Chief of Naval Operations Shares Vision of Maritime Superiority With NPS

By MC2 Patrick Dionne

The Chief of Naval Operations Adm. John Richardson returned to NPS to impart his vision of overcoming the biggest challenges facing today’s Navy during the latest Secretary of the Navy Guest Lecture, Feb. 13.

Richardson addressed the recently-released second version of his “Design for Maintaining Maritime Superiority,” coined Version 2.0, a 20-page document which reaffirms the growing presence of great power competition and seeks to align the U.S. Navy’s strategic guidance with both the National Security Strategy and the National Defense Strategy.

“One of the reasons that we put out Version 2.0 is that so much has happened since we put out the first version in 2016,” said Richardson. “I say ‘we’ very deliberately, because even though I had the privilege of signing this document as the Chief of Naval Operations, it really represents the collective input from all of Navy leadership.”

Version 2.0 maintains that it has been decades since the U.S. last competed for sea control, sea lines of communication, access to world markets, and diplomatic partnerships. Richardson noted that the Navy must transform into a giant, learning engine to achieve faster innovation.

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–Adm. John Richardson

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In closing, Richardson brought up the history of the U.S. Navy and how our decisiveness and our values of honor, courage and commitment have yielded the greatest Navy in the world. Moving ahead, he indicated that NPS plays a critical role in the Navy’s future.

“There are many universities in the world and they are all solving problems,” Richardson stated. “But this university is solving our Navy’s, and our nation’s, problems. This is what is unique about this place. Because of your work here, we will continue to be the Navy that is the safest for our Sailors, the best partner for our allies and the worst nightmare for our adversaries.”
JIFX Accelerates Solutions Through Partnerships with Academia, Industry

By Matthew Schehl

More than 300 leading technology experts from private industry, top universities, military and government agencies converged at NPS’ Joint Interagency Field Experimentation 19-2 (JIFX), Feb. 4-8, to explore new ways to adapt rapidly changing technologies to a host of DOD-relevant domains, including defense support to civil authorities, autonomous systems, geospatial intelligence and cybersecurity.

“JIFX is another example of how NPS is responding to the Secretary of the Navy’s strategic vision for our institution,” noted NPS’ new president, retired Vice Adm. Ann Rondeau, who made it a priority to observe JIFX during her first full week at the university’s helm. “These events, based on our successful legacy of field experimentation, bring together a diverse group of industry, academic and government participants to explore not only emerging technologies, but also new and better ways to share knowledge across these broad institutions.”

The key to JIFX, coordinated by the Consortium for Robotics and Unmanned Systems Education and Research (CRUSER) in partnership with research centers across campus, is that the event is not about immediate acquisition, but rather helping to identify commercial and laboratory capabilities that may be transitioned to military applications, according to Dr. Ray Buettner, JIFX director and NPS associate professor of Information Sciences.

“It really is a collaborative learning environment with minimal rules: people come out, interact and share information, and it’s done with only enough structure to be safe, secure and legal,” he said. “JIFX is, to restate the SECNAV on a recent visit, open to those organizations, both public and private, who want to come to NPS to build, innovate, develop, test and improve ideas, products, and solutions alongside us.”

The February event is the first under primary sponsorship of the Secretary of Defense’s Rapid Reaction Technology Office, expanding NPS’ mandate to enhance the impact on the joint and naval warfighter.

Along with sponsorship from Naval Special Warfare expeditionary warfare (OPNAV N951) and Special Operations Command’s (SOCOM) PEO-Fixed Wing (EOTACS program), JIFX has evolved over the last decade from a SOCOM testing event to a primary locus for truly joint field experimentation.

“All four services were present, with special operations community and Combatant Commander representatives from Southern Command, SOCOM, North American Air Defense - Northern Command, Transportation Command, and Strategic Command all actively engaged,” Buettner said. “Additionally, interagency participation included folks from the Department of State, Department of Energy, the National Geospatial-Intelligence Agency and the National Guard Bureau.”

Crossing the aisle were a range of private-sector entities, who were keen to hone their technologies’ relevance to the military. These included not only defense contractors, such as Lockheed Martin’s “skunk works” division, but also several non-traditional companies from technology giant Nvidia to start-ups like Planet Labs.

With an active armada of more than 300 satellites circumnavigating the entirety of the planet every 90 minutes, Planet Labs is poised to revolutionize ‘Big Data’ digital imagery of the earth.

“With our ‘doves,’ we take a three-meter resolution image of the whole world every day, and our SkySat constellation is capable of sub-meter resolution,” explained Ricky Rios, Planet’s U.S. government programs manager. “We came to support JIFX with our data and see what we can do with it.

“JIFX is a great, hands-on place for this,” he continued. “Here, you’re actually trying to work together and experiment how our data can be ingested into a capability to provide greater value, and the ‘workshoppy’ environment provides great value for us.”

Shawn Herrington, a graduate research assistant at the University of Missouri - Kansas City, performs maintenance on a drone during the Naval Postgraduate School’s (NPS) latest Joint Interagency Field Experimentation program (JIFX), Feb. 6, at NPS’ Field Laboratory in Camp Roberts. (U.S. Navy photo by MC2 Nathan K. Serpico)
NPS Researcher Explores 3D Printing With Viscous Materials

By Dr. Jessica Neasbitt

Dr. Emre Gunduz arrived at NPS in July, ready to continue his cutting-edge work with the 3D printing of extremely viscous materials. This work culminates two years of research and testing completed by Gunduz and his colleagues at Purdue University, where they set out to find a way to improve the flow of extremely viscous materials (for comparison, think the consistency of cookie dough) in direct-write 3D printing.

Generally, direct-write 3D printing uses pliable materials—such as clay—which are pushed through a syringe via piston or compressed air, or works via thermoplastic extrusion, where meltable polymers like polylactic acid are pushed through a heated nozzle to form pre-programmed shapes.

Both types of direct-write 3D printing depend on the ability to get the materials through the printer’s nozzle—and to get them through at a regulated rate in order to produce an accurate, consistent end product. This can be problematic in projects requiring finer nozzle sizes, since smaller sizes mean more restriction when it comes to the flow of printing material. The increased pressure required to remedy this causes friction and excessive heat.

In order to avoid the heat (and consequent thermal excursions) that would be produced by increased friction during the 3D printing of the viscous materials that make up these propellants, Gunduz devised a method to apply ultrasonic vibrations to the nozzles of 3D printing devices, using transducers to resonate in such a way that it separates the viscous materials from the nozzle walls and allows it to flow, unobstructed, through the nozzle.

Gunduz said, “Everything is arranged so that the resonating frequency of the system is matched, to get the optimum amount of vibrations.”

Gunduz can apply an acceleration of about 60,000 Gs in the nozzle, which creates enough force to pull the printing material off the surface of the nozzle walls. The detached materials then move around the nozzle in a step-wise motion, exiting it without necessitating increased pressure and the resultant friction and heat that accompany it.

As one of the newest members of NPS’ Department of Mechanical and Aerospace Engineering, Gunduz will be continuing to develop materials that are most suitable to this approach to 3D printing. He is currently planning on offering courses focused on this type of manufacturing, with the possibility of developing a certificate program at NPS. Gunduz believes this will be an important addition to NPS’ training offerings—especially as 3D printers become more commonly used within the military. As such, he is looking forward to training and collaborating with the greater NPS community: “My goal is to train the students on these so they know what’s going on, how they can use these systems, and how they can improve them through research work.”

A recent addition to NPS’ Department of Mechanical and Aerospace Engineering, Dr. Emre Gunduz continues his research into cutting-edge, direct-write 3D printing with extremely viscous materials. (U.S. Navy photo by Javier Chagoya)
Human Systems Integration Lab Presents Research Projects to NPS President

By MC2 Tom Tonthat

Faculty and students of the Human Systems Integration (HSI) Lab at the Naval Postgraduate School (NPS) presented research findings and current projects to the school’s President retired Vice Adm. Ann Rondeau as she toured the lab inside Glasgow Hall, Feb. 21.

The HSI program studies the science surrounding how humans interact with machines, a discipline NPS has been teaching for more than 10 years. Most recently, the HSI Program developed shipboard watchbills that match a human’s natural circadian rhythm leading to an optimized watchbill program implemented fleetwide to help improve crew performance.

“I wanted President Rondeau to meet the students and see their work, and its importance firsthand,” said NPS Professor Dr. Nita Shattuck, as she guided Rondeau through the tour. “Having senior leadership interested in our work is a terrific encouragement both for our faculty and the students.”

Students presented projects ranging from further sleep studies, effects of interior lighting, shipboard habitability and operational stress. Rondeau gave feedback on each presentation and talked to the students about how HSI can bring changes to Navy procedures.

“There is a tremendous amount of obligation that you have to the fleet,” said Rondeau. “You need to become the missionaries for HSI because this should be part of our leadership thinking every day. Not everybody is going to be an expert on it, but you can make them better by being leaders and training them on it.”

NPS student Lt. Megan Mittleider, who presented research on improving habitability aboard U.S. Navy ships, expressed how important it is for leaders like Rondeau to be aware of these studies in order to help make a difference out in the fleet.

“"The more awareness of what we’re doing at the HSI Lab, the more findings that will be promulgated out,” said Mittleider. “It helps when someone like NPS President Rondeau is being made aware of our work, for she can help get our message to the Navy and to people who can make a difference at the deck plate level. We want to see that improvement in the fleet on a day-to-day basis and our Sailors’ ability to perform at the very best that they can.”

After learning about all the research being conducted, Rondeau gave the HSI faculty and students some final encouragement.

“I’m honored and privileged that you would give me this time to learn,” said Rondeau. “I’m smarter and better and inspired. You are absolutely exemplifying what this school stands for.”

NPS Professor Selected to Receive Engineering Award

By MC2 Taylor Vencill

The American Society of Mechanical Engineers (ASME) selected Dr. Young W. Kwon, a Distinguished Professor in the Mechanical and Aerospace Engineering Department, for the annual S. Y. Zamrik Pressure Vessels and Piping Medal for his significant contributions to the pressure vessel and piping field.

“I really feel honored to be nominated for this award, and I am happy that my contribution has been recognized by my peers and others in the community,” said Kwon. “I received the recognition at NPS, but this is also recognition outside NPS in the technical community of ASME, so I’m happy about that recognition.”

The award will be presented to Kwon this July at the ASME Pressure Vessels and Piping symposium in San Antonio, Texas.

Since arriving at NPS in 1990, Kwon has built a very impressive resume that includes a Certificate of Recognition for Outstanding Research, the Menneken Award for Excellence in Scientific Research, and a Commendation for Excellence in Teaching. He also received the Cedric K. Ferguson Medal from the Society of Petroleum Engineers while working at the Missouri University of Science and Engineering.

NPS President retired Vice Adm. Ann Rondeau, right, speaks with Faculty Associate and Human Systems Integration (HSI) researcher Dr. Heather Clifton during a tour of the HSI’s Crew Endurance & Stress Lab in Glasgow Hall, Feb. 21. (U.S. Navy Photo by MC2 Tom Tonthat)

NPS Distinguished Professor Young W. Kwon has been selected to receive the American Society of Mechanical Engineers S. Y. Zamrik Pressure Vessels and Piping Medal. The award is presented for Kwon’s lengthy career in the field of pressure vessel and piping technology. (U.S. Navy photo by MC2 Taylor Vencill)
Senior Air Force Alumna Honored with Prestigious AACSB, NPS awards

By MC2 Tom Tonthat

U.S. Air Force Brig. Gen. Alice Trevino received dual honors during a ceremony on the Naval Postgraduate School (NPS) campus, Feb. 7, when the Association to Advance Collegiate Schools of Business (AACSB) inducted her into its 2019 Class of Influential Leaders, in addition to NPS designating her as a distinguished alumna.

The AACSB’s Influential Leaders program recognizes alumni – and the business schools that prepared them – who personify the role as a visionary figure or agent of change.

“It’s my first time to give an award here at NPS and I cannot think of a finer leader upon whom to bestow it,” said Rondeau. “Trevino is a leader who has been doing great things in the world of accountability for the financial and contract health of the Air Force. We are delighted to be able to say she’s one of us and comes from the NPS family.”

Following her acceptance of the two honors, Trevino said that she felt surprised and honored for the distinction.

“AACSB is honored to recognize Brig. Gen. Alice Trevino and congratulates NPS for its role in preparing alumni who are leading examples of business education as a force for good in the world,” said Thomas R. Robinson, president and CEO of AACSB.

“The diversity of backgrounds, industries and career paths of the 2019 Class of Influential Leaders demonstrates that AACSB-accredited schools are preparing graduates to succeed wherever their passions may take them.”

Graduating from NPS’ MBA class of 2007, Trevino has served at several key Department of Defense (DOD) contracting positions where she made several significant accomplishments. As senior contracting official in Afghanistan, she infused $3.5 billion into the Afghan economy to increase local industrial growth, and while commanding the Defense Contract Management Agency’s western region, she saved more than $300 million in taxpayer money through a process re-engineering effort.

Trevino continues to innovate business practices as the current commander of the U.S. Air Force Installation Contracting Agency.

Before presenting the AACSB award, NPS President Ann Rondeau presented Trevino with NPS’ Distinguished Alumni Award.

“I’m humbled to even be considered for the nomination and to represent NPS, because I had such a wonderful time here,” said Trevino. “Staying in touch with what they teach here, and with the curriculum, is vital to the students and faculty to help them get the recognition they deserve for the business school.”

Trevino thanked her fellow students with whom she graduated, and the instructors who helped her graduate, and nominated her for the award. Without them, she said that she would not have grown into the positions she now fills, nor would she understand the scope of the impactful missions she undertakes today.

“What this honor shows is that the responsibilities NPS students have as managers within the DOD are extremely important and valuable,” said Gates. “The education that students are getting here is contributing to help make them better leaders when they go back to the defense department. I think they can have a greater impact immediately in their careers in the military than if they went to a business school and into the private sector.”

Founded in 1916, AACSB is the world’s largest business education alliance that connects educators, students and businesses to create the next generation of great leaders.

Laurendine graduated with distinction in 2017 with a Master of Science in Systems Engineering. She also displayed her potential for future success by earning the Wayne E. Meyer Award for Academic Excellence in Systems Engineering while at NPS.

Working for the Missile Defense Agency (MDA), Laurendine leads the agency’s STEM Program, called Society for Science and the Public, and serves as the program’s champion partnering with civic groups, professional organizations and the community at large in order to engage students from 5th to 12th grade ensuring they are equipped with skills to succeed in school and beyond.

Laurendine also led STEM-related scholarship programs and established youth visits to MDA platforms providing interns and students an authentic learning experience about critical technologies involved in ballistic missile defense. She also underscored to these students the vital role engineers play in ensuring systems perform successfully.

According to Wally Owen, the Associate Chair for Distributive Programs and Outreach for the NPS Department of Systems Engineering, this award is important because it highlights inspirational work by an NPS graduate.

“We are engineering and technical educators, and one of our graduates doing good things to enhance STEM within DoD is something that will really keep the STEM workforce healthy and diverse.”

Send your campus news and notes to update@nps.edu.
Rep. Jimmy Panetta of California’s 20th Congressional District delivered his second guest lecture to NPS students while visiting the Graduate School of Business and Public Policy (GSBPP) in Ingersoll Hall, Feb. 22.

Coordinating Panetta’s visit was Associate Professor of Economics and Finance Ryan Sullivan.

“The ability for the students to ask questions openly to an elected member of Congress allowed them to better grasp the processes involved in resource allocation and the making of public policy at the legislative level,” said Sullivan.

Panetta reflected on the first major legislation he encountered in the U.S. Congress which was the effort to repeal and replace the Affordable Care Act (ACA). He joined a group called the Problem Solvers Caucus that worked to solve ACA issues. The group helped Panetta differentiate between the evidence and substance of the bill from the emotions and slogans attached to the bill.

“I learned a lot more about the ACA from my time with the Problem Solvers than I did in any other caucus in Washington,” said Panetta. “Democrats and republicans were actually agreeing on some issues and agreeing to work together to fix this thing.”

“Having someone relate personal experiences in government is the perfect supplement to classroom learning,” said Sullivan. “Guest lecture opportunities like this one really illustrates to the students the principles and topics we discuss in the classroom, which in turn elevates their education.”

Volunteers Help Boost EEO Ranks at NPS

By Javier Chagoya

An all-volunteer group of Navy and DOD employees stepped up to make a difference in Equal Employment Opportunity (EEO), taking the Basic Interactive EEO Counselor Course in Herrmann Hall, Feb. 12-14.

Eight volunteers attended the three-day, intensive program which leads to a collateral duty as a certified EEO case handler.

NPS EEO Manager Brenda Fleming sought out to reinvigorate this important program here on campus, leading the charge to bring the course to NPS. New NPS President retired Vice Adm. Ann Rondeau was on hand for the first session to welcome the group, and to express her appreciation for their willingness to step forward.

“I will tell you that EEO work is very important. We cannot talk about mutual respect if we do not have a voice,” said Rondeau. “In EEO, people may talk about grievances and complaints, but fundamentally what we’re talking about are people and communication.

“I understand from your agenda for today that you’re learning about interviewing skills, and how to ask the right questions ... It’s important to do that,” she continued. “Because of you, NPS will be healthier and stronger because the EEO program will be stronger.”

The EEO workshop participants are provided 32 hours of study for the volunteer certification as EEO counselors. They are also required to take a one-day review of material annually. The eight volunteers came from as far away as Newport, R.I., and as close as the Defense Manpower Data Center, and of course, NPS.

Management and Program Analyst Jaye Panza, a DON employee for 34 years, has a good reason to volunteer her time for the position as she introduced herself to her colleagues prior to the course’s kick-off.

“Everybody has a voice,” said Panza. “I really think that we as employees can work towards a more harmonious workplace at NPS when we can communicate freely in all aspects of the work we do. This can only help us focus on NPS’ mission to educate the greatest military force in the world.”

NPS Provost Steve Lerman was also on hand, and offered his own expression of thanks to the volunteers for the roles they will play on campus.

“First, I want to thank all of you for signing up to take the EEO course. Our ability to run a fair and forward-looking organization where everyone feels welcomed, depends in no small measure, on having recourse for those who believe we have not achieved that objective. And the more people we can train to be able to engage in the work of informal mediation, the better we’ll be as an organization,” he said.
Any Day at NPS...

A special screening of the documentary movie “Scramble the Seawolves” is shown in NPS’ Ingersoll Hall auditorium, Feb. 5. Five members who served in the Vietnam era special HA (L)-3 Squadron answered questions following the film. NPS Senior Lecturer Tom Halwachs and Naval War College Professor Mitch Brown both served in the Naval attack squadron. (U.S. Navy photo by Javier Chagoya)

Members of the Student Oceanography Club at Monterey Bay Aquarium pose for a photo outside Spanagel Hall, Feb. 16. Students toured several labs and academic areas in NPS’ Oceanography department to learn more about the type of research conducted by the students and faculty. (U.S. Navy photo by MC2 Nathan K. Serpico)

While on her first trip to the nation’s capital as NPS’ senior leader, university President retired Vice Adm. Ann E. Rondeau, along with Provost and Academic Dean Dr. Steven Lerman, meet with 20th Congressional District Representative Jimmy Panetta in his Washington, D.C. office, Feb. 26. (Photo courtesy Jimmy Panetta)

Dr. Toshi Yoshihara, Senior Fellow at the Center for Strategic and Budgetary Assessments, addresses NPS students, faculty and staff on Chinese seapower during the latest Secretary of the Navy Guest Lecture (SGL) in King Auditorium, Feb. 26. (U.S. Navy photo by MC2 Tom Tonihan)

Any Day at NPS...

It seems like everyone is getting ready to Spring ahead – our March graduates are finishing comps and theses and looking forward to graduation while the rest of us dig into mid-semester and look forward to thesis and research week.

The PSC is also looking ahead to seeing some of our initiatives gain ground. We will be publishing the second student newsletter, working to start student mentorship groups, and planning a women’s leadership forum. As the Alumni Association gets off the ground, we are working to engage with alumni to forge a mentorship network.

As the voice of the student body, the PSC has been working with school leadership on concerns with quality of life areas including housing and childcare. Students are glad to have gym lockers back as well. Furthermore, the PSC is engaging to reduce student orientation, check-in requirements, and training to ensure students get the information they need pushing for maximum utility and minimal redundancy.

As always, we invite students to join our monthly meetings, the first Wednesday of the month in the library. We are also available to engage via email. The PSC exists to serve the student body and to support President Rondeau in ensuring NPS sits among peers with the most innovative, engaged, and forward-leaning grad schools in the country. Join us!

With Warm Regards,
Caitlin B. Difffley
Major, USAF

NPS President retired Vice Adm. Ann E. Rondeau, center, and NPS Chief of Staff Capt. John Ward, left, speak with George East, an NPS 1957 alumnus, during a social event hosted by the NPS Alumni Association and Foundation (NPSAAF) in Herrmann Hall, Feb. 22. The NPS Foundation, founded in 1970, became the NPS Alumni Association & Foundation in January 2019 to engage with NPS alumni from around the world and to better support the school’s strategic goals. (U.S. Navy photo by MC2 Nathan K. Serpico)

As part of the Teaching and Learning Commons Open Forum, NPS student Lt. Jesse Hernandez demonstrates the ease of operation attributes of the Notability software in Reed Hall, Feb. 12. The digital note-taking tool helps students merge traditional and contemporary technologies that re-invigorate note-taking, and to create interactive documents on the fly, which enhance comprehension and retention in the classroom. (U.S. Navy photo by Javier Chagoya)
On Campus this Month

March 1
Defense Energy Seminar lecture
"Air Force Operational Energy"
1300, DRMI Auditorium

March 5, 12, 19, 26
Texas Hold ‘Em Poker Tournament
1700-2000, El Prado Room

March 15
St. Patrick’s Day Kickoff Party
1630, Trident Room

March 19
Quarterly Awards Ceremony

March 25
Reporting Day

March 29
Winter Quarter Graduation Ceremony
1000, King Hall

Historical Highlights

1963: When Science was Science!
And at NPS, you had to wear a suit and skinny tie to do it.

The Dudley Knox Library is pleased to share a page from the 1963
U.S. Naval Postgraduate School and Naval Air Facility, Monterey,
California, Unofficial Introductory Brochure for your enjoyment.

Clockwise from upper left:
Officer Students receiving instruction in the functions of the Combat Information Center; conducting electrical engineering experiments in the Measurements Laboratory in Bullard Hall; conducting strength tests in the Metallurgy Laboratory in Spanagel Hall; The sub-sonic wind tunnel in Halligan Hall; conducting experiments in the Electronics Laboratory in Spanagel Hall; checking out ordnance equipment.

You can find the entire Unofficial Introductory Brochure in Calhoun, the NPS Archive. (https://calhoun.nps.edu/handle/10945/53768)

Historical Highlights are provided by the Dudley Knox Library.