



**Calhoun: The NPS Institutional Archive**  
**DSpace Repository**

---

News Center

NPS in the News Weekly Media Reports

---

2023-02-06

## NPS in the News Weekly Media Report - January 24-February 6, 2023

Naval Postgraduate School (U.S.)

---

<https://hdl.handle.net/10945/71723>

---

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

*Downloaded from NPS Archive: Calhoun*



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

**Dudley Knox Library / Naval Postgraduate School**  
**411 Dyer Road / 1 University Circle**  
**Monterey, California USA 93943**

<http://www.nps.edu/library>



# NPS IN THE NEWS

## Weekly Media Report – Jan 24- Feb 6, 2023

*Further reproduction or distribution is subject to original copyright restrictions.*

---

### EDUCATION:

#### [Preparing for Strategic Competition: The Need for Irregular Warfare Professional Military Education](#)

*(The Hill 31 Jan 23)*

The Department of Defense (DOD) does not provide the irregular warfare (IW) professional military education necessary for success in competition and conflict in the 21st century. This is a not a new problem, but it is one that may deserve new attention from the Congress and the Pentagon... There are plenty of opportunities for irregular warfare-focused education. Indeed, the joint force has developed and sustained a multitude of educational offerings directly related to irregular warfare, including programs operated by the National Defense University and specifically the College of International Security Affairs (CISA), the Air University, the **Naval Postgraduate School**, the Joint Special Operations University, the Marshall Center, the Daniel K. Inouye Asia Pacific Center of Security Studies, and the U.S. Army John F. Kennedy Special Warfare Center and School (which includes CISA's Joint Special Operations Master of Arts Program).

### RESEARCH:

#### [NPS Office of Research and Innovation will Accelerate Solutions from Idea to Impact](#)

*(EIN 24 Jan 23)*

The Naval Postgraduate School (NPS) recently established the Office of Research and Innovation (OR&I) in response to the National Security Strategy and National Defense Strategy's call to leverage emerging technologies and innovative design practices to accelerate the development of full spectrum capabilities in order to maintain decisive maritime advantage and hedge against uncertainty.

#### [3D Printing: Navy Builds Up Additive Manufacturing on Ships](#)

*(Marine Link 26 Jan 23) ... Edward Lundquist*

The U.S. Navy has long valued the potential of additive manufacturing (AM) and 3D Printing... The ElemX printer was a collaboration with Commander Naval Surface Force Pacific (CNSP) and NAVSEA leveraging the **Naval Postgraduate School** (NPS) cooperative research and development agreement (CRADA) with Xerox, which is a powerful tool to partner quickly for win/win applied research. "The ElemX effort not only demonstrated the technology in shipboard research use cases, but created a self-contained, mobile 3D metal printshop by outfitting a common shipping container that can be put on any ship, or plugged into any power source, such as a field generator so Marines can also have that capability," said Capt. Jeremy Gray, NPS Surface Warfare Chair for CNSP.



## FACULTY:

### [Kevin Smith: New NPS Office Will Advance Technology Research, Innovation Efforts](#)

*(Executive Gov 24 Jan 23)* ... Naomi Cooper

Kevin Smith, vice provost for research at the Naval Postgraduate School, anticipates that the newly established Office of Research and Innovation at the U.S. Navy-operated school will advance relevant research on emerging technologies to provide new warfighting capabilities.

### [This Is Not Who We Are: Zachary Shore on America's Struggle Between Vengeance and Virtue \[Audio Interview\]](#)

*(Lit Hub 26 Jan 23)* ... Andrew Keen

*(History News Network 26 Jan 23)* ... Andrew Keen

Hosted by Andrew Keen, Keen On features conversations with some of the world's leading thinkers and writers about the economic, political, and technological issues being discussed in the news, right now... Zachary Shore is Professor of History at the **Naval Postgraduate School**, Senior Fellow at UC Berkeley's Institute of European Studies, and a National Security Visiting Fellow at Stanford's Hoover Institution. He is the author of five previous books, including *Blunder: Why Smart People Make Bad Decisions* and *A Sense of the Enemy: The High-Stakes History of Reading Your Rival's Mind*.

### [Whitcomb Receives Navy Superior Civilian Service Award](#)

*(Cornell Chronicle 27 Jan 23)* ... Patrick Gillespie

*(India Education Diary 1 Feb 23)*

For strengthening national defense through his research and for mentoring other engineers to do the same, Clifford Whitcomb, professor of practice in systems engineering at Cornell, received one of the highest awards bestowed on civilian employees of the U.S. Navy during a ceremony at the Statler Hotel on the Cornell campus Thursday, Jan. 26... Whitcomb spent nearly 20 years on the faculty at the **Naval Postgraduate School**, serving as a chair of the Systems Engineering Department and director of the Institute of Systems Engineering. He was designated as a distinguished professor at the school, an honorary title recognizing exceptional scholarly activities that have made outstanding contributions to the school's mission.

### [How Truman Sold Americans on Going Hungry](#)

*(FP 4 Feb 23)* ... Zachary Shore

The United Nations recently released two numbers that should shock the world into action. Forty-five million human beings might starve to death this coming year, and 222 million people will suffer acute hunger. U.S. Secretary of State Antony Blinken has called this the "greatest global food insecurity crisis of our time." He is correct, but Americans have been here before. The last time the world faced a global famine, Americans did something astonishing: They chose to go hungry to make more food available for shipment overseas... Zachary Shore is a professor of history at the **Naval Postgraduate School**; a senior fellow at the University of California, Berkeley's Institute of European Studies; and a national security visiting fellow at Stanford University's Hoover Institution.

## ALUMNI:

### [Into the Pickle Barrel: How Thinking About Precision as a System Can Expand the Munition Stockpile](#)

*(War on the Rocks 25 Jan 23)* ... Trevor Phillips-Levine, Andrew Tenbusch, Walker D. Mills, Dylan Phillips-Levine and Collin Fox

The camera from a small drone steadies on a Russian T-72 tank somewhere in Ukraine. Slight movements can be seen in the video as the Ukrainian operator makes final adjustments to the drone's position. Then, release. The munition – a grenade with a 3D-printed plastic fin assembly – falls into the frame and quickly disappears. Then a flash, a gray puff of smoke, and roaring fire erupt from the open hatch. Bullseye. Seconds later, the ammunition inside the tank "cooks off" with violent spurts of orange flame. A raft of similar videos depicts Ukrainian forces precisely dropping small munitions inside Russian trenches, foxholes, and even through the sunroof of a car. While these videos are essentially a highlight reel and are not a representative sample of all attacks, they show a real capability to drop repurposed munitions from small commercial drones... Collin Fox is a U.S. Navy foreign area officer. He is a graduate of the Chilean Naval War College and the **Naval Postgraduate School**, where his final



project on alternative anti-submarine weapons won the John Hopkins Applied Physics Lab Award for Excellence in Systems Analysis.

### [Rotary Club Speakers Highlight Engineers Without Borders](#)

*(The Warren Record 26 Jan 23)*

On Tuesday, Jan. 17, the Rotary Club of Warrenton had two special guests from the Engineers Without Borders project, Mark Swallow and Bruce Binney... Bruce Binney holds a degree in Systems Engineering, which he earned before embarking on a 20-year career in the Navy that included three sea tours, a masters degree in Electrical Engineering from **Naval Postgraduate School**, and multiple positions in Navy shipbuilding and systems acquisition programs.

### [Learning to Get Real and Get Better: A Conversation with Learning Leaders](#)

*(CIMSEC 30 Jan 23)*

“History shows the navy which adapts, learns, and improves the fastest gains an enduring warfighting advantage. The essential element is fostering an ecosystem—a culture—that assesses, corrects, and innovates better than the opposition.”—Admiral Michael Gilday, Chief of Naval Operations, remarks at 2022 Surface Navy Association Symposium... The CNO’s recent initiative of “Get Real, Get Better” (GRGB) touches on the importance of learning on several levels. Learning is difficult and often painful as it involves transformation and change, and is not just something that one can put on “like a new suit,” as Mortimer Adler wrote in his classic piece, “Invitation to the Pain of Learning.” The emphasis in GRGB on taking hard honest looks at our performance and to have the courage to take the steps to improve have resonated well with the recent iteration of our **Naval Postgraduate School** course, “Maneuver Warfare for the Mind: The Art and Science of Interdisciplinary Learning for Innovation and Warfighting Leaders.” We sat down with a handful of students/learning leaders to listen to their reflections on the topic and how learning about learning itself can help us get real and get better as warfighters and warfighting organizations.

### [Retired Admiral Bill Lescher, former Vice Chief of Naval Operations, Joins Red Cell Partners and DEFCON AI](#)

*(Business Wire 31 Jan 23)*

Red Cell Partners (Red Cell), an incubation firm building technology-focused companies that are bringing revolutionary advancements to market within the national security and healthcare arenas, today announced that Admiral (Retired) William K. Lescher, the 41st Vice Chief of Naval Operations, has joined as a Senior Advisor. In addition, Lescher has joined DEFCON AI (DEFCON), a Red Cell portfolio company building next-generation tools for the modern military mobility environment, as a Strategic Advisor... In addition to serving as Vice Chief of Naval Operations, Lescher previously held the position Deputy Chief of Naval Operations for Integration of Capabilities and Resources. Under his leadership, the Navy significantly improved readiness, force generation, and institutional learning outcomes with initiatives like “Get Real, Get Better,” the integration of more effective tools, problem-solving and collaboration approaches, and mindset to broadly elevate enterprise performance. He has commanded at the Squadron, Wing, and Strike Group levels, including Expeditionary Strike Group 5 and Task Forces 51/59 in Bahrain, leading multiple Amphibious Ready Groups and Marine Expeditionary Units. Lescher also led the Seahawk developmental test team as an engineering test pilot, where he launched the first guided missiles from a Navy helicopter. Lescher holds systems and aeronautical engineering degrees from the Naval Academy and **Naval Postgraduate School**, respectively, and a Master of Business Administration from the Harvard Business School.

### [The Power of Purple Teaming: Using Runbooks to Standardize and Collaborate \[Video Interview\]](#)

*(SC Media 1 Feb 23)*

In a recent survey on purple teaming, 89 percent of respondents who had used the method deemed purple teaming activities “very important” to their security operations. Purple teaming exercises conducted regularly have the power to improve collaboration across teams, ensure issues are identified and remediated more proactively, and provide a means to measure progress over time. With all these benefits, why isn’t everyone doing it? Purple teaming doesn’t have to be such a heavy lift. With the right mindset and tools, any team can get started regardless of resources. This talk will highlight practical tips for getting started with purple teaming exercises and show off PlexTrac Runbooks, a platform designed to plan, execute, report, and remediate collaborative purple teaming



engagements so teams can maximize their efforts and improve their security posture... Dan has over 15 years of experience in cybersecurity. Dan started his career in the Department of Defense and then moved on to consulting where he worked for various companies. Prior to PlexTrac, Dan was the Director of Cybersecurity for Scentsy where he and his team built the security program out of its infancy into a best-in-class program. Dan has a master's degree in Computer Science from the **Naval Postgraduate School** with an emphasis in Information Security. Additionally, Dan holds the OSCP and CISSP certifications.

### **History in the Making: Naval Station Norfolk to Welcome First African American Woman Commanding Officer**

*(13 News Now 1 Feb 23) ... Mike Gooding*

*(Star and Stripes 2 Feb 23)*

*(Old Dominion 3 Feb 23) ... Joe Garvey*

*(WTKR 3 Feb 23)*

Captain Janet Days will make history on Friday when she assumes the duties as Naval Station Norfolk's 51st commanding officer...Days holds a Master of Business Administration from the **Naval Postgraduate School** and concurrently earned the Naval War College command and staff diploma.

### **The Navy Needs Deckplate Diplomats**

*(USNI 1 Feb 23) ... Willian Stange*

The United States faces challenges throughout the world, not solely from Russia and China, but also from regional and transnational groups. While U.S. leaders will always debate which instruments of national power will be most effective in each geographic area and against each competitor, the Navy's rapid response capability and on-station endurance no doubt will ensure it plays a role... Mr. Stange is a 2005 graduate of the U.S. Naval Academy and a 2006 graduate of the **Naval Postgraduate School**.

### **Naval Postgraduate School Foundation appoints Dan Lynch, John Micek to Board of Trustees**

*(EIN 1 Feb 23)*

The Naval Postgraduate School Foundation appointed Dan Lynch, CEO and Managing Director of Carmel Realty Company and Monterey Coast Realty, and John Micek, President and Co-Founder of Climb High Capital and Co-Founder of Red Stitch Wine, to its Board of Trustees.

## **UPCOMING NEWS & EVENTS:**

**Feb 6-10:** [JIFX 23-2](#)

**Feb 7:** Black Sea Symposium

**Feb 20:** President's Day (Federal Holiday)



## EDUCATION:

### ‘Preparing for Strategic Competition: The Need for Irregular Warfare Professional Military Education

*(The Hill 31 Jan 23)*

The Department of Defense (DOD) does not provide the irregular warfare (IW) professional military education necessary for success in competition and conflict in the 21st century. This is a not a new problem, but it is one that may deserve new attention from the Congress and the Pentagon.

More than 30 years ago, the late Ambassador Michael Sheehan, who also served as the assistant secretary of defense responsible for irregular warfare, observed that IW had “lost its significance as a separate type of conflict that requires different doctrine and training.” Sheehan concluded that a consequence was that the United States lacked the “operational level and campaign planning” necessary for irregular warfare above the tactical level.

Congress — reflecting on the findings from the Skelton Panel in the 21st century — has affirmed that “the primary purpose of [professional military education] is to develop military officers, throughout their careers, for the rigorous intellectual demands of complex contingencies and major conflicts.” It is perhaps unsurprising that the United States was unable to assemble high-level irregular-warfare-proficient campaign headquarters in either Afghanistan or Iraq — which may provide a critical vulnerability as U.S. adversaries are increasingly turning to irregular approaches to undermine U.S. conventional supremacy.

There are plenty of opportunities for irregular warfare-focused education. Indeed, the joint force has developed and sustained a multitude of educational offerings directly related to irregular warfare, including programs operated by the National Defense University and specifically the College of International Security Affairs (CISA), the Air University, the **Naval Postgraduate School**, the Joint Special Operations University, the Marshall Center, the Daniel K. Inouye Asia Pacific Center of Security Studies, and the U.S. Army John F. Kennedy Special Warfare Center and School (which includes CISA’s Joint Special Operations Master of Arts Program).

However, there is no coherent professional military education “architecture” for irregular warfare. There is no dedicated IW segment in DOD education and no mechanism for relevant officers, enlisted, and civilians to receive the “continuous access to IW-related training, doctrine, and education” which the Irregular Warfare Annex to the 2020 National Defense Strategy highlighted as a requirement.

The Joint Staff has declared that it cannot tell services how to design irregular warfare curriculum, and neither Special Operations Command nor the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict have a specified role. Professional military education for irregular warfare is typically “sequestered to electives,” and often the requirement for IW professionals in attending traditional military education is to function as a “training aide” for conventional counterparts, which arguably impedes the education for all domains of warfare, including land, air sea, cyber, and space.

This highly diffuse approach for irregular warfare is in sharp contrast to that currently being deployed by the Space Force. Developing an “independent” professional military education for the Space Force was a priority of the first Chief of Space Operations, General John W. Raymond, and it reflected a recognition that the “Space Force works in a radically different domain in terms of physics, size, and legal regime” than the rest of the Air Force.

Further, rather than executing this independent and specialized education via an existing military institution, the Space Force decided to partner with a civilian university. This approach allowed the Space Force to “tailor curriculum to meet the unique and evolving needs of space operations by capitalizing on the multidisciplinary, strategy-focused course offerings in international security, ethics and leadership, international public policy and more” at its university partner, Johns Hopkins University.

This approach may offer two important lessons for how the DOD could overhaul its approach.

First, irregular warfare may require its own independent professional education. Irregular warfare operates in a wholly different domain than conventional forces — which Gen. Raymond Odierno, Gen. James Amos, and Adm. William McRaven called the “human domain.” Thus, as Space Force operations



in the space domain necessitated an independent program, irregular warfare may necessitate its own program as well — in order to develop IW-proficient campaign headquarters.

Second, effectively executing this may require a more robust partnership with a civilian university. Irregular warfare by its nature requires an understanding of typically civilian disciplines, including anthropology, economics, geography, politics, psychology, and sociology. These can and are taught at military education institutions, but partnerships with civilian universities — following the approach currently being employed by the Space Force — may provide the DOD a new approach for ensuring its irregular warfare commanders, planners, and operators are immersed in these tools. Education through a partnership with a world-class university may also expose military officers to other elements of national power that often prove critical in the success of irregular approaches, since irregular warfare is the military contribution to political warfare or competitive statecraft, the province of national level civilian policymakers.

While the congressionally authorized Irregular Warfare Center may provide a mechanism for partnering with a civilian university, congressional leadership may be necessary to implement these two pragmatic lessons offered by the Space Force.

Establishing independent professional military education for irregular warfare may require that Congress empower and require the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict and Special Operations Command to bring coherence to IW education. These organizations were created to address U.S. failures in IW but were not given needed authorities for personnel development and management — and just as Space Force education has a champion in the new service chief, irregular warfare may need a “senior champion” as well.

A consolidated irregular warfare program could allow the DOD to generate the irregular warfare professionals necessary to meet the demands of strategic competition in the 21st century. It could include career-long education for appropriate branches and specializations, advanced IW strategy and campaign planning for select personnel at intermediate and senior service equivalent levels, and IW supporting components inserted into service education at all levels from the basic course through senior service colleges. The services might also consider including IW curriculum in the service academies and Reserve Officers’ Training Corps.

The U.S. has the best trained and educated military in the world — for traditional warfare. The national security and defense strategies highlight the requirement to conduct strategic competition in the gray zone as well as to deter war, and to fight and win the nation’s wars. It may be time to give IW equal priority in professional military education and find it a home.

Lt. Gen. Charles T. Cleveland (Ret.) is an adjunct researcher at the nonprofit, nonpartisan RAND Corporation and a senior mentor to the Army War College.

America’s distrust of Washington is a five-alarm political crisis. Succeeding in strategic competition is today’s imperative.

Daniel Egel is a senior economist at RAND.

Col. David Maxwell (Ret.) is a senior fellow at the Foundation for Defense of Democracies and the Global Peace Foundation and a senior advisor to the Center for Asia Pacific Strategy.

Col. Hy Rothstein (Ret.) is a recently retired faculty member of the **Naval Postgraduate School**.

[Preparing for strategic competition: The need for irregular warfare professional military education | The Hill](#)

[Return to Index](#)



## RESEARCH:

### NPS Office of Research and Innovation will Accelerate Solutions from Idea to Impact

*(EIN 24 Jan 23)*

The Naval Postgraduate School (NPS) recently established the Office of Research and Innovation (OR&I) in response to the National Security Strategy and National Defense Strategy's call to leverage emerging technologies and innovative design practices to accelerate the development of full spectrum capabilities in order to maintain decisive maritime advantage and hedge against uncertainty.

During a recent address at Columbia University, Secretary of the Navy Carlos Del Toro stated, "The best way to deter our adversaries is for the department to restore its technological superiority." The Department of the Navy is driving innovation across every aspect of the service.

"Education is the key connector for this work. Our educational institutions hold great promise and opportunity," Del Toro added.

NPS is a central connector in the naval innovation ecosystem, uniquely positioned to complement the Naval Research and Development Establishment (NR&DE). OR&I will fully leverage the school's enduring and fundamental strengths – motivated warrior-scholar students with fleet and field experience; renowned, defense-expert faculty; a mission grounded in advancing the naval services; and close proximity to the heart of American technological innovation.

"OR&I will be a support mechanism to take NPS' research enterprise to an entirely new level, leveraging our naval innovation ecosystem – a network of academia, defense researchers, and industry working with NPS faculty, students and the operational fleet," according to Dr. Kevin Smith, NPS Vice Provost for Research and head of OR&I.

Academic basic research drives the discovery and dissemination of new knowledge, which helps to ensure the veracity of NPS cutting-edge curricula. The former NPS Research Office provided vital support to the school's academic research function. OR&I will continue to support foundational research, while also promoting faculty and student engagement in larger, multidisciplinary projects to help advance the Navy and Marine Corps as an integrated, all-domain force. "OR&I will continue to provide support to NPS faculty and researchers, such as processing proposals and support agreements," said Smith.

Under Smith's leadership, OR&I, along with the Naval Warfare Studies Institute (NWSI), is working to strengthen relationships throughout the NR&DE and across the Navy and Marine Corps staff, combatant commands, and others in the Department of Defense to provide NPS with important engagement and support for research projects that take solutions to key operational problems from concept to capability through academic research.

Together, OR&I and NWSI are developing collaborative industry partnerships, enabling project management, and promoting interdisciplinary, multi-organizational research teams conducting repeatable, rapid innovation processes, prototyping and experimentation.

"NPS' secret weapon is its students," said U.S. Marine Corps Col. Randy Pugh, director of NWSI. "They are warrior-scholars with incredible talent and operational insights. Working alongside expert faculty, they inform research and the innovation process. We are working to strengthen our connection between them and the challenges of the fleet and Fleet Marine Forces (FMF) and the Sailors and Marines out 'doing the job,' and they will far exceed our highest expectations. The Office of Research and Innovation is critical to achieving this vision at scale."

"We are increasingly offered a space at the table for discussions on how NPS can contribute to the challenges facing the Navy," said Smith. "And our formal membership within the NR&DE provides NPS with significant capacity in technical capabilities, opportunities to do testing on ranges, build prototypes, and really expand what we can do on the engineering side. With the operational experience of our warrior-scholars, this provides NPS and our partners with the opportunity to support test and evaluation of systems being developed through the Navy's process of innovation."

Many of these partnerships are supported by Cooperative Research and Development Agreements (CRADAs) that allow government researchers to work with industry partners such as Microsoft, AT&T,





and Xerox. Additionally, the Naval Research Program (NRP) links the operational Navy and Marine Corps commands with researchers to solve timely operational fleet and FMF needs.

Naval forces operate under, on and above the ocean, as well as ashore in space and cyberspace. Over the past decade, NPS research has expanded to larger endeavors that address increasingly complex, multidomain challenges and span NPS departments. Ultimately, Smith said that OR&I is about fully leveraging the enduring strengths of NPS – something which is more important than ever given today’s rapidly changing security environment.

“The imperative is that we develop solutions and capabilities faster than our adversaries to reestablish and sustain the technological advantage critical to warfighting, as well as the cognitive readiness to fight and win,” added U.S. Navy Capt. Bill Sherrod, director of the NPS Office of Strategic Initiatives.

Effective solutions must involve the fleet and increasingly industry partners where much of today’s technology innovation is occurring. OR&I will connect fleet needs with researchers, support proposal development, find funding sources, identify partners, and provide program managers to support the administration of larger projects at an institutional level.

“The reason we are moving to an Office of Research and Innovation is because we are now making an intentional institutional effort to capitalize on the attributes unique to NPS that we have here to support innovation within the Department of the Navy and accelerating research solutions from idea to impact,” Smith said.

Learn more about the Office of Research and Innovation and how it will advance NPS priorities and desired outcomes outlined in the NPS Strategic Framework.

To learn more about the NPS Office of Research and Innovation, visit the OR&I website at <https://nps.edu/web/research>.

More information on the NPS Strategic Framework can be found at <https://nps.edu/strategic-framework>.

[NPS Office of Research and Innovation will Accelerate Solutions from Idea to Impact - EIN Presswire \(einnews.com\)](#)

[Return to Index](#)

### **3D Printing: Navy Builds Up Additive Manufacturing on Ships**

*(Marine Link 26 Jan 23) ... Edward Lundquist*

The U.S. Navy has long valued the potential of additive manufacturing (AM) and 3D Printing.

AM refers to the depositing of material layer by layer to create an object. For the Navy, it’s not practical to carry every replacement part for every system on a ship, and it can be difficult to forecast if or when parts will fail. AM provides a flexible source of supply in being able to make parts instead of ordering them and waiting for them to arrive, especially for warships at the far end of the supply chain. Printing repair parts on demand can save time, lower costs and reduce the need to carry extensive parts inventories.

While there are many things one can do with AM, such as rapid prototyping, the holy grail has been the ability to fabricate parts at sea to repair things quickly. Imagine not having to carry multiple spare parts for every piece of equipment, or having to rely on a lengthy supply chain to get urgently needed parts from a supply depot.

Desktop 3D printers are widely available, starting at about \$300 for a home system. Many ships have 3D printers that make relatively small plastic parts.

“We’ve been using polymer plastic printers on ships and submarines for several years, but they are essentially desktop units that make relatively small plastic parts. The feedback we were getting from the fleet is that they need larger metal parts,” said Jim Pluta, additive manufacturing (AM) program manager at Naval Sea Systems Command (NAVSEA).

Now the Navy has installed two different kinds of metal 3D printers on Navy ships, with an aluminum system on the west coast, and a stainless steel system on the east coast.



A Xerox Elem Additive Solutions ElemX liquid metal 3D printer was delivered in a container aboard USS Essex (LHD 2) in July 2022, becoming the first metal additive manufacturing machine installed on a U.S. naval vessel. The ElemX printer is modular, and after operating aboard Essex during the RIMPAC 2022 multi-national fleet exercise last summer, the CONEX box was transferred to USS Boxer (LHD 4) to continue the evaluation.

The ElemX printer was a collaboration with Commander Naval Surface Force Pacific (CNSP) and NAVSEA leveraging the **Naval Postgraduate School** (NPS) cooperative research and development agreement (CRADA) with Xerox, which is a powerful tool to partner quickly for win/win applied research. “The ElemX effort not only demonstrated the technology in shipboard research use cases, but created a self-contained, mobile 3D metal printshop by outfitting a common shipping container that can be put on any ship, or plugged into any power source, such as a field generator so Marines can also have that capability,” said Capt. Jeremy Gray, NPS Surface Warfare Chair for CNSP.

On the east coast, a Phillips Hybrid Additive Manufacturing system arrived aboard USS Bataan (LHD 5). The Bataan project is intended to be a permanent fixture on the ship. The Bataan’s equipment, installed under a joint effort between Commander, Naval Surface Force Atlantic and Naval Sea Systems Command (NAVSEA) Technology Office, and supported in design and execution by Johns Hopkins Applied Physics Laboratory, includes the Phillips Additive Hybrid system, which integrates a Meltio3D laser metal wire deposition tool head on a Haas TM-1 computer numerical control (CNC) three-axis mill.

While both are metal printers, the ElemX platform employs a fundamentally different AM process than the Phillips Additive Hybrid system on Bataan. The ElemX printer makes aluminum parts, while the Phillips system uses 316 stainless steel. The ElemX uses a molten metal droplet deposition, where the Phillips Hybrid system is a wire-fed laser system using a directed energy deposition (DED) process to create a nearly-complete object, and then, as a hybrid system, uses the CNC milling head to finish the part.

While many industrial 3D metal printers use powdered material, which can be reactive. The wire-fed systems are much safer for shipboard use.

According to Bataan’s executive officer, Capt. Paul Burkhart, using the 3D printer to make parts on demand doesn’t replace the supply system. But, Burkhart said, it does provide a way to fix a part or component to get a system it operational again.

“Instead of having to order the whole, large assembly, and wait for it to get delivered wherever we are in the world, we just manufacture the sub-component or part that’s required, especially if it’s something we don’t normally carry,” said Burkhart.

Burkhart said that a group of Bataan Sailors received training from the manufacture to operate the system, and teach others how to use it.

Because some Navy ships with repair shops already have the Haas CNC system, that system can be “upgraded” to be a Hybrid AM system.

Jonathan Hopkins, who leads the additive manufacturing team at NSWC Carderock Division, said the Bataan’s system complements the training and expertise that Navy people already have. “Stainless-steel welding is a capability found on our larger ships, and the wire feed stock for the printer is the same as used in our welding machines—it’s in the supply system and is commercially available. For the ships that already have the Haas CNC system, it’s possible to add the Meltio system and Phillips integration to existing the CNS tooling to upgrade a ship with this capability.”

The San Diego-based Essex and Boxer and Norfolk-based Bataan are 843-foot, 41,000-ton Wasp-class multi-purpose amphibious assault ships that can carry 2,500 Sailors and Marines, along with boats, vehicles and aircraft.

[3D Printing: Navy Builds Up Additive Manufacturing On \(marinelink.com\)](https://marinelink.com)

[Return to Index](#)



## FACULTY:

### **Kevin Smith: New NPS Office Will Advance Technology Research, Innovation Efforts**

*(Executive Gov 24 Jan 23) ... Naomi Cooper*

Kevin Smith, vice provost for research at the Naval Postgraduate School, anticipates that the newly established Office of Research and Innovation at the U.S. Navy-operated school will advance relevant research on emerging technologies to provide new warfighting capabilities.

The office was created to help provide full-spectrum capabilities necessary to progress the National Security Strategy and National Defense Strategy's shared goal of maintaining U.S. technological superiority, NPS announced on Monday.

"OR&I will be a support mechanism to take NPS' research enterprise to an entirely new level, leveraging our naval innovation ecosystem – a network of academia, defense researchers and industry working with NPS faculty, students and the operational fleet," Smith said.

Smith leads OR&I as it seeks to support foundational research, encourage faculty and student engagement and facilitate formalized relationships to help prepare the Navy and Marine Corps for globally integrated and all-domain operations.

The office works with the Naval Warfare Studies Institute in establishing interdisciplinary, multi-organizational research teams to promote swift innovation, prototyping and experimentation.

[Kevin Smith: New NPS Office Will Advance Technology Research, Innovation Efforts \(executivegov.com\)](#)

[Return to Index](#)

### **This Is Not Who We Are: Zachary Shore on America's Struggle Between Vengeance and Virtue [Audio Interview]**

*(Lit Hub 26 Jan 23) ... Andrew Keen*

*(History News Network 26 Jan 23) ... Andrew Keen*

Hosted by Andrew Keen, Keen On features conversations with some of the world's leading thinkers and writers about the economic, political, and technological issues being discussed in the news, right now.

Find more Keen On episodes and additional videos on Lit Hub's YouTube Channel!

In this episode, Andrew talks to This is Not Who We Are author Zachary Shore about America's struggle between vengeance and virtue during World War Two with a particular focus on the decision to drop two atomic weapons on Japan and to rebuild Germany.

Zachary Shore is Professor of History at the **Naval Postgraduate School**, Senior Fellow at UC Berkeley's Institute of European Studies, and a National Security Visiting Fellow at Stanford's Hoover Institution. He is the author of five previous books, including *Blunder: Why Smart People Make Bad Decisions* and *A Sense of the Enemy: The High-Stakes History of Reading Your Rival's Mind*.

[This Is Not Who We Are: Zachary Shore on America's Struggle Between Vengeance and Virtue < Literary Hub \(lithub.com\)](#)

[Zachary Shore: the Struggle Between Vengeance and Virtue in WWII | History News Network](#)

[Return to Index](#)



## Whitcomb Receives Navy Superior Civilian Service Award

(*Cornell Chronicle* 27 Jan 23) ... Patrick Gillespie

(*India Education Diary* 1 Feb 23)

For strengthening national defense through his research and for mentoring other engineers to do the same, Clifford Whitcomb, professor of practice in systems engineering at Cornell, received one of the highest awards bestowed on civilian employees of the U.S. Navy during a ceremony at the Statler Hotel on the Cornell campus Thursday, Jan. 26.

The Navy Superior Civilian Service Award is granted to civilians who make contributions in a variety of areas ranging from successful project leadership and scientific achievements to unusually heroic acts.

Whitcomb spent nearly 20 years on the faculty at the **Naval Postgraduate School**, serving as a chair of the Systems Engineering Department and director of the Institute of Systems Engineering. He was designated as a distinguished professor at the school, an honorary title recognizing exceptional scholarly activities that have made outstanding contributions to the school's mission.

"Dr. Whitcomb is a great colleague to have – professional, knowledgeable, effective, reliable, always on top of things and willing to help others," said Oleg Yakimenko, a distinguished professor and long-time colleague who presented Whitcomb with the award.

The award reads, in part: "Dr. Whitcomb's exceptional leadership, work within academia, relevant research, and devotion to the **Naval Postgraduate School** was unsurpassed. [He] spearheaded the departmental Accreditation Board for Engineering and Technology accreditation in 2010, and reaccreditation in 2013, for both resident and distance learning programs. Additionally, he mentored over 60 faculty and staff members and oversaw more than 500 graduate students and 11 doctoral graduates."

The citation continues, "As a renowned researcher within Systems Engineering, he secured millions of dollars in reimbursable funds that have led to improved ship design and construction, shipyard production methods, and submarine and surface ship modularity for the United States Navy. Furthermore, in support of the Office of the Secretary of Defense and Naval Research, he created system-of-systems architecture for meteorological and oceanographic models and unmanned aerial systems."

"I figured something was up when I saw a few people with Navy uniforms and then I saw Oleg," said Whitcomb, who was not told of the award before arriving to the ceremony. "I'm really honored for this award and the time I spent in the Navy because I served 24 years active duty – before that, as a submarine officer and engineer, and then 20 years working for the Department of Navy, so I really appreciate this recognition."

Whitcomb has more than 35 years of experience in defense systems engineering and related fields with over 23 years of experience in academia. He has been a principal investigator for the U.S. Navy Office of Naval Research, Office of the Joint Staff, Office of the Secretary of the Navy, and the Veteran's Health Administration. He is a fellow of two engineering professional societies: the International Council on Systems Engineering – for which he served on the board of directors – and the Society of Naval Architects and Marine Engineers.

He was previously a professor and the Northrop Grumman Ship Systems Endowed Chair in Shipbuilding and Engineering in the Department of Naval Architecture and Marine Engineering, and held academic titles at the University of New Orleans and the Massachusetts Institute of Technology.

[Whitcomb receives Navy Superior Civilian Service Award | Cornell Chronicle](#)

[Cornell University professor receives Navy Superior Civilian Service Award – India Education | Latest Education News | Global Educational News | Recent Educational News \(indiaeducationdiary.in\)](#)

[Return to Index](#)



## How Truman Sold Americans on Going Hungry

(FP 4 Feb 23) ... Zachary Shore

The United Nations recently released two numbers that should shock the world into action. Forty-five million human beings might starve to death this coming year, and 222 million people will suffer acute hunger. U.S. Secretary of State Antony Blinken has called this the “greatest global food insecurity crisis of our time.” He is correct, but Americans have been here before. The last time the world faced a global famine, Americans did something astonishing: They chose to go hungry to make more food available for shipment overseas.

As the winter of 1947 approached, millions of Europeans faced mass starvation. A combination of wartime destruction, postwar drought, and the coldest winter in memory was damaging production. By the close of September 1947, the U.S. State Department was reporting that Italy and France were in danger of total collapse, which would trigger a cascade of calamities across the continent. The next three months would be critical. The United States had already sent as much surplus grain as it had available, but Europe needed an additional roughly 100 million bushels before Christmas to avoid apocalypse. There was simply no more grain to send—at least, not yet.

Then-U.S. President Harry Truman could not stomach the idea of allowing millions of people to starve if he could possibly prevent it. So much had been sacrificed throughout the war, so many lives had been shattered and lost, and now starvation threatened to destroy the hard-won peace. Mass death, malnutrition, and especially the spread of disease that accompanied the crisis would leave Europe prey to anarchy and communism. Hunger, he knew, drove people to despair. Somehow, that extra 100 million bushels would have to be found. And Americans would need to find it in less than 100 days.

It would be a strategic disaster as well as a moral one: The United States was already embarking on a global contest with the Soviet Union, and Europe was the first battleground where prosperity was the key to people’s hearts and minds. Truman had to persuade the nation to sacrifice on behalf of total strangers overseas. And he was counting on the American people’s sensibleness, goodness, and basic sense of decency. Truman was not wrong to expect support, but his idealized image of America crashed headfirst into the reality of a divided nation.

Unlike his Soviet counterparts, the president had no legal authority to seize grain from farmers. Any additional grain would have to be secured voluntarily by changing existing patterns of usage. So, Truman made an unusual move. He recruited the nation’s top salesman, Charles Luckman, to head an emergency food committee. Time magazine had dubbed Luckman the “boy wonder” of business when he was 27, a few years before catapulted to the head of Pepsodent at 27. Instead of selling toothpaste, his job would now be to convince Americans to eat less to free up grain for shipment abroad. Luckman immediately turned to the country’s top seven advertising agencies to create their most compelling campaigns, and he gave them only a weekend to work on it. Luckman had thrown down a challenge, and the so-called Mad Men of Madison Avenue responded. The slogan they selected was simple: “Save Wheat. Save Meat. Save the Peace.”

Luckman’s Citizens Food Committee then put forward a stringent four-point program. Americans would be asked to eat one less slice of bread per day, to eat no meat on Tuesdays, and to eat no poultry or eggs on Thursdays. In addition, restaurants would be asked not to serve bread unless requested. And that was just the start.

Amazingly, ordinary Americans rallied behind the food drive. Meat sales fell as sales of fish rose. But Truman and the Citizens Food Committee understood that the greatest savings would come from grain producers, not consumers. Here, again, the country came together. Bakers changed what they produced and how they produced it. Restaurants enforced meatless Tuesdays and eggless Thursdays. Flour mills reduced waste; breakfast cereal manufacturers cut production. Sector after sector, countless companies pitched in. But then, as it always does, the backlash began.

The first major opposition came from the country’s poultry producers. Fearing the loss of revenue, they strongly opposed poultryless Thursdays. To draw attention to the problem and simultaneously embarrass the president, they sent crates of live chickens to the White House, hoping that the cacophony of squawks would undermine the president’s public relations campaign. The media instantly dubbed them



“Hens for Harry” and “Leghorns for Luckman.” The ploy worked. Luckman’s committee dropped poultryless Thursdays, kept eggless Tuesdays, and hatched a new plan.

It turned out that the largest consumers of grain were chicks, not people. Feeding them required the use of enormous amounts of grain. The solution was clear. The nation’s poultry producers engaged in an act of mass extermination in which 136 million baby chicks were killed. The industry also reduced the turkey population, even though Thanksgiving was coming soon. But those measures combined to yield 56 million bushels of extra grain. The Citizens Food Committee was nearing its 100-million-bushel mark. They just needed 20 million bushels more, but this last measure seemed a step too far.

Moscow and Washington battle at the U.N. to assign responsibility for a looming food crisis that threatens millions with starvation.

There was one other industry that could make a major difference. Distilleries consume vast quantities of grain to make alcohol. If they could be induced to shut down their operations altogether, if only for a few months, then the United States could make enough grain available for Europe. But shutting them down meant that American workers would be laid off during the holidays, and they objected. The workers felt that the president should be putting America first.

Industry leaders were equally outraged. They had no wish to lose so much revenue, especially around the holiday season. With industry chiefs seated around a table, Luckman made his case. He described the desperate straits of Europe’s women and children. He played on the industrialists’ compassion, their kindness, their humanity—and the owners were utterly unmoved. The discussions were not going well. Luckman knew he would soon have to call for a vote.

And then, unexpectedly, Luckman was passed a note. It came from one of the industrialists in the room, the influential Armand Hammer. The note read: “Everyone in this room knows you have the complete backing of Harry Truman. Make them vote by name.”

Luckman immediately understood what it meant. None of these men would want to make an enemy of the president, but the cost of being exposed as shirkers would be even worse. At a time when so many Americans were doing their part to sacrifice for strangers overseas, if these wealthy industrialists were revealed as heartless, then it could be a public relations disaster for their businesses. When the roll call vote was taken, the tally was 14 to 7. Luckman had won.

On Oct. 25, 1947, production of alcohol in America slowed to a trickle. It did not resume until Christmas Eve. The grain savings exceeded even the best estimates, pushing the final campaign’s total over the 100-million-bushel goal. Unfortunately, nearly 1,000 distillery workers lost their jobs and had their lives upended by the stoppage. America was waging a war on hunger, and in the cold calculus of this campaign, it was a simple choice between the loss of work or the loss of life.

Today, America is a much wealthier country with far greater productive capacities. Its citizens will probably not need to eat less to create more food for others, but Americans will likely have to sacrifice in other ways to help feed hungry humans. As the global food shortage worsens, the United States will have to devise creative new methods for supplementing food shipments to countries in dire need. And as in the past, everyone will be expected to do their fair share. The overwhelming support for Ukraine has shown that Americans can still unite behind those people in need. There will always be selfish America-firsters, indifferent to the suffering of others, but most Americans still want to do the right thing. They just need their leaders to show them how.

This article is adapted from *This Is Not Who We Are: America’s Struggle Between Vengeance and Virtue* by Zachary Shore (Cambridge University Press, 348 pp., \$27.95, January 2023).

Zachary Shore is a professor of history at the **Naval Postgraduate School**; a senior fellow at the University of California, Berkeley’s Institute of European Studies; and a national security visiting fellow at Stanford University’s Hoover Institution.

[Truman's Hunger Plan Convinced Americans to Save a Starving Europe \(foreignpolicy.com\)](https://foreignpolicy.com)

[Return to Index](#)



## ALUMNI:

### **Into the Pickle Barrel: How Thinking About Precision as a System Can Expand the Munition Stockpile**

*(War on the Rocks 25 Jan 23)* ... Trevor Phillips-Levine, Andrew Tenbusch, Walker D. Mills, Dylan Phillips-Levine and Collin Fox

The camera from a small drone steadies on a Russian T-72 tank somewhere in Ukraine. Slight movements can be seen in the video as the Ukrainian operator makes final adjustments to the drone's position. Then, release. The munition – a grenade with a 3D-printed plastic fin assembly – falls into the frame and quickly disappears. Then a flash, a gray puff of smoke, and roaring fire erupt from the open hatch. Bullseye. Seconds later, the ammunition inside the tank “cooks off” with violent spurts of orange flame. A raft of similar videos depicts Ukrainian forces precisely dropping small munitions inside Russian trenches, foxholes, and even through the sunroof of a car. While these videos are essentially a highlight reel and are not a representative sample of all attacks, they show a real capability to drop repurposed munitions from small commercial drones.

On the battlefields of Ukraine, many Western-provided munitions like the Javelin anti-tank missile and high mobility artillery rocket systems (HIMARS) have become household names. But some systems attracting the most attention are modified, commercial off-the-shelf quadcopter systems like the Chinese-made DJI Mavic armed with common infantry munitions. Small drones are proving effective on the modern battlefield because they can drop small munitions with precision, remain difficult to defend against, and are cheap. Nearly inaudible and challenging to locate visually at altitude, their small size helps them remain masked from most air defense systems and get close to a target, minimizing the variables affecting the precision of ballistic munitions.

The problem with precision munitions today is that they are highly manufactured, require advanced chips and materials, and therefore are harder to replenish when stocks are depleted than unguided or “dumb” munitions. Countermeasures like camouflage, decoys, and electronic warfare help adversaries deplete precision munition stocks. Ukraine is showing the world that cheap, commercial drones combined with “dumb” unguided munitions can reliably achieve the same effects as much more expensive, precision-guided munitions.

The Pentagon should re-evaluate its emphasis on the requirement for guided munitions to achieve precision. Rather than exclusively acquiring exquisite munitions that demand a unique targeting solution and logistical chain to achieve precise effects, the delivery of precision firepower should be considered holistically as a product of a system and acquired through a spectrum of requirements necessary to achieve the desired outcomes. Simply put, if unguided munitions can achieve satisfactory precision with the addition of a precision guidance kit or an alternative delivery method, such a solution should be resourced prior to an exquisite, purpose-built one.

### **The Need for Precision**

After years of attempts and hundreds of unguided weapons, the Thanh Hoa Bridge in North Vietnam finally fell to two laser-guided munitions in 1972. Since then, the U.S. military's love affair with precision or “smart” guided munitions has blossomed, followed by the rest of the world's. Precision munitions have become synonymous with great power and prestige. Great power competitors' long-range weapon capabilities have increased the risk to operating forces and necessitated a shoot first, kill first requirement. As a result, countries worldwide have tried to either indigenously develop their own precision munitions or purchase them through foreign acquisition. In particular, the United States has built a vast inventory of guided munitions ranging from precision guidance kits mated to conventional munitions like aerial bombs or artillery rounds, infantry rocket systems like the Javelin, and expensive cruise missiles like the Tomahawk. As the progenitors of Western precision weapons, the United States established compatibility and employment standards for its allies.



A guided munition provides the launching platform with the advantages of less restrictive release conditions and can give greater standoff from the target—for example, ballistic releases at altitude versus a diving attack. A 1974 RAND study detailed the effects of various enhancements to the ballistic release of an aerial munition, including the addition of “a pulsed laser beam and guidance system [that] could...home in on the reflected laser light” and correct the flight path of the weapon to the target if released from a point in the air other than the single physically possible ballistic release point. Before modern guidance kits, aircraft used special tactics and more primitive technology to achieve precision. For aircraft, the most precise delivery for unguided ordnance is a 90-degree delivery angle (nadir drop), which minimizes vertical error and horizontal travel. For this reason, World War II dive bombers like the famous German Stuka were equipped with dive brakes to achieve near-vertical descents while dropping bombs. But steep descent profiles have major drawbacks, requiring the attacking aircraft to maintain a predictable flight path while increasing its exposure to ground fire and making aircraft more susceptible to air defenses.

In 1943, the gyro-stabilized Norden Bombsight was the flagship of precision bombing, with claims it could “drop a bomb into a pickle barrel.” Proponents asserted a remarkably accurate ability to drop bombs within 75 feet in ideal conditions. Actual wartime employment was over 1,200 feet outside of the target area and further compounded when the entire formation released off the lead aircraft instead of their calculated release point. The lack of real precision resulted in most bombs missing their targets and inflicting mass civilian casualties.

The 1974 RAND study noted that unguided munitions released using a manual bombsight required 21,000 bombs to destroy 100 targets or 210 bombs per target. According to the same RAND study, when a ballistic computer was introduced to calculate the release, the munition requirement lowered to 40 bombs per target. Equipping a bomb with a laser seeker and guidance kit took just 100 bombs to destroy 100 targets: a one-to-one ratio. This pursuit of precision resulted in a focus on guided or steerable munitions like the Paveway I (GBU-1), first used in Vietnam. With the ability to strike precisely within 20 feet, the Paveway series remains in use today. Precision guidance kits are a relatively cheap way to make unguided warheads precise because instead of designing a whole new weapon, a special kit can be bolted onto an existing bomb.

Air forces found that they could deliver ordnance precisely while maintaining acceptable risk. Risk is mitigated by reducing cognitive loads on the employing pilot or bombardier by taking the requirements for the precise delivery of ordnance out of the aircrews’ hands and putting them into the munition. With the munition able to steer post-release and guide itself to either a preprogrammed GPS coordinate or a laser aimpoint, the acceptable release parameters are expanded, reducing the pilot’s workload and risk of groundfire. The effects of guided munitions have been profound. Recently, the U.S. Navy stopped training on dive bombing tactics in portions of its tactical syllabus for the first time since the tactic was introduced during the interwar period because of the availability of precision guidance kits.

### **Precision is the Product of a System, not a Munition**

One of the lessons the war in Ukraine reinforces is that precisely delivered munitions create greater desired effects on the battlefield than a larger quantity of unguided and imprecise weapons. Despite Russia’s quantitative weapon advantage over Ukraine, Ukraine’s effective use of precision munitions like artillery rocket systems and drones, coupled with agile combat principles, is disrupting Russian combat operations. Imprecise munition delivery requires larger quantities to achieve the same desired effect – and likely causes a preponderance of undesired consequences. Russia required large ammunition stockpiles near the frontlines to supply engaged combat units vulnerable to Ukrainian precision counter-targeting, which led to mass casualty events when troops billeted near ammunition depots were struck by Ukrainian forces. Using a combination of special force sabotage within Russia and long-range precision fires, Ukraine effectively shaped the battlefield ahead of major assaults by precisely targeting large Russian weapon caches. However, precision is not the sole property of guided munitions.

In theory, an accurately calculated ballistic release point that accounts for all variables negates the requirement for a guided (steerable) munition, provided the target is stationary or maintains a constant





speed and direction if moving. For example, the F/A-18's mission computers can calculate the winds at the aircraft's altitude but cannot determine the winds below that will affect the bomb. Instead, the mission computers use a computer model to predict the effect of winds based on the winds at release altitude. While the model improves ballistic accuracy, it is not foolproof. To increase precision, the pilot could place the aircraft in a dive, reducing the flight time of the weapon, horizontal velocities and corresponding error, and the time environmental factors can affect the munition. Fighter jets typically release bombs a few thousand feet above a target when in a dive. When a guidance kit is attached to a bomb, the aircraft can utilize ballistic releases at higher altitudes. The aircraft could be miles from the target – keeping the aircraft safer and nearly guaranteeing a direct hit. Guided weapons also allow for standoff outside ballistic releases or horizontal attack profiles, usually accomplished through powered flight, as with cruise missiles or airfoils for gliding.

But if a weapons platform can come within negligible distances of a target without detection or risk to a human pilot, does that system require a guided munition? The explosion of armed drones has generated significant interest in micro and loitering munitions. Micro-munitions are purpose-built, scaled-down versions of their larger aerial cousins. Examples of these munitions include the Northrop Grumman Hatchet and Raytheon Pyros. Micro-munitions' development follows a familiar vein and almost all the proposed and prototyped munitions are guided. Unlike current laser-guided or global positioning system bombs, which use precision guidance kits bolted on to the basic unguided bomb, proposed and current guided micro-munitions are not kits leveraging existing munitions like grenades or mortars. Instead, these munitions are purpose-built, making them more expensive and slower to produce than established infantry weapons like grenades and mortars, and there are little to no pre-existing stocks to draw from.

A loitering munition mates a drone with a warhead into a single system. Once the operator finds a target, or perhaps through autonomous guidance, the drone flies into the target and is destroyed along with it. Like micro-munitions or any purpose-built precision weapon, the logistics tail required to buy, build, and field a more complex system made in sufficient numbers is longer and more brittle. For example, the United States began running out of precision weapons during the air campaign against the Islamic State because weapon expenditures exceeded the ability of the defense industry to replenish them and were frequently unnecessarily used. Western defense officials repeatedly noted the shortages of precision munitions on both sides of the war in Ukraine.

### **Weaponized Drones versus Exquisiteness**

The United States did not fully appreciate the threat of small armed drones until it engaged in combat operations against the Islamic State. Iraqi security forces first experienced the new aerial threat that the U.S. Central Command Commander, General Kenneth McKenzie, called the “most concerning tactical development” since improvised explosive devices. During the push to liberate Mosul, the Islamic State launched quadcopters and indigenously built fixed-wing drones to deliver lethal munitions. Videos released by the Islamic State featured drones dropping unguided munitions onto Iraqi forces. Later, drones used by both the Islamic State and Iranian proxies attacked remote outposts occupied by U.S. forces. The United States was not alone: Russia suffered drone attacks from militants in Syria, and French forces were wounded in an Islamic State drone attack with a quadcopter and grenade — the same method Ukraine now employs to target Russian armor and personnel.

Weaponized drones in hotspots worldwide were a harbinger of things to come. Modifying commercial or custom-built drones with available small unguided munitions, like grenades or mortars, allowed militant groups lacking nation-state resources to engage in precise aerial firepower. Numerous defense articles acknowledged the new danger and paradigm shift and referred to it as the era of democratized airpower.

There are two ways in which drones deliver lethal effects. One is a regenerative weapons delivery platform capable of releasing ordnance and returning home for rearming. The other is as a loitering munition. Loitering munitions like AeroVironment's Switchblade are effective but are specialty items and do not provide regenerative airpower, or the ability to return and rearm using commonly available munitions. This means replenishment for loitering munitions requires sustainable combat logistics that



keep pace with consumption in the field since each expended munition requires a drone vehicle and warhead replacement.

The war in Ukraine demonstrates the benefits of precision effects and the ability to maintain agile and light logistics, principles the U.S. military espouses as essential for its distributed maritime operations for a Pacific theater war. Ukraine has burned its stockpiles of guided munitions at excessive rates, especially infantry-borne guided rocket systems. Exercising resourcefulness, Ukraine tapped caches of easily obtained mortar rounds and grenades. It mated its infantry weapons to small drones to harass and target Russian personnel and vehicles near the front lines, preserving precious stores of more costly and harder-to-acquire exquisite precision ammunition. A Ukrainian drone operator stated, “if you can destroy a tank from a Mavic, you’re the best at this war.”

A modern drone contains microprocessors and numerous specialty parts, like optics, requiring more industrial expertise and logistics than steel casings filled with cheap explosives. Each time an explosive is delivered with a loitering or guided munition, the delivery system (fuselage, optics, and flight controls) and warhead must be replaced. A drone that delivers a munition but returns to be rearmed only requires the replacement of the munition. Plus, the ability to use munitions readily found with infantry units simplifies logistics through interchangeability and availability.

The side that is better able to reconstitute over time is the side that can sustain and ultimately win the war. Reconfiguring unguided munitions and augmented precision is more sustainable than exquisite weapon systems whose components cannot be resourced from diversified supply chains.

### **‘Dumb’ + 3D Printed Fins = Precise Enough**

Small drones can get remarkably close to their targets. With low acoustic and visual signatures, decent optics, and a modest payload capacity, they are proving to be a force multiplier for the ground forces that use them. Coupled with the fact that drones are extremely risk-worthy, Ukrainian operators are showing that they can get close enough to a target for a nadir drop. In many cases, nadir drops eliminate the need for a guided munition. Grenades and mortars affixed with plastic stabilizing fins manufactured using 3D printers have proved effective. As evidence, Ukraine released videos of the modified unguided munitions dropped from drones hitting targets with accuracies that rivaled the guided ones. While these public releases are meant to embolden the Ukrainian war effort and increase morale, and therefore may exaggerate the capability, they also demonstrate that these drones and the repurposed munitions they employ are small and light enough to be carried and deployed en masse by infantry units and do not need vehicle support like larger weapons.

Does this mean guided micro-munitions are not needed? No. There are cases where a drone must remain at higher altitudes, or perhaps a target is moving. A quadcopter can hover, making nadir drops possible and simplifying aiming. But in many cases, the quadcopter is low, less than 500 feet above the target. However, larger, fixed-wing drones can remain at higher altitudes – harder to detect with the naked eye and safer from ground fire. In that case, guided munitions may be better suited since horizontal velocities are imparted to the munition from the launch platform, and the flight time allows for greater errors to manifest.

If a dive profile is available for a fixed-wing drone through an artificial pilot, an unguided munition may still be acceptable; it depends on the accuracy of the computer calculation and the target range. Utilizing risk-worthy fixed-wing drones enables scaling this concept to larger munitions. For example, an armed version of the Tracer could deliver larger unguided munitions like 155mm shells or 120mm mortars with dive deliveries. Once a mission is completed, the Tracer would return to a road, maybe utilizing an arrestor hook system, to be quickly captured and rearmed. Also, a forward velocity component associated with fixed-wing aircraft is beneficial for guided munitions like Elbit’s laser-guided mortars against moving targets since the munition will have greater kinetic energy at release, increasing maneuverability and interception envelope. With a nadir drop, the ability to guide onto a moving target is significantly less.

For now, small drones cannot carry large, heavy munitions, but future versions might be able to. Advances in battery technology or hydrogen fuel cells could enable them to carry greater loads and extend their range. 60-millimeter and 81-millimeter mortar rounds are stockpiled by the tens of thousands



and would be the ideal choice for pairing with drones. Also, patents exist to turn these mortars into precision weapons. These systems could complement other, more exquisite systems, like the Marine Corps' Organic Precision Fires system. Ideally, a munition or weapons system is not over-engineered with features that are not required to achieve the effects of the mission – low cost and simplicity are inherent advantages in production.

### **The Spectrum of Requirements: Unguided, Kit, Exquisite**

During the clearance operations in Iraq in 2016, U.S. forces were expending so many Laser Joint Direct Attack Munitions in a target-rich environment that ground commanders received warnings to ensure that targets serviced by these munitions required the use of the weapon. Media reported that the U.S. military was “running out of precision-guided munitions,” which reignited conversations about substituting lower-cost weapons. The Laser Joint Direct Attack Munition is a very capable precision guidance kit with great capabilities against moving targets. Still, it is considerably more exquisite than a normal Joint Direct Attack Munition, and the voracious consumption rate made war planners nervous about the remaining inventory.

Precision effects should not be equated to exquisite precision munitions. Instead, industry and practitioners should view precision as a holistic product of the system and the parameters that system employs. The minimum capability required to achieve the desired effect should be the goal. Employing a weapon system of greater capability against a target that does not require it is wasted capability that a force may have trouble replacing in combat. Risk-worthy systems, like drones mated with artificial pilots, can create conditions where a precision munition is not required to achieve precision effects. Instead, a spectrum of requirements should be applied in which these questions are asked in sequential order: Can the intended precision be achieved with the delivery platform without using a precision-guided munition? If so, utilize the appropriate unguided munition. Next, if effects cannot be achieved with unguided munitions, can they be achieved with a modified unguided munition, perhaps a precision guidance kit, to achieve the appropriate level of precision? A purpose-built munition should only be commissioned if the mission is unable to achieve precision through the other two means.

Military readiness assessments should include an assessment of the ability of the defense industry to reconstitute munitions during conflict. Western governments are concerned with the rate at which their gifted weapon systems are being consumed in Ukraine, straining peacetime industrial bases. If a proxy war can so quickly drain vast stockpiles of precision weapons, how will stockpiles fare in a direct, open conflict? Using a systems-based approach for precision, the United States can more efficiently utilize existing inventories and not over-engineer, averting some logistical headaches in high-intensity warfare.

Trevor Phillips-Levine is a naval aviator and close air support instructor. He holds a Master of Business Administration in aerospace and defense from the University of Tennessee. He also serves as an advisor for weaponized small drone development in a cooperative research and development agreement.

Andrew Tenbusch is an F/A-18 Super Hornet naval flight officer and fellow with the Halsey Alfa Advanced Research Program at the U.S. Naval War College. He is a graduate of the Navy Fighter Weapons School (TOPGUN) and previously served as a carrier air wing integration instructor at the Naval Aviation Warfighting Development Center.

Walker D. Mills is a Marine Corps Infantry Officer training to be an Unmanned Aircraft System Officer. He is also nonresident fellow at Marine Corps University's Brute Krulak Center for Innovation and Future War and a nonresident fellow with the Irregular Warfare Initiative, a collaboration between the Modern Warfare Institute at West Point and Princeton's Empirical Studies of Conflict Project.

Dylan Phillips-Levine is an active-duty naval aviator with a tactical air control squadron.

Collin Fox is a U.S. Navy foreign area officer. He is a graduate of the Chilean Naval War College and the **Naval Postgraduate School**, where his final project on alternative anti-submarine weapons won the John Hopkins Applied Physics Lab Award for Excellence in Systems Analysis.

[Into the Pickle Barrel: How Thinking About Precision as a System Can Expand the Munition Stockpile - War on the Rocks](#)

[Return to Index](#)



## Rotary Club Speakers Highlight Engineers Without Borders

*(The Warren Record 26 Jan 23)*

On Tuesday, Jan. 17, the Rotary Club of Warrenton had two special guests from the Engineers Without Borders project, Mark Swallow and Bruce Binney.

They are working in Guatemala to provide a steady stream of fresh water to the village. They have worked with the local Rotary District to secure grants and funds to help with the project. Swallow and Binney shared some photographs related to the project and described such efforts as getting pipes and other materials up a steep jungle mountain and back down.

The clubs that were involved were the Cary/Kildare Rotary, Garner Rotary and Knightdale Rotary clubs.

Mark Swallow holds degrees in Botany and Computer Science. In 1982, he joined IBM as a computer programmer working on their MVS Operating system.

Through his 37 years in IT (mostly with IBM), he has been a programmer, team leader, manager and program manager.

The projects grew in complexity from multi-thousand dollar projects to multi-million dollar projects. His last project prior to retiring included 700 people spread across six countries and lasted three years in Toronto, Canada.

After retiring in 2019, Swallow has volunteered with organizations helping the homeless in Raleigh and Wake County. He also volunteers with White Flag Shelters. Swallow joined Engineers Without Borders in 2019 and became vice president of the Research Triangle Professional Chapter in 2021, leveraging his project management experience with the Chipozo Water project.

Bruce Binney holds a degree in Systems Engineering, which he earned before embarking on a 20-year career in the Navy that included three sea tours, a masters degree in Electrical Engineering from **Naval Postgraduate School**, and multiple positions in Navy shipbuilding and systems acquisition programs.

After retiring from the Navy in 1980 with the rank of Commander, Binney began a second career with the MITRE Corporation, a not-for-profit organization that provides systems engineering services for the federal government, and this role continues to the present time.

In 2015, Binney became involved with Engineers Without Borders. After joining the Research Triangle Professional chapter, he also became involved with the NC State student chapter, acting as the mentor for the university's water supply project in Guatemala.

The RTP chapter initiated the ongoing water supply project in the same region of Guatemala.

[Rotary Club speakers highlight Engineers Without Borders | News | warrenrecord.com](#)

[Return to Index](#)

## Learning to Get Real and Get Better: A Conversation with Learning Leaders

*(CIMSEC 30 Jan 23)*

“History shows the navy which adapts, learns, and improves the fastest gains an enduring warfighting advantage. The essential element is fostering an ecosystem—a culture—that assesses, corrects, and innovates better than the opposition.”—Admiral Michael Gilday, Chief of Naval Operations, remarks at 2022 Surface Navy Association Symposium

Assembled and edited by notetakers Professor Mie Augier and Maj Gen (Ret.) William F. Mullen, USMC.

Learning is an important topic. The increasing pace of change in the operating environment, as well as the evolving requirements of leading each new generation that comes of age, makes both individual and organizational learning essential. At the same time, dedicated time for learning may be missing, or the desire for continued learning is lacking. But it can be reawakened through learning about learning itself, and discussing the need for both individual and organizational learning for warfighters.



The CNO's recent initiative of "Get Real, Get Better" (GRGB) touches on the importance of learning on several levels. Learning is difficult and often painful as it involves transformation and change, and is not just something that one can put on "like a new suit," as Mortimer Adler wrote in his classic piece, "Invitation to the Pain of Learning." The emphasis in GRGB on taking hard honest looks at our performance and to have the courage to take the steps to improve have resonated well with the recent iteration of our **Naval Postgraduate School** course, "Maneuver Warfare for the Mind: The Art and Science of Interdisciplinary Learning for Innovation and Warfighting Leaders." We sat down with a handful of students/learning leaders to listen to their reflections on the topic and how learning about learning itself can help us get real and get better as warfighters and warfighting organizations.

The course starts with understanding the 'why' of learning, the need to exercise our minds, and embracing the pain along the way. It approaches learning as a manifestation of Marine General Al Gray's approach to "maneuver warfare," and as a mindset that is relevant across industries, organizations, services, and warfighter topics. We focus on different dimensions and elements of learning, such as the mechanisms for individual learning, organizational learning, learning organizations, and some of the key tradeoffs between refining existing competencies and exploring and experimenting for new ones.<sup>2</sup> We use a broad set of interdisciplinary as well as warfighter-oriented readings ranging from Mortimer Adler's 'How to Read a Book,' Herbert Simon, James March, General Gray, Secretary Mattis, Colonel John Boyd, and other articles on behavioral strategy, organizational learning, and counterfactuals.

We believe that active minds are best developed through active learning, and not lecturing and rote learning (no PowerPoints). That too was something emphasized in Gen Gray's approach to learning and education, and we try to honor that by facilitating discussion through questions, small groups, and relating scholarly material to warfighter issues. As a result, we studied and learned from Gen Gray's leadership and the maneuver warfare movement not just as an important episode in USMC institutional history, but also an approach to thinking, leading, and learning that can be useful to help evolve current initiatives (such as GRGB) into something that can have lasting impact on how our organizations think, learn, and fight.<sup>3</sup>

In the conversation below, our learning leaders reflected on aspects of what we studied and discussed in the course; such as different mechanisms and levels of learning, some links between individual and organization learning, the role of leaders in facilitating both, and how learning is essential to 'get real, get better.'

What is your main takeaway about the importance of learning at the individual level and how it can help us become better learning leaders? How does that help us 'get real'?

Individual learning becomes a building block for the organization. If learning is inculcated on an individual basis, it is more likely that the organization can become a learning organization. However, while individual learning is important, it is not the only thing needed. The organization has to provide the space, time, and opportunity for the individuals to be learners. And specific to Navy or military bureaucracies as a whole, there has to be a culture to allow for learning, innovation and innovative thinking, and the status quo needs to have less of a hold on progress. The status quo can be an inhibitor of innovation and of change in general.

Another takeaway is the role of the leader as a teacher. You cannot teach if you do not have a desire to learn, understand the mechanisms of how people learn, and more importantly for the sake of the organization, you need to understand how to help others be lifelong learners. That is really important because in organizations like the Navy and Marine Corps that are multi-tiered and stratified, the one thing you can find that will bind us all together as a learning organization is to cultivate this in future leaders/teachers. This is an example of something that links individual learners/leaders to building learning in others and a broader learning culture as well.

It is not enough to say you are a learning organization – you have to learn how to learn, and you have to learn to teach how to learn. That is a mechanism for how our approach to learning as individuals can help transmit and transform the organization into a learning organization.

We feel strongly that the role of the organization is essential. That is not specific to learning only – but to everything since the leader drives where the organization is going. We also saw that in some of the cases we discussed in class and some of the guest speakers. Boyd did that; Gen Zinni did that; Gen Gray



too. All of those leaders offer examples of people in key positions deliberately driving change and learning in their own way.

There are important traits and skills that characterize learning leaders. It takes vulnerability to push folks beyond their comfort zone, to admit they may not know something, or to be willing to ask for another's advice. It can also take vulnerability to stand up for learning efforts, especially when their takeaways challenge the norm. We discussed Gen Gray's emphasis on "we," not "me," which is one manifestation of humility. How do you see the roles of humility, vulnerability, and courage in learning?

We better understood that through one of the readings, the Levinthal and March reading.<sup>4</sup> In their article they are looking at learning at the individual level, and how that has implications for the organizational level. They are also looking at the cultural and social aspects for why learning fails or does not always succeed. That could be due to friction between people; people being too focused on themselves and not the organizations; and the myopias of learning.

It is also connected to the idea of satisficing – that we are often satisfied with the minimum solution, or what is good enough, to be effective. We also probably over-attribute success (or failure) to particular events or people. What if the success or failure was just by chance? What happened, and how much of that was attributed to things we were doing intentionally, and how much of that was influenced by chance? It involves self-awareness and comfort with uncertainty. Too often people and organizations attribute success or failure to efforts, mainly individual efforts, that may not have much to do with the actual causes. The "Myopia of Learning" article speaks to that in a great way. Admitting that you as a leader may not be the source of all great things involves some humility as well.

At a deeper level, it also relates to the idea of moral courage as a leader and that revolves around humility and vulnerability. Humility is difficult to teach, but it might be easier if you engage in a conversation about vulnerability as well. There have been leaders who lead with the statement, "I will confide in you something that I wouldn't tell anyone else, and you do the same." It is a challenge because it relies on trusting someone you may not know well. So vulnerability here builds trust. And that is part of the fuel that gets to learning.

Modeling learning behavior is critical, like with any other favorable leadership trait. To be a leader you need to be willing to be vulnerable, not only for accepting outside criticism, but also to be self-critical. As you embark on Senge's concept or discipline of personal mastery, it is a journey that is ongoing and you never fully arrive at the destination. We can tie in a little bit of Boyd as well. A lot of folks naturally start the OODA loop with the first part, the observation. But once you delve into it you realize that you never take off on the OODA loop unless you get the orientation right, the part where you consider the implications of your observations. And orientation is itself its own OODA loop that is built on things like culture, norms, shared values, and others. But through observation from other parties and your own self-observation you are able to change that orientation. This then changes the nature of the OODA loop and how you perceive the environment, decide, and act.

As a leader, what we talked about regarding vulnerability, humility, and values, if you tie it back to Boyd, you are hitting the center of the orientation piece and the necessity of you as a leader to really understand yourself. A leader has to have the self-awareness to understand their strengths and shortcomings, while actively striving toward personal mastery so that they can make better decisions, and they can model better learning behaviors for those they lead.

How can learning help the Navy "get real, get better," and what are the difficulties in creating learning organizations? Is there anything from the course that would be particularly useful to share? What would we do to help make it more like a movement, like MW/FMFM-1 Warfighting?

You can take a page out of General Dempsey's "Mission Command," and you have intent, trust, and communication. This helps with explaining the importance of learning, not just for learning's sake, but for the mission and the organization, a point Gen Gray made in the maneuver warfare panel we discussed. This would ideally guide you as a leader and your colleagues to foster an environment where people have your intent and your trust. Trust is defined here as the absence of fear of humiliation, mocking, or ridicule, including for wanting to learn something new or pursue a novel idea. Once you have that environment, a leader can embrace those efforts, including those trying to understand what is wrong and develop solutions.



If you as a leader do not foster an environment where people can think outside the box – can think beyond the NAVADMINS and instructions and guidelines – then you are going to struggle to explain the orientation part of your thought process. You are going to struggle to think differently. If a leader does not foster trust, adequately communicate their intent, and foster an environment where people are not afraid to explore beyond the conventional boundaries, then they will struggle to develop creative solutions. It is not enough to say we need to harness constructive failures. We have to be able to create an environment where people are not afraid to explore beyond the boundaries of what they would normally do or think about. You will struggle to get to the creative solutions GRGB is aiming for without that organizational environment. GRGB is both about individual-level traits and approaches, but definitely organizational culture as well.

Boyd was able to use the bureaucracy against itself at times. The true secret is to reward the behavior you want and carefully manage the incentives. A perfect example for the U.S. Navy is this – I came across a NAVADMIN that completely rewrote the definitions for performance evaluations, and it put out exactly what should be ranked in terms of efforts to create and sustain a learning environment at both the individual level, in the workspace, at the organizational level, across the U.S. Navy. We saw this document come out – and be completely ignored – and then we had the perfect opportunity where the performance evaluation system was completely revised. Now we have gone from navfit98 to eNAVFIT online. Lo and behold, all of that wonderful criteria that was supposed to evaluate me on how good I am as a personal learner and how good I am at getting those under my charge to be learners – it evaporated overnight! How can we get better in building more lasting changes? It needs to be pushed within the bureaucracy itself, we need it to be sustained, unlike the implication of that NAVADMIN, unfortunately.

Another problem is leadership turnover. Leaders often want to put their mark on things and change things just for the sake of change. But they often rotate out of the position after so little time in the seat that things can rarely be sustained, or rarely do leaders have to live with the possible consequences of their initiatives, and the cycle repeats with turnover.<sup>5</sup> So we need to help build a sustainable vision and change how the organization thinks, so it becomes embedded in our overall approach, much like the Marines and Gen Gray did with FMFM-1 Warfighting.<sup>6</sup>

What do you see as barriers to GRGB?

I think if you survey all members of the Navy, most would want the organization to become a learning organization where they can have time for personal learning, have the room and freedom to think, and they want to become deeper learners themselves. But it is hard. Learning is painful as we discussed in class, and it needs to be. On the organizational level, it is often everyone else's fault for why it doesn't happen. Because of the Navy mentality and what is valued, certainly in the officer corps it is often about FITREPs and promotion. No one is going to make the push that is needed when it may be seen as professionally risky. In other words, there can be a mentality of, 'The system that promoted me can't be wrong,' but the GRGB initiative could change what the system values in people.

The Marines seem to have done a decent job at reversing some of these trends, both historically with the reforms Gen Gray led, but also more recently. They seem to be at least trying to build an organization that embraces learning and exploration, with MCDP-1 Warfighting and the recent publication of MCDP-7 Learning really demonstrating that. Not having as much funding and having different challenges might have helped. We could learn something from how the Marine Corps institutionalized the emphasis on thinking and learning with FMFM-1 early on and the value of lifelong learning it embodied.<sup>7</sup> It doesn't cost money to think as Gen Gray reminds us.

Some of the recommendations in the Education for Seapower study can address these themes if we applied them. These include an organizational emphasis to developing learning and thinking as part of the culture and the ethos of the organization. It includes emphasizing this in the key documents which the organization derives guidance from over time, not just in a set of instructions that are changed tomorrow. The Navy hasn't done that.

In the Navy we are so focused on our communities and too focused on depth, and unwilling to accept breadth in knowledge and proficiency, that we sort of get in our own way. We focus so much on operating our highly technical platforms that it signals to people that this is all we really care about. But



what do you do in your free time, what do you do to educate your mind? What do you do officially, formally, organizationally to enhance learning for yourself and your command beyond the baseline standards?

What can we do to help GRGB become more of a movement and build it into our organizations?

We saw examples of the mentoring process in class and having a dialogue about the purpose, where to get more information, and how it can be implemented. Taking the time to discuss and share the ideas behind the GRGB initiative is essential and can help build excitement for it as well.

But it is really about renovating or transforming organizational culture and that is very difficult. The pamphlet and training package is good in providing some structure and training for how to deliver GRGB. But what they don't really get at is where does it go from here, what is the follow-through? Who does this? What is the qualification? Where do we do this? There is nothing that says this is part of our organizational DNA now, as MCDP-1 is for the USMC. So as far as you can help make GRGB be part of the organization, you have to make it an agent of change, to make it something that is genuinely embraced by the organization, not just printed by the organization.

There are things happening at a high level now that supports making it a movement, such as mandatory GRGB training for flag officers, and the fact that it is a warfighting enabler is important. The Navy respects and acts upon what is written in ink. If it is not in ink then it is less likely to care. This spans from completing a travel voucher, to performance evaluations and other things. We need to have that hard document that I can wave and say, 'This is why we are doing this, because this is directive, this is official.' That is when it will really start to take hold.

The idea of publishing an FMFM-1/MCDP-1-type document for the Navy is key. It can become something the organization embraces as a sign of it becoming a deeper learning organization. It can be something that is foundational to new and experienced members of the organization, and part of who we all are and how we learn. An outline for an MCDP-1 type document might be a good start to at least start the conversation and discuss the benefits of a more structured organizational movement.

We look forward to you writing that!

Commander (Dr.) Art Valeri is an Operative Dentist stationed at NMRTC Great Lakes serving as the Department Head/Chief, Dental Service of the Veterans and Military Staff Hospital Dental Clinic, Captain James A. Lovell Federal Health Care Center, North Chicago, IL.

Commander Paul Nickell is a Naval Flight Officer currently stationed at the United States Naval War College as a student in the College of Naval Warfare in Newport Rhode Island and an MBA Candidate at the Naval Postgraduate School.

Captain Daniel G. Betancourt is a career Foreign Area Officer and Naval Aviator specializing in Latin America and the Indo-Pacific. He currently serves as Chief of the United States Naval Mission to Colombia.

Commander (Dr.) Jay Yelon is a US Navy Trauma Surgeon currently stationed at the military-civilian partnership at the Hospital of the University of Pennsylvania.

[Learning to Get Real and Get Better: A Conversation with Learning Leaders | Center for International Maritime Security \(cimsec.org\)](#)

[Return to Index](#)

## **Retired Admiral Bill Lescher, former Vice Chief of Naval Operations, Joins Red Cell Partners and DEFCON AI**

*(Business Wire 31 Jan 23)*

Red Cell Partners (Red Cell), an incubation firm building technology-focused companies that are bringing revolutionary advancements to market within the national security and healthcare arenas, today announced that Admiral (Retired) William K. Lescher, the 41st Vice Chief of Naval Operations, has joined as a Senior Advisor. In addition, Lescher has joined DEFCON AI (DEFCON), a Red Cell portfolio





company building next-generation tools for the modern military mobility environment, as a Strategic Advisor.

“The depth of experience and insight that Bill brings to Red Cell Partners and DEFCON AI cannot be overstated,” said Grant Verstandig, Red Cell Founder & CEO and DEFCON Co-Founder and Executive Chairman. “Throughout his remarkable tenure with the Navy, Bill spearheaded initiatives that brought continuous innovation and a ‘Get Real, Get Better’ culture to the Navy that proved transformative. He has a profound understanding of what we are trying to accomplish at both Red Cell and DEFCON, which will prove invaluable as we move forward with our mission to build powerful tools and solutions to address our Nation’s most pressing problems.”

“As a modeling, simulation, and analysis (MS&A) company, DEFCON is developing technologies designed to streamline America’s military responses to supply chain and mobility network disruptions caused by contested scenarios – from natural disasters to adversary attacks. The tools the team is developing are in service of our goal to build a new generation of reliable decision-support tools and analytics that assist the US military, advance national security, and protect the American people,” said Yisroel Brumer, Co-Founder and CEO of DEFCON and Red Cell President. “Admiral Lescher has a proven appreciation and respect for innovation, having helped the Navy to become a more learning-oriented institution while greatly scaling the use of powerful technologies including machine learning and artificial intelligence to measurably improve a wide range of force generation and supply chain outcomes. There is no doubt that we will benefit greatly from Admiral Lescher’s insight and counsel.”

In addition to serving as Vice Chief of Naval Operations, Lescher previously held the position Deputy Chief of Naval Operations for Integration of Capabilities and Resources. Under his leadership, the Navy significantly improved readiness, force generation, and institutional learning outcomes with initiatives like “Get Real, Get Better,” the integration of more effective tools, problem-solving and collaboration approaches, and mindset to broadly elevate enterprise performance. He has commanded at the Squadron, Wing, and Strike Group levels, including Expeditionary Strike Group 5 and Task Forces 51/59 in Bahrain, leading multiple Amphibious Ready Groups and Marine Expeditionary Units. Lescher also led the Seahawk developmental test team as an engineering test pilot, where he launched the first guided missiles from a Navy helicopter. Lescher holds systems and aeronautical engineering degrees from the Naval Academy and **Naval Postgraduate School**, respectively, and a Master of Business Administration from the Harvard Business School.

“I very much appreciate, and strongly align with, the values and mission focus of Red Cell and DEFCON,” Lescher said. “Both companies are using technology and innovation in exciting ways to address extraordinarily consequential opportunities across healthcare and defense. The combination of that mission focus and the exceptional teams they have assembled make Red Cell and DEFCON compelling places to join to achieve great outcomes.

“As someone who has worked for years to help advance a culture of innovation and continuous learning in the Navy, I understand the proven power of tools like artificial intelligence and machine learning to transform performance in areas that have long been a source of frustration. I also understand the importance of holding ourselves accountable for making a measurable difference to our warfighters and to the American people, and see the same perspective in the teams at Red Cell and DEFCON,” Lescher said. “I look forward to contributing to these organizations in meaningful ways and working together to achieve great outcomes, not only for Red Cell and DEFCON, but for our Nation.”

[Retired Admiral Bill Lescher, former Vice Chief of Naval Operations, Joins Red Cell Partners and DEFCON AI | Business Wire](#)

[Return to Index](#)



## The Power of Purple Teaming: Using Runbooks to Standardize and Collaborate [Video Interview]

(SC Media 1 Feb 23)

In a recent survey on purple teaming, 89 percent of respondents who had used the method deemed purple teaming activities “very important” to their security operations. Purple teaming exercises conducted regularly have the power to improve collaboration across teams, ensure issues are identified and remediated more proactively, and provide a means to measure progress over time. With all these benefits, why isn’t everyone doing it? Purple teaming doesn’t have to be such a heavy lift. With the right mindset and tools, any team can get started regardless of resources. This talk will highlight practical tips for getting started with purple teaming exercises and show off PlexTrac Runbooks, a platform designed to plan, execute, report, and remediate collaborative purple teaming engagements so teams can maximize their efforts and improve their security posture.

Segment Resources: Learn more and book a demo: <https://plextrac.com/securityweekly>

More information on Runbooks: <https://plextrac.com/platform/runbooks/> This segment is sponsored by PlexTrac. Visit <https://securityweekly.com/plextrac> to learn more about them!

### Dan DeCloss

Founder / CEO & President at PlexTrac

<http://plextrac.com/>

Dan has over 15 years of experience in cybersecurity. Dan started his career in the Department of Defense and then moved on to consulting where he worked for various companies. Prior to PlexTrac, Dan was the Director of Cybersecurity for Scentsy where he and his team built the security program out of its infancy into a best-in-class program. Dan has a master’s degree in Computer Science from the **Naval Postgraduate School** with an emphasis in Information Security. Additionally, Dan holds the OSCP and CISSP certifications.

[The Power of Purple Teaming: Using Runbooks to Standardize and Collaborate – Dan DeCloss – PSW #771 | SC Media \(scmagazine.com\)](#)

[Return to Index](#)

## History in the Making: Naval Station Norfolk to Welcome First African American Woman Commanding Officer

(13 News Now 1 Feb 23) ... Mike Gooding

(Star and Stripes 2 Feb 23)

(Old Dominion 3 Feb 23) ... Joe Garvey

(WTKR 3 Feb 23)

Captain Janet Days will make history on Friday when she assumes the duties as Naval Station Norfolk's 51st commanding officer.

Days will become the first African American commanding officer in the 106-year history of the world's largest naval base.

Days previously served as the base's executive officer.

Days, a native of Chicago, graduated summa cum laude from Old Dominion University in 1999 with a Bachelor of Science in Business and received her commission through Naval ROTC via the Enlisted Commissioning Program.

Days holds a Master of Business Administration from the **Naval Postgraduate School** and concurrently earned the Naval War College command and staff diploma.

She is also a graduate of Joint and Combined Warfighting School at Joint Forces Staff College and is a qualified joint specialty officer.

Days' sea assignments include tours aboard USS Simon Lake homeported at La Maddalena, Italy; USS Mahan; and USS Forrest Sherman.



Days served as the Destroyer Squadron 28 material officer and staff director embarked aboard USS Dwight D. Eisenhower, where she completed two deployments to the U.S. Central Command Area of Operations in support of Operation Enduring Freedom.

During her tour as executive officer and commanding officer of USS McFaul, she deployed independently to the U.S. 6th and 5th Fleet Areas of Operation.

Ashore, Days was assigned to the Joint Staff Joint and Coalition Warfighting Directorate as a military analyst and observer trainer augment to the deployable training team.

She also deployed to Kabul, Afghanistan as the Joint Staff Liaison Officer to the International Security Assistance Force headquarters.

Days completed a tour at Afloat Training Group Norfolk as a combat systems tactical mentor and is a graduate of the pilot Warfare Tactics Instructor/Integrated Air and Missile Defense course.

As the Director of Maritime Warfare at Surface Warfare Officers School, she was responsible for the training and development of all surface warfare department heads as well as providing instruction for prospective executive officers, commanding officers and major command students.

Following a tour as the executive officer of Surface Warfare Schools Command, in Newport, Rhode Island, Days assumed the position of executive officer of Naval Station Norfolk.

Days will relieve Captain David Dees, who will assume duties as the Chief of Staff for Commander, Navy Region Mid-Atlantic.

Naval Station Norfolk covers 6,200 acres plus outlying properties and contains more than 600 significant facilities and 326 tenant commands. Naval Station Norfolk has 13 piers and an 8,000-foot airfield, supporting 63 ships, 188 aircraft and 18 squadrons.

The Naval Station employs more than 67,000 personnel including both military and civilian personnel.

[Captain Janet Days to make history at Naval Station Norfolk | 13newsnow.com](#)

[Naval Station Norfolk welcomes 1st Black female commanding officer | Stars and Stripes](#)

[ODU Alumna Becomes First Black Female Commanding Officer of Naval Station Norfolk | Old Dominion University](#)

[First Black female commanding officer sworn in at Naval Station Norfolk \(wtkr.com\)](#)

[Return to Index](#)

## The Navy Needs Deckplate Diplomats

*(USNI 1 Feb 23) ... Willian Stange*

The United States faces challenges throughout the world, not solely from Russia and China, but also from regional and transnational groups. While U.S. leaders will always debate which instruments of national power will be most effective in each geographic area and against each competitor, the Navy's rapid response capability and on-station endurance no doubt will ensure it plays a role.

Naval officers can enhance the Navy's role by developing a deeper understanding of international security cooperation and how U.S. partners view their own place in the region and the world.

## 21st-Century Challenges Require Partnerships

As the United States faces great power competition with Russia and China, as well as risks from regional challengers, one of its crucial advantages is the ability to rally allies and partners.<sup>1</sup> This expands its effective reach across the globe, but it does not happen only at the diplomatic level. U.S. Navy ships and aircraft are a critical piece in the military element of national power, but the Navy can do more, especially in building relationships with other nations' militaries and people.<sup>2</sup>

The U.S. National Security Strategy (NSS) calls for naval actions in every corner of the globe—from promoting a free and open Indo-Pacific, to maintaining a peaceful Arctic, to building U.S.-Africa partnerships. Ensuring freedom of navigation along sea trade routes and strategically vital international waterways—another ongoing Navy mission—takes the service to places such as the Strait of Malacca,



Strait of Hormuz, Strait of Gibraltar, Suez Canal, and Panama Canal. Even this small list covers three combatant commands and four continents, all with complex political relationships.

In addition, arms control, nonproliferation, humanitarian assistance, and disaster response could take Navy units to unexpected places with unexpected partners. Competition with Russia and China also could occur in unexpected geographies and require the Navy to arrive on-scene and help forge new partnerships.

At the unit level, officers may face unexpected red lines in international military operations: partners who refuse to cooperate with one another, or operations in waters or airspace with particular sensitivities for the countries involved. Moreover, there can be significant differences in U.S. military cooperation with individual nations within larger security partnerships and alliances, such as NATO, the India-Japan-Australia-U.S. Quad, or the European Union's Common Security and Defense Policy. Combatant commands and U.S. military foreign area officers (FAOs) work extensively to prevent such issues from disrupting operations; however, last-minute changes to plans can put decisions on the shoulders of ship and squadron commanders.

The Navy must increase regional knowledge and foundational and continuing military education on international security organizations among its personnel—from the combatant command down to the deckplate level. This would not supplant the expertise of trained FAOs, but rather would provide unit-level officers enough knowledge to identify potential problems and develop an instinct for when to slow down and ask questions.

Familiarity with countries in a region also can help officers identify ways to take advantage of the Navy's presence to further other national goals.<sup>3</sup> Community relations projects are a mainstay of a ship's efforts to show the positive impact U.S. Sailors bring to a host country. So too are the interactions officers and crews have with foreign officials during ship tours and exchanges at sea or in port, which can be opportunities to highlight why the U.S. Navy makes such a powerful partner and formidable foe. Navy port visits present opportunities to exercise all elements of national power, including economic (positive impacts on ports' economies) and informational (the opportunity to share and update information on local conditions).

### **Teach International Security Cooperation**

The Navy can take several steps to improve its officers' knowledge of international affairs.

First, entry-on-duty education is an opportunity to teach the fundamentals of international security partnerships. The U.S. Naval Academy, NROTC, and Officer Candidate School (OCS) should include basic international affairs courses or seminars on the functioning of NATO, the Australia, United Kingdom, and United States trilateral pact AUKUS, and other critical security partnerships. The Naval Academy offers more than two dozen political science courses relating to international relations at the global and regional levels, but none are required for midshipmen outside political science majors.<sup>4</sup>

The Academy also should resume staffing its Political Science Department faculty member from the Department of State's Foreign Service, providing an experienced foreign affairs practitioner to instruct midshipmen and offer detailed seminars about regional politics. NROTC similarly could incorporate an introductory international affairs course requirement or equivalent seminar, and OCS could include seminars from either a Department of State faculty member or a student at the collocated Naval War College in Newport, Rhode Island.

Second, continuing military education and training can refresh foundational knowledge and provide greater detail on international cooperation. Every service has requirements for joint professional military education (JPME), yet there are no required modules for international affairs until JPME Phase 2.5 JPME Phase 1 and 2 are prime opportunities to include information on security partnerships and how the U.S. military plans operations and exchanges information with partners.

Third, operational deployments should include pre-briefings and periodic updates on regional relationships. Every combatant command and many subordinate commands include experienced FAOs and a Department of State foreign service officer as a political advisor. Political advisors have served multiple assignments at U.S. embassies, bring at least a decade of international affairs experience, and are well-placed to provide regular updates to deploying units on the intricacies of a region.



As the United States contemplates how to face continuing (and ever more complex) global competition, reliance on new systems, platforms, and capabilities alone will not suffice. The Navy should seek ways to use and expand partnerships in every theater of operation, thereby multiplying their impact. Doing this effectively will require new skills, but it is an opportunity to expand collaboration between the Department of Defense and the Department of State, to better support U.S. efforts in global competition.

William “Wes” Stange

Mr. Stange is a 2005 graduate of the U.S. Naval Academy and a 2006 graduate of the **Naval Postgraduate School**.

[The Navy Needs Deckplate Diplomats | Proceedings - February 2023 Vol. 149/2/1,440 \(usni.org\)](#)

[Return to Index](#)

## **Naval Postgraduate School Foundation appoints Dan Lynch, John Micek to Board of Trustees**

*(EIN 1 Feb 23)*

The Naval Postgraduate School Foundation appointed Dan Lynch, CEO and Managing Director of Carmel Realty Company and Monterey Coast Realty, and John Micek, President and Co-Founder of Climb High Capital and Co-Founder of Red Stitch Wine, to its Board of Trustees.

Lynch and Micek join the NPS Foundation at a critical time for U.S. national security and during a period of transformation for the Naval Postgraduate School. National security affects every individual, and every individual is responsible for the work of national defense. The NPS Foundation’s new board members highlight community interest and investment in the Naval Postgraduate School at a time when the stakes are high. Strategic competitors to the United States have greater access to commercial state-of-the-art technologies than ever before and are wielding these technologies to attack America’s interests and our citizens’ personal security. As a Nation, we cannot afford to be complacent as our technological edge erodes or is made irrelevant by the modernization and growth of our adversaries’ militaries.

In December 2022, Secretary of the Navy Carlos Del Toro announced his intention to construct a Naval Innovation Center at the Naval Postgraduate School and detailed Department of the Navy efforts to transform military education and lead the innovation ecosystem for the U.S. Department of Defense. The Naval Innovation Center at NPS will provide a capability unavailable elsewhere in the DOD for industry and academic partners to work side-by-side with NPS’ 2,500+ operational students and expert faculty to solve the unique challenges facing our Nation in a collaborative, applied and classified setting.

“We are at an inflection point in American innovation. Our Department of Defense is committed to adopting emerging technologies and national security solutions faster than our adversaries. Naval Postgraduate School students, faculty and alumni are the difference makers for our Nation to maintain competitive advantage,” said Hank Plain, Chair of the NPS Foundation Board of Trustees. “The experiences and connections of our new members bring immense value to the Foundation’s work and will greatly enhance our support and advocacy for NPS, the Naval Innovation Center, corporate partnership and community engagement.”

The NPS Foundation is proud to have supported the Naval Innovation Center at NPS since the initial vision development in 2020 and is committed to working alongside NPS and the Department of the Navy in the advocacy, development and funding of a Naval Innovation Center at NPS through its completion. [View a concept for the Naval Innovation Center here.](#)

Dan Lynch is the CEO and Managing Director of Carmel Realty Company and Monterey Coast Realty, a family of real estate companies serving the Monterey Peninsula. With over 120 agents and staff, the company is the market leader in luxury real estate with over \$1.5 billion in annual real estate sales supported by a robust real estate rental, management and estate services business. Under his oversight, the 110-year-old brand has flourished through extraordinary competitive and industry disruption, disintermediation and technological evolution, and has continued to be the market leading luxury brand for the last 20 years. Previously, Lynch served as President and CEO of Wire Stone Inc, one of Ad Age’s



top 25 independent marketing agencies. In 2018, Lynch completed the sale and full integration of Wire Stone into Accenture, the world's largest digital marketing network. As Managing Director and President of Wire Stone within Accenture, Lynch was responsible for the strategic planning, budgeting, and delivery of Wire Stone business into the Accenture service offering. Prior to his position at Wire Stone, Lynch held positions as the Chief Officer for Global Business Development at Organic Inc., a pioneer in web development, and as Sr. Vice President for Sales and Marketing at Technicolor. Lynch is an investor, director and advisor to numerous companies inside and out of the digital marketing space. He is an active member on the Board of Directors for The First Tee of Monterey County and the director of the Carmel Realty Company Foundation. Lynch has a business marketing degree from the University of San Diego.

John Micek is the President and Co-founder of Climb High Capital, a boutique software investment firm based in San Francisco. Additionally, he is the co-founder of Red Stitch Wine, a critically acclaimed Napa Valley boutique winery founded in 2009 with former professional baseball players Dave Roberts and Rich Aurilia along with their families. Previously, Micek was a managing partner at Third Leaf Partners where he focused on business development and deal sourcing across the hospitality and wine industries. Prior to Third Leaf, Micek spent over 17 years in the hedge fund industry both as a Partner, Chief Operating Officer and Head of Investor Relations and Business Development at Criterion Capital Management, and as a Vice President overseeing the West Coast Region for the Capital Introduction business at Goldman Sachs & Co. He also held the role of Head of Business Development and Investor Relations at HRJ Capital Management. In addition to his professional responsibilities, Micek is an Ambassador to the Navy SEAL Foundation, a member of the Board of Directors of PrivApp, Inc., and a Community Activities Commissioner for the City of Carmel-by-the-Sea. Micek received a Bachelor of Arts in Finance and Business Economics from the University of Notre Dame in South Bend, Indiana, and currently resides in Carmel, California, with his wife, Noelle and two children.

[Naval Postgraduate School Foundation appoints Dan Lynch, John Micek to Board of Trustees - EIN Presswire \(einnews.com\)](#)

[Return to Index](#)

