Fleet Forces Deputy Offers Candid Presentation on U.S. Security Challenges

By MC2 Patrick Dionne

U.S. Fleet Forces Command’s deputy commander Vice Adm. Bruce H. Lindsey addressed NPS students, faculty and staff on the challenges facing the United States in the wake of Great Power competition during the latest Secretary of the Navy Guest Lecture (SGL) in King Auditorium, July 24.

“I may not be an alumnus myself, but I am a fan because of all the great people that you have here, and most importantly, because of the academic rigor that NPS brings all throughout the world,” said Lindsey.

“It is the rigor of the learning process; it is the rigor of taking data and organizing it into information, and turning that information into knowledge,” Lindsey continued. “That is what you are doing here, and that is what is truly valuable.”

Lindsey began his presentation to the students and faculty with a discussion on the importance of future innovation and advanced technologies, such as artificial intelligence, autonomy, quantum computing and neuro-networks.

“These are the problems of your generation, and we have to figure it out before our adversaries figure it out. You guys are doing that here and now,” he said.

“Each and every one of you are leaders and I want to challenge you to think about our future, what roles you will play, and how we will get there and shape that future,” he continued. “My generation has come and gone, this is your time. You don’t need people like me telling you what to do, you need people like me fighting for your ideas back in the Pentagon.”

NPS’ Secretary of the Navy Guest Lecture program provides a series of professional lectures by senior leaders throughout defense, government, industry and academia designed to help the university’s students and faculty link their studies, teaching and research efforts to the defense needs of the nation.

“This is the mess that we are leaving you ... Great power competition at a time when our pocket book is really stretched,” he said in closing his presentation. “As you go back and do your research and write your papers, everyone should start with, ‘In support of the National Defense Strategy, my project will ...’ NPS provides the knowledge and you in the audience have the ideas that we need to figure out.”
Legendary Naval Strategist Wayne Hughes Releases New Edition of Fleet Tactics

By Matthew Schehl

Naval Postgraduate School (NPS) Dean Emeritus Wayne Hughes, renowned as a foremost authority on naval tactics, has just published a new edition of his seminal book, “Fleet Tactics and Naval Operations.”

Co-authored with retired Rear Adm. Robert Girrier, and with a forward by Chief of Naval Operations Adm. John Richardson, the new third edition traces the historical evolution of tactics, analysis and operations from the age of sail to the present, including an expanded understanding of how emerging technologies are impacting battles at sea.

“This edition emphasizes information warfare, including unmanned vehicles, cyber warfare, modern means of deception, and artificial intelligence,” Hughes explained. “There is a whole new chapter on information warfare and its influence on tactics.

“The main reason for reading the new edition is its descriptions of how to fight and win battles past, present and future,” he added.

“Fleet Tactics” has long been considered a go-to resource for Navy officers on battle planning and tactical thinking since it was first published in 1986. Its relevance has not waned over the last four decades, and continues to be a ‘wheel book’ for freshly-minted junior officers and seasoned leadership alike.

“I am sure that I am not alone when I say that my copy of ‘Fleet Tactics’ is one of the most consulted, most dog-eared, most underlined, most marked-up books in my library,” Richardson wrote in his forward. “The book filled an important void, providing an up-to-date treatise on the importance and execution of tactics in modern naval warfare.”

The landmark study was the first since World War II to thoroughly examine technological advances for the American Navy to successfully engage a peer competitor – the Soviet Union. The second edition, published in 2000 at the apex of the post-Cold War era, explored tactical adaptation to missile threats and littoral operations.

“Wayne Hughes’ ‘Fleet Tactics’ is one of the most widely-read books on naval warfare,” said retired Navy Capt. Jeff Kline, NPS Professor of Practice in the operations research department. “This new edition maintains the foundational lessons of the first two editions, while addressing the emerging impact of cyber and robotics on naval tactics.”

Throughout the post-Cold War era, the United States enjoyed naval ascendancy and technological superiority. However, with the arrival of the information age, near-peer adversaries have emerged in the virtual domains of space, cyberspace and the electromagnetic spectrum, according to Richardson.

“The U.S. Navy now faces significant blue-water competition,” Hughes wrote. “It is no longer possible to ignore fleet-to-fleet engagements as naval forces seek to influence events ashore; navies will have to fight their way in from far out at sea.”

“The sea-control game is back on, and we need to get moving – and new tactics will lead the way,” he added.

The third edition of “Fleet Tactics” also considers how technological advances affect operations in traditional domains: undersea, on the surface, in the air and over land in the littorals.

The on-demand availability of precise information and networks to nearly anyone – not only adversarial militaries – has shifted focus from information superiority to decision superiority in these environments, pushing commanders to think in new ways, Richardson said.

“The introduction of information warfare into fleet tactics is an important development that demands critical analysis and thought,” he wrote. “The imperative that we update our tactics to account for this new reality is here.”

“In an era where ‘firing effectively first’ may now mandate that the first salvos will be non-kinetic, this update is a timely ‘kick’ to remind us to rig for sea and get under way,” he wrote.
NPS Student Begins Rare Quarter-long Internship With NASA

By Matthew Schehl

A Naval Postgraduate School (NPS) graduate student has boldly gone where no NPS physics student has gone before.

Navy Lt. Todd Coursey recently embarked on a quarter-long internship this summer with NASA at its Armstrong Flight Research Center in Edwards, Calif., to supplement his applied physics curriculum. He is the first such student to do so, and his internship has the potential to significantly expand NPS’ research horizons.

“Todd took a quantum leap in going to NASA,” said NPS physics professor Ray Gamache. “I don’t think anyone has ever done this before. It’s a great idea: go to another place that’s completely unknown and work there, assess, understand how things work; this is just priceless.”

Over his three-month internship, Coursey and his NASA team are experimenting with various materials for a new generation of fiber optic sensing cables which optimize performance at cryogenic temperatures.

In providing real-time monitoring of a range of key engineering data, the fiber optic sensing systems which will employ these can revolutionize not only future rocket bodies, but aircraft, energy and transportation infrastructure, and medical surgeries, according to NASA.

“We’re basically dropping different kinds of coated fiber optic sensing cables into a small cryochamber – about the size of a fire extinguisher – and then reading the raw data to see which ones are most effective and efficient,” Coursey explained. “From there they’ll do the systems development and look at incorporation.”

The internship is a natural continuation of Coursey’s studies at NPS.

His graduate work in applied physics – his thesis will be on the acoustic detection of drones – will be amplified by his hands-on experience at NASA, says NPS physics professor Frank Narducci, who is providing Coursey with directed study so the internship can satisfy the optics requirement of his curriculum.

“When Coursey first approached me with this opportunity at NASA, I asked him, ‘How is it that you have an entire quarter when you don’t have to be here?’” Narducci said. “When students come to NPS, their class matrix is pretty packed; it’s very hard to get any wiggle room. But Todd, knowing that this was a possibility in his future, front-loaded some of his courses so that he could clear out the summer.”

Yet the singular course load is hardly a cake-walk.

With his master’s research looming over him, Coursey voraciously works through the readings Narducci assigns in addition to the work he is doing at NASA.

“I suspect when they’re doing their tests it’s not even ‘nine to five’ to begin with,” Narducci said. “If you’re doing experimental physics and the experiment is working, you just keep working, you keep taking as much data as you can because when you’ve turned things off and come back tomorrow, nothing’s going to work ... Experimental physics is always like that.”

Coursey embraces the challenge, however, and remains deeply engaged with his work and studies.

“When you come to NASA, you’re there obviously for the academic work, but it’s another thing to get experience,” he said. “Coming to NASA is a great way to learn about what other organizations are doing, how they’re approaching problem-solving internally and how the project teams are put together.”

After he completes his internship in August, Coursey will be sharing his experience with the NPS community. On Friday, September 28, he’ll spearhead the physics department’s Fall Quarter Colloquium Series.

“I’m learning a lot about the culture at NASA which I think would do really well to bring back to the Navy,” Coursey added.

U.S. Navy Lt. Todd Coursey is pictured at NASA’s Armstrong Flight Research Center in Edwards, Calif., where he is supplementing his applied physics curriculum with a rare quarter-long internship researching next generation fiber optics. (Courtesy photo)
Student Wargaming Activities Address Sponsors’ Direct Needs

By Matthew Schehl

In the near future, a crisis suddenly flares up on the southern Philippines island of Mindanao, and U.S. Marines are called to action to evacuate U.S. civilians trapped in a hostile city. The nearest Marine Expeditionary Unit, however, is several days away.

Several hundred Marines with the Marine Rotational Force – Darwin, on a training mission nearby with the Australian military, are re-tasked to embark on a Royal Australian Navy (RAN) Canberra class amphibious assault ship. With the support of a U.S. Navy destroyer and a small Littoral Combat Ship, they must extract the besieged civilians from a rapidly devolving environment bristling with armed foreign fighters, mortar fire and explosives-laden small boats.

This is a fictional, though not implausible, scenario which raises a host of questions about the interoperability of American and Australian militaries that U.S. Marine Corps Forces, Pacific (MARFORPAC) is keen to answer. “Can we do it? What can’t we do from Australian ships? Can you land a V-22 Osprey on a Canberra class amphibious ship? How many, and what about maintenance, crews and ammunition? How are Marines going to be supported on-ship and then off-ship? How will command and control work?” asked Marine Corps Capt. Chris Fletcher, a Naval Postgraduate School (NPS) graduate student tasked by MARFORPAC to explore the logistical challenges of such a joint U.S.-Australian littoral combat operation.

Doing so in real life would potentially cost millions of dollars and endanger service members’ lives, yet Fletcher and his five-man team of fellow Marines recently accomplished this by playing a wargame over two days.

Their wargame, entitled Combined Australian/U.S. Amphibious Operations, was the culmination of an 11-week capstone wargaming course for their graduate thesis. Along with four other teams working closely with Department of Defense (DOD) sponsors such as MARFORPAC, the students rigorously designed, developed and executed wargames which provide analytic input into some of the nation’s most pressing security issues.

The five wargames – classified and unclassified – were then played out during NPS’ Wargaming Week, held in early June by the Operations Research (OR) department’s Wargaming Activity Hub.

“The great benefit of this wargaming course is it matches student teams with a real-world sponsor who has a real-world problem,” said Jeff Appleget, Wargaming Activity Hub director and senior lecturer in the OR department. “Their problems aren’t articulated in terms of ‘use this tool to solve this problem,’ but ‘I have a problem and help me understand how to solve this problem.’”

In the end, officials with the Wargaming Activity Hub say, the effort is about providing the American military, and its partners and allies, with a steady stream of officers capable of conducting analytic wargaming. As this cadre advances in their careers, this population will prove a strategic asset as the demand for analytic wargaming grows in an increasingly complex world.

NPS Welcomes New President’s Student Council Leadership

By MC2 Michael Ehrlich

NPS’ President’s Student Council (PSC) Chair U.S. Air Force Capt. I. Benjamin Collier and Vice Chair U.S. Air Force Capt. Angelica Silva-Garza have taken the reins representing the student body of NPS. The PSC is an organization that advocates within NPS and NSAM, for students by students who can relate to many of the challenges faced on a daily basis.

“The prior PSC Chair Lt. Tanya Herfi, told me about this opportunity to help NPS and my classmates,” said Collier. “Hopefully we can make it a better campus for everyone.

“Being a representative for the students is very important,” continued Collier. “The students have valuable ideas on how to make the campus and some of the processes better; my goal is to relay and advocate for those changes on behalf of the students.”

Silva-Garza also hopes to continue maintaining open lines of communication between students and NPS and NSAM leadership. “The PSC plays an active role on several different NPS councils,” said Silva-Garza. “This provides avenues for student input to reach staff and professors.”

Silva-Garza also added that she encourages students to, “find out who their PSC representatives are and participate in monthly meetings that focus on improving the NPS community and student experience.”
NPS-Developed Software Detects System Design Errors Early

By MC2 Nathan K. Serpico

A small group of Naval Postgraduate School (NPS) faculty has teamed up with NPS’ Center for Educational Design, Development and Distribution (CED3) to develop a software-based tool which has the power to bridge the disparate worlds of computer science and systems engineering.

The Monterey Phoenix specification language and software, created by Computer Science department Associate Professor Mikhail Auguston, utilizes user input to generate process flowcharts, which model a wide range of system behaviors, enabling users to visualize multiple outcomes before embarking on coding the system.

Visually seeing the work flow of an entire system this way significantly reduces potential human error in the design process before a single line of code is ever written, according to Auguston.

“The initial steps [of the design process] are mostly pencil and paper work,” he said. “Humans using pencil and paper have the ability to make mistakes, and those mistakes can become very expensive ... This is where Monterey Phoenix comes in.”

The software tool does all of the heavy lifting of the ‘pencil and paper’ design process. The user simply describes relevant system actors – software, hardware, people, organization and/or environment – which are automatically rendered to create a graphic understanding of possible scenarios.

“Most errors are not coding errors, but errors from the design and architecture of the code,” Auguston said. “There are steps that must be completed to move us from the problem to the final working code.”

“It’s not a [replacement] to what people are currently doing,” said NPS Associate Professor for Systems Engineering Kristin Giammarco. “This is an addition that verifies and validates the completeness of the work they’ve already done. They can take their data and run it through a Monterey Phoenix analysis to get results that help them improve their design and their tools.”

They believe Monterey Phoenix to be user-friendly enough to be accessible to people of varied skill levels, and hope that one day the program will be included in the regular toolkit of those looking to solve any behavior-related problem.

NPS Alumnus Returns to Lead HRCOE

By MC2 Michael Ehrlich

The Graduate School of Business and Public Policy’s Human Resources Center of Excellence (HRCOE) recently welcomed its new director, Capt. George Werenskjold. A 1998 NPS alumnus and seasoned Navy HR officer, Werenskjold says he is looking forward to giving back to the Navy HR community through the center’s one-of-a-kind programs.

“In uniform, the HR community is not exactly like HR in the civilian world ... We are experts in the entire process, from developing requirements of billets, in addition to the processes of recruiting, retaining, advancing, promoting, separating and retiring personnel,” explained Werenskjold.

“On one side, it’s the requirement piece where we develop the methodology of billets,” he continued. “Then we do the programming side, where we fund those billets within a certain amount of resources, and we can only resource so much as those resources are programmed year after year.”

“A lot of what NPS teaches is very valuable to the Navy in terms of doing the analysis, and therefore defending your investments,” he noted.

In an environment where change is frequent, with new leadership and new priorities, Werenskjold says the role of the HRCOE is to ensure the Navy’s HR community is prepared.

“Even in an environment where the topline is expanding, resources will still be constrained,” he says. And HR officers need to understand how to maximize resources to ensure the Navy is getting the “best return on its investment.”

Send your campus news and notes to update@nps.edu.
Chief Yeoman Kenneth Winston pinned First Class collar devices on Electronic Technician 2nd Class Donnie Williams during a promotion ceremony, July 12. Williams was the second NPS Sailor to be promoted through the Navy’s Meritorious Advancement Program (MAP).

“I was relieved that I had finally earned and achieved this goal,” said Williams. “I have a lot of friends that have all put on First Class and have been joking fun and asking when will finally make it.”

Capt. Mike Ward, NPS Chief of Staff, congratulated Williams on his promotion.

“Getting selected for this promotion means a couple things,” said Ward. “It means you have proven yourself among your peers, and it means that we believe in you to carry out the duty and responsibilities of a First Class Petty Officer.

“I was truly honored to receive this award, but more importantly I was excited for the recognition that our entire team got,” said Staples. “Over the three iterations of HACKtheMACHINE that we did at NPS, it doubled in size and complexity every single time. By the end, we had a huge team of players that without their support we would never be able to get to a point where we are recognized as a leading catalyst for change by the Secretary of the Navy.”

Dubbed the ‘Blue Angels for geeks,’ HACKtheMACHINE gets some of the nation’s best hackers and cybersecurity experts to focus their minds on Navy problems, bringing innovative ideas to the world of cybersecurity in the maritime domain.

“I truly believe cultural diversity makes us more creative, and I am trying to extend that diversity into the technology domain,” said Staples.

“For example, a program office would usually engage with those industry partners who are directly working with the government. HACKtheMACHINE, in contrast, attracted people all across the academic, small business and entrepreneurial space to come learn about the Navy who otherwise would have no other exposure to what we bring to the table.”

In early 2018 during his first visit to the Naval Postgraduate School (NPS), Secretary of the Navy (SECNAV) the Honorable Richard V. Spencer offered his vision for the future of the university, calling NPS a driving force of research and technology, and a hub of innovation for the DOD.

“This institution is a primary incubator for the capabilities that we need now,” he said during his Feb. 1 guest lecture. “NPS is at the forefront of improving our capabilities.”

Months later, the latest winners of the SECNAV Innovation Awards were announced Navy-wide. With NPS connections across the field, the university is clearly living up to the SECNAV’s vision.

In total, nine Innovation Award winners have NPS connections. Some of the award-winning efforts were envisioned right on the university’s campus by students and faculty, while many others were awarded to NPS alumni, who took their education back to the fleet and field and continued to innovate.

Taking top honors in the Innovation Catalyst category is HACKtheMACHINE, spearheaded by U.S. Navy Cmdr. Zac Staples who, up until his retirement in April, served as the Director of NPS’ Center for Cyber Warfare. Over three separate iterations, the last of which took place in Sept. 2017 in Boston, NPS brought together a diverse pool of cyber security experts in a hackathon-style setting, this time at the Massachusetts Institute of Technology’s (MIT) Computer Science and Artificial Intelligence Laboratory (CSAIL).

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Innovators from across government, industry and academia participate in the third U.S. Navy sponsored HACKtheMACHINE at the Massachusetts Institute of Technology in September 2017. The event is one of several innovative efforts led by NPS students, faculty and alumni honored through the SECNAV Innovation Awards. (U.S. Navy photo by MC2 Patrick Dionne)
Fellow Students,

I hope all of your studies are going well! Midterms are approaching, and with them come opportunities to utilize many helpful services around campus including those offered by our fantastic library. Since we are a bit deeper into the quarter, please feel free to reach out to your President’s Student Council representatives if you noticed anything that needs addressing. Your input is valued. Student observations and suggestions are consistently used to improve the overall NPS experience. That said, our annual student survey will be coming out this quarter. The survey is anonymous, and it is the best single way of making sure your thoughts end up in the hands of the NPS staff. These surveys cover everything from dentist services and gym satisfaction, to academic concerns. Keep an eye out and be sure to submit your input. We want to know what you are thinking so we can help you and NPS leadership reach set plans and goals.

Lastly, note that the President’s Student Council is available and ready to assist all students. We can be reached at PSC@nps.edu or via your school representative.

Sincerely,
Capt. I. Benjamin Collier, USAF
Chair:
Capt. I. Benjamin Collier
Vice-Chair:
Capt. Angelica Silva-Garza
SIGS Lead:
Lt. Tanya L. Herfi
SIGS Reps: Lt j.g. Tim Cole, Maj. Peter Cox, Maj. Callin Diffley, Lt. Christina Gattit
GSOIS Lead: Master Sgt. Alex Eudy
GSOIS Rep: Lt. Cmdr. S. Shivashankar
GSEAS Lead: Lt. Josh Malia
GSEAS Rep: Lt. Adam Waymouth
Lt. Cmdr. Pete Harley, Lt j.g. A. Demers
GSBPP Lead: 1st Lt. Helene Caniac
GSBPP Rep: Capt. Tyler Flansburg

Have a story to share? Public Affairs is constantly seeking interesting news and stories for Update NPS. Send your tips to pao@nps.edu.
"...CWO Frank L. Beardsley, Personnel Officer at the Naval Postgraduate School, last September married Mrs. Helen B. North. He was then a widower with 10 children, she a Navy widow with eight...."

Feel like you saw this movie? CWO and Mrs. Beardsley were just an ordinary Navy couple, newly come to NPS together with an extraordinary blended family of 18 children.

Beardsley was interviewed just before Father’s Day, 1962 for “The Classmate”. Was it hard to blend the two families? “On the contrary,” laughed Beardsley, “it was they who urged Helen and me to marry”.

“What about groceries?” It looked like there was going to be a famine and we were storing up...People gave us the strangest looks when they saw us with our seven or eight baskets and we hadn’t even hit the bread section yet...” Is housework women’s work? “Lord Fauntleroy type of thinking,” replied the father of 18. At the Beardsleys’, everyone pitched in.

Read the interview just as it came out in June, 1962 issue of The Classmate Magazine: http://hdl.handle.net/10945/59169.

Historical Highlights are provided by the Dudley Knox Library.