GPAG, led by Chair Dr. C. J. LaCivita, in support of a certificate program at NPS in Security, Stability and Development, tailored to meet educational gaps in the areas of global challenge and international governance, security, development and methods for analysis.

Additional efforts include a dual-degree program in development with the German-Jordanian University, expansion of education and research programs with the National University of Singapore Temasek Defense Systems Institute, expanding a Ph.D. program with Egypt, and ongoing discussions with the Military Technical College in Cairo on developing a joint technical master's degree program. Also, NATO's international staff has asked the USPTC to mentor Moldova's Military Training Institute on developing a research center and a student thesis process. Several strategic collaborations are also in the works, including the USPTC assisting in the development of a possible Jordanian PTC, as well as various efforts in support of the Swiss and Swedish PTCs as well.

In 2009, the USPTC was tapped by the Of-

fice of the Secretary of Defense to lead a three-year partnership project to develop capacity at the PTC of Bosnia and Herzegovina, the Peace Support Operations Training Centre (PSOTC) in Sarajevo. Hazard's team spent the latter part of 2009 planning and developing a strategy for partnership with the PSOTC to offer niche coursework for the region.

“We're proud of the work we've started in Bosnia and committed to a sustainable plan for success. As the USPTC, we have access to a broad range of top-quality resources here at NPS, allowing us to develop and deliver relevant, unique coursework for the region.” Hazard said.

He emphasizes that the USPTC focuses on long-term partnership projects, which enable transformative change. Hazard believes this creates a path towards sustainable peace and stability in the partner country and provides these countries with the tools to step up and be key players in the security and stability of their respective regions.

“The USPTC has made invaluable contributions that will only increase as U.S. policy makers, the Navy, and NPS rededicate themselves to not only winning wars, but also to preventing them and the myriad of crises which spawn them,” Hazard added.

Perhaps it will be the efforts of the USPTC and the Global Forums project that lead a worldwide rededication to the value of prevention.

NPS Initiative Creates Public-Private Partnership for Enhanced Maritime Awareness

By Barbara Honegger

A prime goal of post-9/11 homeland defense is information sharing across military services and government departments and agencies. Now, a new initiative by the Naval Postgraduate School is capturing and integrating the expertise and knowledge of the private sector shipping and sea tourism industries to enhance national and global maritime domain awareness (MDA) and security.

The new program, the NPS Maritime Information Sharing Taskforce (MIST), conducts interviews and surveys and facilitates port workshops linking commercial shippers and port operators with representatives of the Navy, Coast Guard, Department of Homeland Security and federal, state and local governments. Its core mission is to establish a two-way communication and active partnership between the government and the maritime industry.

The MIST initiative began as a pilot program in the ports of Los Angeles/Long Beach and Seattle/Puget Sound to identify and understand the major maritime security information sharing challenges among local private and public sector players. Jump-started by Maritime Domain Awareness (MDA) direct research seed funds from the Navy, the program soon gained co-sponsorship by the Department of Transportation Maritime Administration (MARAD) and the Coast Guard.

"MIST is a great example of a National Security Institute program that is making a major policy impact at the national and local levels in maritime domain defense and security," said retired Navy Capt. Jeffrey Kline, director of NPS' Maritime Defense and Security Research Program. "It's the newest of more than 15 successful NSI programs now making significant contributions nationally and internationally."

"We identified a major need – to capture, integrate and leverage the voice of key private stakeholders in maritime homeland security – and filled it," said MIST project manager Wendy Walsh. "Though there's been a massive effort in maritime domain awareness

"This is vitally important, because there are more private industry ships on the water and in the ports than in all of the Navies combined, and we need to leverage that experience and knowledge if we're going to have complete maritime domain awareness."

Wendy Walsh

MIST Program Manager

since September 11, and a basic tenet of U.S. maritime security policy is to partner with and expand links to the maritime industry, no one was yet looking at how security-related information is shared locally among private shippers and port operators who can often be overwhelmed by uncoordinated and conflicting [official information] requests," Walsh explained. "MIST's interactive, invitational port seminars address this gap by bringing together key public and private players to frankly discuss and capture maritime homeland security challenges and propose solutions that everyone can act on," Walsh noted.

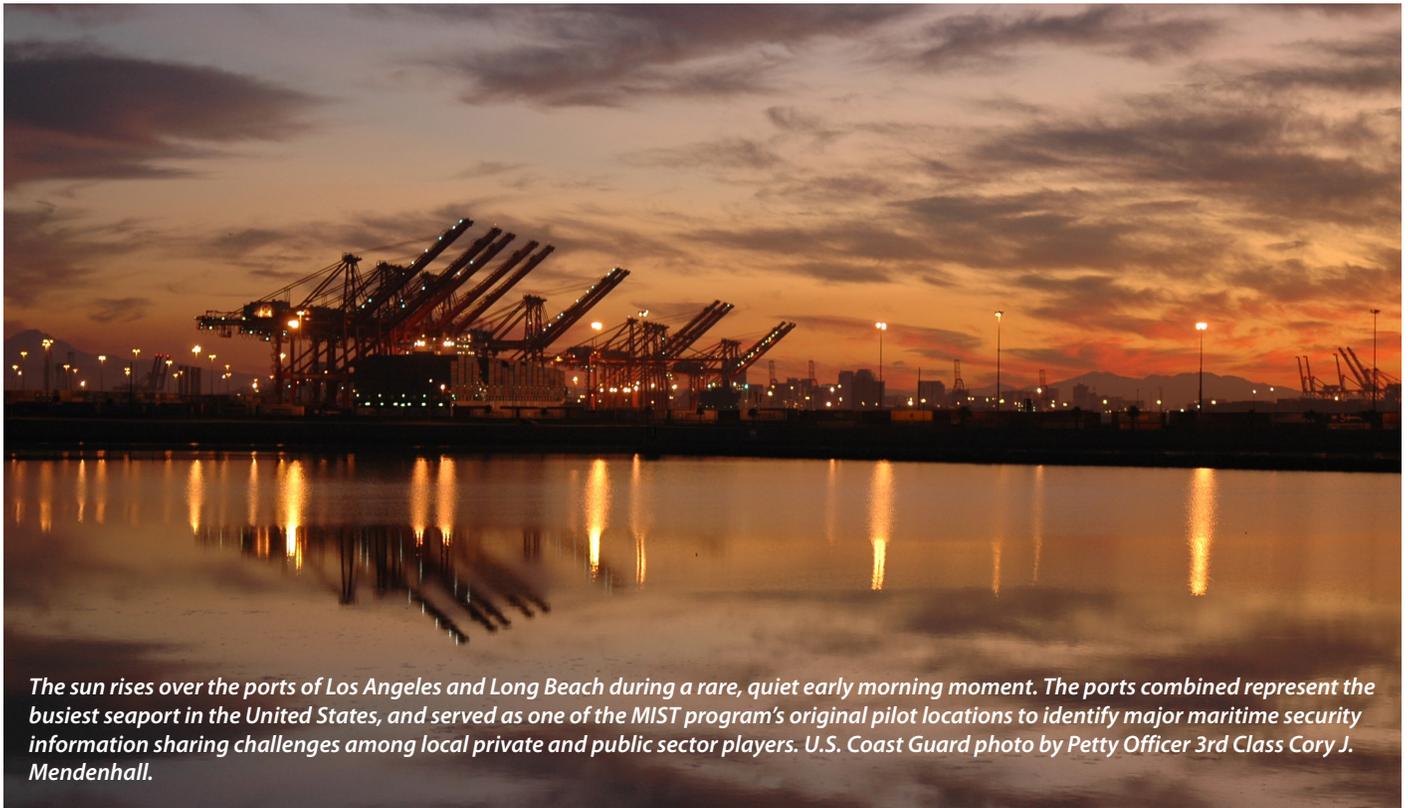
"This is vitally important, because there are more private industry ships on the water and in the ports than in all of the Navies combined, and we need to leverage that experience and knowledge if we're going to have complete maritime domain awareness," Walsh stressed.

"Examples of solutions that have been addressed at our workshops are to create a new private-side information clearinghouse to deconflict, fuse and streamline information requests from official agencies like the Navy, Coast Guard and Homeland Security's Customs and Border Patrol and act as an information broker between the regional Joint Terrorism Task Force and the maritime industry; a new interagency operations center and 1-800 number for sea captains to call for the most up-to-date official information about potential threats and emerging security situations; how to increase incentives for commercial shippers to share what they know without compromising proprietary information; and new ideas about how to do joint boarding operations," Walsh noted.

The report from MIST's initial Los Angeles/Long Beach seminar won acclaim and captured the attention of Rear Adm. Lee Metcalf, then head of the Office of Global Maritime Situational Awareness (OGMSA), a multi-agency U.S. entity responsible for ensuring maritime situational awareness by facilitating effective access to interagency and international information sources impacting safety, security, the environment and the economy. At the time, OGMSA was about to hold the first Global Maritime Information Sharing Symposium, in 2008, to better coordinate government interaction with the maritime industry, improve and increase industry-government maritime information sharing relationships, and create new channels to bring



MIST Lead Researcher Anita Salem, left, and Project Manager Wendy Walsh, right, begin their most recent workshop at the Port of Honolulu. The workshop included participants from the private shipping industry and local port authority, Coast Guard, Customs and Border Protection, the Joint Terrorism Task Force, Immigration and Customs Enforcement, the Naval Criminal Investigative Service and the police, among others.



The sun rises over the ports of Los Angeles and Long Beach during a rare, quiet early morning moment. The ports combined represent the busiest seaport in the United States, and served as one of the MIST program's original pilot locations to identify major maritime security information sharing challenges among local private and public sector players. U.S. Coast Guard photo by Petty Officer 3rd Class Cory J. Mendenhall.

industry issues before the interagency bodies that coordinate government maritime policies.

“The timing couldn’t have been better,” Kline noted, “and only a year later the lessons learned captured by MIST’s outreach to the maritime industry are being actively integrated to inform national and international audiences on MDA issues and policy. In fact, MIST’s week-long September symposium was synchronized and fully integrated with OGM-SA’s 2009 Global Maritime Information Sharing Symposium on ‘Streamlining Information Sharing: Improving Efficiency, Security, Safety and the Environment.’”

“It was a symbiotic partnership,” Walsh agreed. “They were looking at the national and global levels and we were focusing on capturing ‘day in the life’ snap shots at the local level. We saw the convergence and became collaborative, and the planning for our port seminar and the conference moved forward in concert.

“One of the most important lessons from these brainstorming sessions is that when you’ve seen one port, you haven’t seen them all,” Walsh stressed. “Each port’s security processes and relationships and information sharing between the public and private sectors are unique. Some, for instance, are focused on [sea] container traffic and others on ferries, some on roll on-roll off [vessels] and some on

barges carrying bulk cargoes like grains. For most, the terminals are privately owned, but for some, like Honolulu, all but one are state owned. And we learned not to make assumptions about specific maritime companies and how they operate in a region.”

In addition to the Office of Global Maritime Situational Awareness and NORTHCOM, the Assistant Secretary of Defense for Homeland Defense and America’s Security Affairs, Director, Homeland Defense Domains; the Office of the Director of National Intelligence, Global Maritime and Air Intelligence Integration; and the Office of the Department of Defense Executive Agent for Maritime Domain Awareness have all expressed interest in capitalizing on MIST efforts.

“We took the Puget Sound report to the Assistant Secretary of Defense for Homeland Defense, to the then maritime director,” said Walsh. “They liked its recommendations and said that what they need are specific solutions, so at the next workshop, in Honolulu, we took it to the next level.”

The Honolulu workshop, in late November, included participants from the private shipping industry and local port authority, Coast Guard, Customs and Border Protection, the Joint Terrorism Task Force, Immigration and Customs Enforcement, the Naval Criminal Investigative Service and the police, among others. In conjunction with the event,

Walsh presented a MIST brief to the Facility Security Officers meeting of Honolulu’s Area Maritime Security Committee. “Honolulu has taken the lead to formalize training for its security guards in the port environment, to professionalize and certify their roles,” Walsh added. She has also presented to the Maritime Domain Awareness Stakeholders Board, a group of all federal agencies addressing the MDA challenge.

Next on the agenda, according to Walsh, is a workshop and exercise with the New York/New Jersey Port Authority, and increased participation by the Coast Guard. “We’re actively seeking funding for this,” she said.

“MIST owes a great debt of gratitude to Jeff Kline, director of the NPS Maritime Defense and Security Research Program,” Walsh added. “He’s been a great leader, mentor and sponsor. He gives us the autonomy we need to succeed in the project.”

In addition to Kline and Walsh, other key members of the MIST team are lead project researcher Anita Salem of the NPS Graduate School of Business and Public Policy, and NPS Research Associate Lyla Englehorn, a graduate student at the Panetta Institute.

For more information about MIST, go to <http://www.gmsa.gov/gmiss/mist.html>. For more information about the NPS National Security Institute, go to <http://www.nps.edu/Academics/Institutes/NSI/index.html>.

Intriguing Series of Speakers Gives Students Access to Today's History-Makers

By Dale Kuska

Over the course of one month, NPS students were addressed by a former Ambassador, a *New York Times* journalist, and a retired Air Force Chief of Staff – all three intimately involved with the Iraq War and with equally unique and compelling stories to share.

A hallmark of higher education is the student's exposure to new ideas and methods of thought. Developing the ability to analyze options, to make sound decisions and challenge the conventional norm is a skill learned by the kind academic discourse that only occurs on a university campus. The Naval Postgraduate School is no different in this respect, and for a few weeks this past quarter, NPS students were addressed by three distinguished lecturers offering first-hand views on one of recent history's most dominating events.

The series of presentations began with the Honorable Ryan Crocker, former Ambassador to Iraq from March 2007 through February 2009. Crocker is one of the tumultuous region's most well-recognized diplomats – serving as Ambassador to Pakistan, Syria, Lebanon and Kuwait spanning three presidential administrations. Since joining the Foreign Service in 1971, he has also had assignments in Iran, Qatar, Iraq and Egypt, as well as Washington. He was assigned to the American Embassy in Beirut during the Israeli invasion of Lebanon in 1982 and the bombings of the embassy and the Marine barracks in 1983, and he reopened the U.S. Embassy in Kabul, Afghanistan in 2002.

His discussion to NPS students focused on the current state of Iraq – a nation in its infancy that would need to grow and evolve over time.

"Iraq is in the very beginning of its modern story," he said. "This is only the first chapter in what is to be a very long book. What's the shape of the new state and society of Iraq? What are the authorities of the federal government ver-

sus the regional government versus the provincial governments? For Americans, this should sound familiar."

It was the U.S. that just over 230 years ago went through its own growing pains, and Crocker noted that the residual effects of adopting a new system of government take decades to assimilate.

"We didn't get it quite right in our own country as to what rights the state government should have versus the federal government," he explained. "And we only resolved it, after nine decades of our existence, with the bloodiest conflict Americans have ever been involved in," Crocker added in reference to the American Civil War.

He closed his discussion with what seems a common thread through many presentations to NPS' students – a strong reminder of their abilities to shape the future.

"You're in the unique position of not only learning history, but making it." He said. "And one of the ways we are making it, even though we've got a long way to go, is in the realm of civil-military relations. That is something Gen. Petraeus and I put a huge premium on during our time together in Iraq. It is very much a part of the approach going forward in this conflict



The Honorable Ryan Crocker, a former Ambassador to Iraq and several other Middle-Eastern nations in a career that spans several Presidents, offered students a compelling perspective on the war in Iraq.

in Iraq, as it is in Afghanistan and Pakistan as well."

On November 3, Michael R. Gordon, Chief Military Correspondent for the *New York Times*, addressed the NPS student population with an in-depth discussion on the invasion in Iraq in 2001. Gordon possesses a unique perspective on the planning and evolution of the Iraq War, he was the only print journalist embedded with the allied land command under General Tommy Franks, and also co-authored a book *Cobra II – How the Iraq War Was Planned and Launched*, with retired Marine Corps Lt. Gen. Bernard Trainor.

Gordon's discussion focused on the inherent miscalculations in decisions made by both the White House and by Saddam Hussein dur-

--continued on page 22

“NPS’ Own” Admiral Hank Mauz Rallies Fall 2009 Grads

By Barbara Honegger

Nearly 400 Naval Postgraduate School students tossed their tassels at festive Fall 2009 commencement exercises in King Auditorium, Dec. 18.

“Somebody really ought to make a movie about our keynote speaker’s remarkable career,” Oliver said in introducing “NPS’ own” retired Admiral Henry “Hank” Mauz, former Commander of U.S. Atlantic Fleet and Chairman of the NPS Foundation. Mauz also commanded U.S. Seventh Fleet, and Naval Forces Central Command during Operations Desert Storm/Desert Shield.

“Admiral Mauz commanded all U.S. naval forces and those of a dozen coalition navies in the Persian Gulf directly under General Schwarzkopf, and the carrier battle group that conducted operations against Libya in 1986 in response to terrorism,” Oliver noted. “He has been a great leader, mentor and friend over the 20 years since I first met him. There is no stronger supporter and proponent of the Naval Postgraduate School. Admiral Mauz is the single person most responsible for NPS being here after the Base Realignment and Closure Commission. We all owe him a great debt.”

“You’re graduating from one of the finest educational institutions in the country,” Mauz told the grads. “My NPS education did more for my career than all of my other degrees combined. It taught me how to make the hard decisions under time pressure with insufficient information using the analytical decision-making I learned here. It also says a lot that when I was [with] Allied Powers Europe in Belgium, my best military staffer by far was a German major who had graduated from NPS in Operations Research. He was a critical thinker and very hard worker who ran circles around the others on the staff.

“As you leave the Naval Postgraduate School, remember that the American people honor the military over all the other professions, so if you have something to say, say it – they will listen. And in this society, more than



in any other, one person can make a difference.”

Mauz shared some key ‘lessons learned’ with the graduates.

“I’ll close with a little career counseling,” he said. “Ask for the hardest job, where you can make the biggest contribution. Seek command at every opportunity, and prepare for it. If you’re serious about your career, go to Washington – it’s where the action is and where you can make the most difference. Keep expanding your mind and, especially, read the great biographies and read about the great battles. Measure yourself against the greatest figures of history and learn from them.

“If you want to know my personal hero, it’s Arleigh Burke, the longest serving Chief of Naval Operations,” Mauz revealed. “He was an inspirational, swashbuckling, aggressive, offensive kind of officer whose advice you should heed. ‘For a leader,’ he said, ‘it’s good to be colorful.’

“Finally, as you leave NPS, remember that this school is a resource to you for the rest of your careers. Reach back to the faculty and staff, who are here to help you. You’ve enriched our lives immeasurably and we are better Americans because of you. God speed and God bless.”

Following the ceremony, the new alums and their family members walked through the Christmas-bedecked grand lobby of the Old Del Monte Hotel to gather in the Barbara McNitt Ballroom for the cutting of the class



Above:
Retired Admiral Henry “Hank” Mauz, former Commander of U.S. Atlantic Fleet and Chairman of the NPS Foundation, leads the Fall 2009 class of nearly 400 graduates with a poignant address, stating, “As you leave NPS, remember that this school is a resource to you for the rest of your careers. Reach back to the faculty and staff, who are here to help you. You’ve enriched our lives immeasurably and we are better Americans because of you.”

Above left:
A quarterly tradition ... Lt. Cmdr. Andrew Boyden, second from left and winner of the class’s top academic honor, joins NPS President Dan Oliver, speaker and Hall of Fame alumnus Adm. Hank Mauz, and Exec. Vice Pres and Provost Leonard Ferrari in the ceremonial cutting of the class cake. Boyden is an intelligence officer graduating in special operations and irregular warfare through the Department of Defense Analysis.

cake. Joining President Daniel Oliver, Executive Vice President and Provost Leonard Ferrari and Mauz for the ceremonial honors was top academic award winner Lt. Cmdr. Andrew Boyden, an intelligence officer studying special operations and irregular warfare in the Department of Defense analysis (DA). Boyden won the prestigious Monterey Council Navy League Award for Highest Academic Achievement for his thesis “Making the Case: What Is the Problem with Targeted Killing?”

“The Defense Analysis Department’s goal of producing critical thinkers best exemplifies the value of my NPS experience,” Boyden said. “The instruction – both formal and informal – on how to read, write, analyze and think critically will be an invaluable asset. I am truly indebted to the professors and staff for the quality

--continued on page 22



Left:
Michael Gordon, Chief Military Correspondent with the New York Times, addresses students during his guest lecture. As the only journalist embedded in the early stages of planning the conflict, Gordon shared a unique perspective on some of the mistakes made by both nations during this time.

Below:
Former U.S. Air Force Chief of Staff retired General John P. Jumper reviews NPS' Centennial Timeline following his presentation to students on the constant of transformation during his Secretary of the Navy Guest Lecture.

--continued from page 20

ing the events of late 2001 through mid 2002 as tensions built between the two nations. There are times when, "Smart people make poor choices," Gordon said, "Where decisions made in isolation add up . . . and have consequences."

As the war with Iraq began and trudged forward, Gordon noted three critical mistakes that he felt led to some of the more significant challenges, vastly extending the operation. He credited an inherent "hostility towards nation building" in some U.S. leadership at the time, that it wasn't "the role of the U.S. military." Added with "an exaggerated faith in transformation and technology, and an unhealthy civilian-military relationship where the military didn't have enough say in policy," the war was doomed to longevity, he said.

Gordon mentioned that he rarely spoke to gatherings as large as the 1,200 in King Auditorium that day. "I believe the officers are well informed and they asked good, tough questions and I hope my discussion was useful to them – it was very useful to me," he noted.

Just a couple of weeks later, retired Air Force Gen. John P. Jumper gave a special guest



lecture focusing on transformation in military affairs. As Chief of Staff of Air Force from 2001 through 2005, Jumper experienced the same challenges of the Iraq War but from a very different perspective, and gave a solemn reminder to the student audience of the costs of war in human lives.

"It always is helpful to remind ourselves of the consequences of a world gone wrong," Jumper said. "Each service has its own set of numbers we should try to remember when we talk about responsibilities. Responsibilities I have had, and responsibilities you will have."

In the end, the overarching theme of his lecture was one of transformation. Devastating and iconic figures of our time like Saddam Hussein and Osama bin Laden have changed the way we operate, just as each of the World Wars did in generations past. The point is, change will happen and the U.S. must be mas-

ters of that change.

"This is going to be for your generation to fix," Jumper said. "The current generation is dealing with a glare in their face, and [they] need to set their sights on the far horizon and create balance. It's going to be for your generation to do this, your generation of operators, of acquisition professionals, of logisticians, of support personnel, to get us back on track."

After answering students' questions from the lecture, Jumper was welcomed by school leadership, supporters from the community and Foundation members for a reception in his honor.

"It's quite an honor to have the general join us here," said retired Rear Adm. Merrill Ruck, Executive Director of the NPS Foundation. "The chance for the students and the community to interact with someone like John is great. He's entertaining, he's cordial, and most of all, he is genuinely insightful"

Jumper retired from the U.S. Air Force in 2005 after a distinguished 39-year military career.

The Secretary of the Navy Guest Lectures held at Naval Postgraduate School are a series of periodic professional lectures designed give students first-hand access to leaders in all aspects of domestic and international security, and to help students and faculty link their study, teaching and research efforts to the real-world needs of the nation.

--continued from page 21

of the education and mentoring they gave me over the past 18 months."

Boyden was among a number of students and four faculty members who received special recognition at the Fall 2009 Graduate and Faculty Awards ceremony held earlier, on Dec. 8. The faculty honors were the Carl E. and Jesse W. Menneken Annual Faculty Award for Excellence in Scientific Research to Assistant Prof. Jamie MacMahan; the Louis D. Liskin Award for Teaching Excellence in the Graduate School of Business and Public Policy to Senior Lecturer Phillip Candreva; the Military Officers Association of America Joint Service Warfare Award to Col. Mark B. Chakwin; and the Rear Adm. Wayne E. Meyer Award for Teaching Excellence in Systems Engineering to Prof. Charles Calvano.

"I figured out a way to significantly increase the accuracy of inexpensive handheld GPS [Global Positioning System] devices from the usual

10-foot [resolution] – if all is going well – down to 40 centimeters," MacMahan said when asked what he believed had earned him the Menneken research award. "And because they're so inexpensive, we can afford to deploy ten times as many on drifters as we could before to obtain surf zone flow-field data, which we can now get in much greater detail."

Of the 389 graduating in the morning ceremony, 264 were military officers – 122 Navy, 31 Marine Corps, 62 Air Force, 47 Army, one Army Reserve and one National Guard; 56 international students; and 70 Department of Defense civilians. Degrees awarded were 204 Master of Science, 106 Master of Arts, 84 Master of Business Administration, one Mechanical Engineer, one Astronautical Engineer and seven dual diplomas. Sixty students – most from a growing number of distance learning programs – earned their degrees in absentia.



NPS CENTENNIAL YEAR

CELEBRATING THE PAST, DEFINING THE FUTURE

May 2009



May 2010

FINALE CELEBRATION AND ALUMNI REUNION DETAILS

May 28 - 31, 2010



Friday, May 28

Campus activities, tours, NASA astronaut visits, enrichment lectures, time capsule dedication, evening wine and beer tasting event and more

Saturday, May 29

Centennial Finale Gala:
The Best Is Yet to Come

Sunday, May 30

Champagne Brunch

Monday, May 31 - Memorial Day

Service of Remembrance

Symphony Concert on the Lawn and
Community Non-Profit Fair

Centennial Park Dedication

April 24, 2010

Located next to the historic Lake Del Monte, it will be dedicated to the past, present and future students, faculty and staff of NPS.



Time Capsule Dedication

May 28, 2010

Commemorating NPS' first 100 years of 'Excellence in Education'

Current and past students, faculty, staff, alumni and friends can write messages to include in the time capsule. For more details visit the Centennial Web site.



For more information or to register for upcoming Centennial events visit

www.nps.edu/100

For any additional inquiries, please contact the Alumni Relations and Centennial Headquarters Office

(831) 656-2077

alumni@nps.edu





Our Most Senior SEAL

Admiral Eric T. Olson is Commander of the United States Special Operations Command (USSOCOM), leading the special ops forces of every branch in the U.S. Armed Services, some 57,000 personnel. He is the first Navy SEAL ever to be a four-star Admiral, or a third-star for that matter. He is the first Naval officer to be appointed to the head of USSOCOM, and he is a distinguished National Security Affairs graduate of the Naval Postgraduate School.

Adm. Olson returned to his alma mater in November to review the uniquely-focused Special Operations curriculum, part of NPS' Defense Analysis department. During his review, he spoke with current students one-on-one and in small focus groups, providing these young special operations officers with an opportunity and a forum for academic discourse with the most senior leader in their community.

Their discussions were on research theses, demand for resources, irregular warfare and the various missions special ops forces face – but they were focused through the aperture of graduate level education. This is a hallmark of the Naval Postgraduate School, where the leaders of tomorrow are mentored by those who make history today.

Olson is shown here just before he engaged the entire campus in a lecture on the state of the Special Operations command, its current initiatives and challenges. His address was one of several distinguished speakers that spent time invigorating the campus community with presentations to students, faculty and staff during the past quarter. Other speakers included a former Ambassador to Iraq, a former Air Force Chief of Staff, and the only journalist embedded with General Tommy Franks at the beginning of the Iraq War. Read more about their stories on page 20 of this issue of *In Review*.