BREAKING THE MOLD

A Workshop on War and Strategy in the 21st Century

CONSOLIDATED REPORT OF THE WORKSHOP SPONSORED BY THE UNDER SECRETARY OF THE NAVY

MARCH 7–8, 2018

NAVAL WAR COLLEGE
NEWPORT, RHODE ISLAND

Consolidated Report of the "Breaking the Mold" Workshop
Sponsored by the Under Secretary of the Navy
March 7–8, 2018, Naval War College, Newport, Rhode Island

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Foreword

A primary mission of the Naval War College is to enhance the ability of our students to think critically and to conduct rigorous and data-driven analysis of competing alternatives. When our alumni return to the operational environment, they are better able to perform as effective decision makers at the highest levels, in all conditions of peace, conflict, and war.

The College also has a role to play beyond meeting the needs of our student body, and that is to facilitate thoughtful discussions among national security leaders, planners, and operators through a series of wargames, simulations, workshops, and conferences. In pursuit of this larger goal, we hosted the "Breaking the Mold: War and Strategy in the 21st Century" workshop in March 2018. A broad overview of the topics discussed and some preliminary findings worthy of additional study are detailed in this document. The goal of the workshop was to demand thinking that was bold, yet based on fact and sound strategic and operational logic.

With a future that remains unpredictable, hugely dynamic, and in many ways more challenging than at any time in our history, we need to rely on our intellect to shape and propose appropriate constructs and strategies for ensuring the security of this nation and our many friends and allies. As President, I am profoundly grateful for the hard work of the participants and organizers who made this event possible. I am sure you will find much to consider within the pages that follow.

Rear Admiral J. A. Harley, USN
President, Naval War College

CHAPTER 1

Introduction to the Workshop/ Categorized List of Actionable Recommendations

The "Breaking the Mold: War and Strategy in the 21st Century" workshop was conducted under the sponsorship of the Under Secretary of the Navy at the Naval War College on March 7–8, 2018. The fifty-nine participants were invited on the basis of their expertise in national defense issues; their leadership, operational, or analytical experience within the Department of Defense, Department of State, or other agencies or academic institutions; and their community reputations as creative thinkers.

The workshop was intended as a functional "experiment" in a top-down approach to generating novel ideas that "break the mold of conventional thinking" concerning necessary changes in the national security plans, processes, and organization of the United States.

This depiction of the concept of *experiment* reflects the fact that the workshop was *not* conceived as a stand-alone event, but was envisioned as part of an evolving process in generating "radical" ideas in which other participants and the Naval War College faculty would subsequently participate.

Under Secretary of the Navy Thomas B. Modly provided the kickoff to the workshop. His extensive remarks covered the naval services' need to "break the mold" in considering a future that could be even more complicated and challenging than today's. Secretary Modly's full address appears in this Report as appendix 1.

The workshop was conducted by Rear Admiral Jeffrey A. Harley, USN, President of the Naval War College (NWC), assisted by Dr. Harlan K. Ullman, distinguished senior fellow and visiting professor at NWC. The participants were challenged to think "boldly and creatively about the future with few restraints other than the laws of physics," and that "the crucial guiding and operative principle is to think boldly and creatively" so as "to provoke imaginative and even counterintuitive" ideas." These few restraints included the following entering assumptions (in abbreviated form):

- Budget appropriations will continue to be (far) less than is required to maintain the current force structure, strategic and operational requirements, and deployments.
- Power will continue to diffuse, empowering individuals and nonstate groups at the expense of traditional states.
- Serious potential threats will continue to arise from nonmilitary and nonkinetic sources, to include "active measures"; cyber; creative use of economic and mercantile policies; intimidation; misinformation, propaganda, and misdirection; interference in domestic politics; and more innovative use of military power to achieve political objectives.
- Offensive, precision weapons and C4ISR will tend to dominate defenses, meaning deception

and maneuver will be more critical. So too logistical and C4ISR networks will become more vulnerable.

- The doctrine of most states with advanced weapons stresses the advantage of firing the first shot, that is, anticipating an enemy's actions and striking preemptively.
- Nuclear arms talks—INF and New Start—will fail and the United States will withdraw from the JCPOA with Iran. But rather than resulting in an arms race, modernization will lead to self-imposed limits on U.S and Russian strategic forces. Meanwhile, China will continue to pursue a more technologically advanced but still minimum nuclear deterrent.
- NATO will experience continued erosion as certain unnamed but known allies pursue different courses and Brexit distances the United Kingdom from Europe.
- The U.S. political system will remain polarized and highly divisive, and growing deficits, along with interest rate increases, will provide a major, possibly crippling constraint on military forces.
- No global financial or environmental catastrophe will occur.

The future environment was described as follows: "In general terms, the world of 202X is one marked by the continued diffusion of power and globalization. Qualitatively, the military forces of the United States and several NATO and Asian allies, Russia, and China have become relatively equal in advanced capability, but with significant strategic distinctions. Russian forces remain centered on Europe and the protection of Russia, with small but effective deployments abroad. China's military remains a high-low mix, with many PLA units less well-equipped than others due to financial constraints."

Against the future described above, the working groups were provided the outline of three strategic options to be used to guide responses to "war" in the 21st century and break the mold of conventional thinking: (1) A "porcupine defense," undertaken in part in conjunction with Naval Forces Europe and focused on Europe and Russia; (2) Containing potential Chinese military expansion within the "first island chain" with "a mobile maritime Maginot Line plan that cannot be outflanked"; and (3) Greater reliance on special forces, cyber, and unmanned vehicles (UVs), all broadly defined. A fourth area for examination is the question of how such options might be implemented. This suggests (4) "Redefining the National Security Act and Unified Command Plan, along with a reconstitution and regeneration of forces in which a smaller but highly ready active-duty force would be dependent on a larger reserve or cadre component that could be mobilized when or if needed."

To the degree there was a central idea permeating the four working groups in encouraging a "break-the-mold" mindset, it was to induce ideas that would exploit a cost-exchange strategy designed to defeat potential adversaries by circumventing, neutralizing, and containing their strategic thinking.

As general guidance, the working groups were challenged to examine:

- What might these strategic options entail?
- What basic assumptions would undergird each option?
- What would be each option's strengths and weaknesses?
- How would the entire defense and manpower base support each option?
- Would these options be affordable, given the reality of the resources available?

Appendix 2 contains the full statements of guidance and precepts for the workshop.
The workshop was organized using NWC resources and also received generous support from the Naval War College Foundation.

To "prime the pump" and establish an atmosphere of "radical" thinking, a series of 12 point papers on individual proposals were provided to the participants in advance. Some of the point papers were referenced in the subsequent discussions, some were not. In addition to a contribution by the NWC Provost, Dr. Lewis Duncan, the point papers were drafted by faculty members of NWC and the Naval Postgraduate School, primarily—but not exclusively—by members of the NWC Center for Naval Warfare Studies. The point papers are included as appendix 3.

TASK

The overall objective of the workshop was to generate actionable recommendations that would "break the mold" of current U.S. national security plans and processes. These recommendations are intended to be briefed to selected decision makers and to be used for additional analysis by NWC faculty members.

The entering assumption of the project, in the words of Dr. Ullman, is that "if we are serious in pursuing a more lethal Navy [and more effective national security overall], we need to break the mold of past thinking because, under those conditions, without a huge and virtually impossible increase in budgets, that goal is not achievable for decades." This entering argument provides considerable incentive for creative thought and novel, nontraditional defense concepts. Yet at the same time it requires grounding in the realities of the geopolitical environment and the realities of cost and budget. While as novel as possible, the thinking also was required to remain within the art of the possible, with the collective expertise and experience of the participants providing the knowledge of that art.

FOCUS

In his address to the workshop participants, Under Secretary Modly pointed to the speed of change as the prime motivator for breaking free of "organizational paradigms, and behaviors, and biases." He observed that after 911 DoD adapted "tactics and capabilities quite well" in militarily addressing terrorist threats. However, this effort at "cracking the mold," while successful, "may not be enough because no longer are we faced with a single rogue terrorist actor, rather we are faced with a broad and varied spectrum of them."

Moreover, the new National Defense Strategy (NDS) identifies "changes that have eclipsed the dangers these rogue actors, and rogue nations, have presented over the past decade. . . . We are entering an era of great-power competition on a global scale, so we must be focused on responsibly developing forces that protect our people and our interests, our friends and allies around the world." Noting that "China and Russia want to shape a world consistent with their authoritarian model and they will use whatever tools that are available to them, both lethal and nonlethal, legal and illegal, to gain influence and authority over other nations' economic, diplomatic, and security decisions," Under Secretary Modly described the NDS as providing a "mandate for how we construct our naval forces" to address a "broad range of competing challenges" that include:

- A return to great-power competition, but not to the exclusion of other threats.
- An emphasis on lethality and readiness, but not to the exclusion of new platforms and technologies for the future fight.
- A recognition that we must advance our nation's interest and influence on the seas, but not to the exclusion of building alliances and partnerships that seek peaceful conflict resolution, with preparedness for the use of decisive force if necessary.

Under Secretary Modly suggested that the "preeminent focus" in breaking the mold of old paradigms was the need to achieve organizational "agility." He defined the characteristics of *agility* within the Department of the Navy in terms of providing "flexible, adaptable, faster development cycles, reduced maintenance requirements, greater lethality, and an industrial strategy that sustains a modern, flexible, and sustainable industrial base." To sustain the naval industrial base, the mold of an "adversarial relationship with industry" certainly needs to be broken and "we must also understand the difference between being a smart buyer and a bad customer." Additionally, agility in organization is needed to "recruit and train people who are innovative, creative, and courageous, . . . who are comfortable with uncertainty and who can collaborate and trust their teams and leaders under stressful conditions."

The Under Secretary identified five organizational qualities that "will contribute to a more agile Navy": (1) velocity or speed, (2) adaptability, (3) collaboration, (4) visibility, and (5) innovation, which is strengthened by a culture of lifelong learning. He concluded by predicting that "we will have to break the mold" to truly embrace agility.

ORGANIZATION

The discussions were conducted and findings generated within four working groups. Each group was organized around one of the themes previously suggested by Dr. Ullman. Group 1 was assigned the concept of a "porcupine strategy" for the defense of NATO/Europe. Group 2 organized around the concept of a mobile maritime barrier ("a maritime Maginot Line plan") in the Asia-Pacific. Group 3 considered "the new conventional triad" of special operation forces (SOFs), unmanned systems, and cyber-warfare capabilities (a construct originally suggested by

Admiral James Stavridis, USN [Ret.]).[1] Group 4 considered a new National Security Act and recreation of a national security organization, to include all U.S. government agencies.

A narrative of each of the four working group discussions and copies of their final outbriefs are contained within this report as chapters 2 to 5, respectively. The briefing slides included were presented to the full workshop, including the Vice Chief of Naval Operations, Admiral William Moran, USN. The slides represent the agreed-upon findings of each group. The narratives, in contrast, attempt to capture discussions and conclusions on the basis of notes taken at the sessions. Although the narratives were drafted by individuals, the members of each working group had opportunities to comment on their narrative following the workshop. While not claiming to represent an absolute consensus, the report reflects every effort to come close to a common view of what was discussed. Each group was allowed the discretion to brief and discuss its proceedings and findings in the way its members judged best. Despite core commonality, the narratives and briefings of chapters 2, 3, 4, and 5 are not strictly uniform in approach, style, or content, but reflect the individualities of each group. In certain cases, they deviate considerably from the guidance provided in the starting precepts, going far beyond, for example, the original concept of a *porcupine strategy* or a *mobile barrier*.

CONSOLIDATED RECOMMENDATIONS

Since the workshop was not designed to form a consensus across groups and did not seek to prioritize recommendations, a consolidation of these recommendations does not reflect an order of precedence or relative degree of achievability.

However, Group 1 did create a *scattergram* (also called a *scatter graph* and *scatter plot*) that illustrates their recommendations on axes of difficulty (of achievement) versus effectiveness (in potential outcome). This indexed graphic not only effectively illuminates Group 1 discussions, but provides a potential plan of action for countering Russian "gray-zone" activities in the European region. It is contained in the briefing slide section of chapter 2.

Recommendations from other groups are not necessarily well represented by scattergrams; however, it is possible to categorize all the recommendations into areas by which they could be assigned more easily for action within the Department of the Navy or Department of Defense. To place the recommendations of the four working groups within a context of Department of the Navy/Department of Defense decision-making, they have been extracted from the narratives/slides and reaggregated into the following four categories: (a) alternative strategy development, (b) alternative operational planning and capabilities, (c) acquisition and R&D reforms, and (d) organizational and personnel policy changes. Several of the recommendations could also fall within multiple categories. If they were implemented, all could have effects and require changes in all the categories.

1. James Stavridis, "The New Triad: It's Time to Found a U.S. Cyber Force," *Foreign Policy* (web edition), June 20, 2013, http://foreignpolicy.com/2013/06/20/the-new-triad.

a. Alternative Strategy Development

Group 1: *A Porcupine Strategy for Europe*

- Grow Forward-Deployed Navy Force-Europe (FDNF-E) and tailor its traditional rotational forces for deployment to specific areas within Europe/Middle East.
- Restructure the European Deterrence Initiative (EDI) away from traditional-force power-projection packages toward cost-imposing approaches (detailed in chapter 2).
- Deepen NATO cyberspace defense capabilities and enhance NATO counter-messaging centers.
- Formalize procedures to allow swift formation and deployment of "coalitions of the willing" for situations outside of NATO purview or when NATO will not act. In support of this, experiment with subregional organizations to complement NATO efforts.
- Conduct strategic communications and information operations into Russia to disseminate Western values and truths, while better illuminating Russian actions.
- Stop avoiding contested international seas and airspace—without being unduly provocative—to preserve the current rules-based international order.

Group 2: *A Mobile Maritime Barrier in Asia*

- Avoid an *initial* high-end maritime battle within the first island chain, and then operate within the first island chain under carefully considered and delineated conditions.
- Extend the U.S.-Philippines mutual defense treaty to include the Philippine claims of their exclusive economic zone (EEZ).
- Continue the U.S.-Japanese annual navy-to-navy ANNUALEX events, moving the location to west of the Ryukyu Islands.
- Employ a system of missiles, mines, and unmanned systems, at sea and ashore, to establish land-based batteries across island chains in the Pacific for choke point control and denial and localized sea control and denial.
- Consider maritime forces as conducting "nonplatform-centric warfare" or "launch-platform" warfare, under which anything that can launch an unmanned system, weapon, or sensor is considered a warship (rather than the "platform-based" war at sea characteristic of World War II).
- Develop and deploy a U.S. maritime militia.
- Address the speed of escalation and the control of that speed as an inherent part of the military competition.
- Manage national hedging strategies to encourage allies and partners to deploy maritime militias even in the face of questionable levels of cooperation with the Philippines, Malaysia, Thailand, and others.

- Increase U.S. Coast Guard and allied coast guard operations in East Asian waters.
- Increase presence in port facilities in Vietnam, Indonesia, and other nations (and political leverage in those countries), thereby forcing China to face third-nation considerations in actions against the United States.
- Improve facilities in the Marianas, Palau, and Micronesia as logistics bases for U.S. and allied actions within the second island chain.

Group 3: *The New Conventional Triad*

- Develop a coherent strategy for the development and employment of the new conventional triad of SOF-like fleet/unmanned systems (UsX)/cyber.
- Integrate UxS as an integral element of distributed maritime operations (DMOs).
- Ensure that the Force Structure Assessment implements the new conventional triad.

Group 4: *Organizing for National Defense*

- Develop an integrated, whole-of-government national security strategy based on a national security threat analysis, aligned with a unified national security budget.

b. Alternative Operational Planning and Capabilities

Group 1: *A Porcupine Strategy for Europe*

- Bolster NATO force integration units (NFIUs) and Multinational Division-Southeast (MND-SE) Headquarters, including the use of theater special operations command (T-SOC) planning and execution processes.
- Surge greater numbers of NATO ships and aircraft into the Black Sea.
- Deploy antiship cruise missiles and air-defense systems into the Baltic and Black Seas to counter Russian power-projection capabilities.
- Openly stockpile land and naval mines in the Black Sea region while simultaneously preparing capabilities to clear straits and choke points in the event of conflict.
- Deploy nationwide warnings and message-dissemination "apps" to produce "crowd-sourced" information and to fight against disinformation.
- Use mountain or underground facilities to harden key command and control, operational, and warfighting facilities and systems.
- Develop the capability to use swarming tactics, techniques, and technology in the gray zone and in open conflict.

Group 2: *A Mobile Maritime Barrier in Asia*

- Deploy a completely autonomous, unmanned air wing by 2023.
- Deploy a completely autonomous, unmanned surface and subsurface action group by 2028.
- Develop a seabed-warfare capability (more than MIW, ASW, or USW), constructive and destructive, for attack and defense.
- Develop and deploy containerized missiles and drones for placement on vessels other than USN warships.
- Develop a full range of capabilities for deception operations and decoys.

c. Acquisition and R&D Reforms

Note: All working groups identified the need for significant—and severe—acquisition reform.

Group 1: *A Porcupine Strategy for Europe*

- Increase maritime SOF training and capability development (particularly for gray-zone operations).

Group 2: *A Mobile Maritime Barrier in Asia*

- Stop purchasing and deploying short-range aircraft.
- Stop building and deploying high-signature surface warships and support ships.
- Stop acquiring systems that must rely on forward-located shore bases.
- Trade off new platforms to develop and deploy advanced, survivable 21st-century battle-management capabilities, to include targeting, weapon-target pairing, advanced tactical decision aids, and information cloud.
- Make the *Kennedy* the last CVN and procure air-capable ships of different types. (Note: This will still allow the Navy to have seven CVNs in the fleet through 2047.)
- Increase the payload-to-platform ratio on all warships, especially SSNs, with the use of towed payload modules.

Group 3: *The New Conventional Triad*

- Embrace prototyping, use commercial development, and focus experimentation on the elemental capabilities for the new conventional triad of SOF-like fleet/UsX/cyber.
- Increase CRADAs with commercial AI businesses.

- Integrate capabilities for the new conventional triad, fully develop TTP, enable prototype transitions, and protect from traditional Program of Record (POR) acquisition-management procedures.

d. Organizational and Personnel Policy Changes

Group 1: *A Porcupine Strategy for Europe*

- NATO: Delegate greater military response authorities to Supreme Allied Commander Europe (SACEUR) and streamline the North Atlantic Council's decision-making processes, all to allow for faster force generation and more-timely action.
- Integrate law-enforcement authorities and capabilities to better detect and act against provocations in the gray zone.
- NATO: Stop investments by some nations in procurement of traditional large ships, aircraft, and ground forces. Instead, encourage the procurement of small, inexpensive-but-lethal platforms, such as suicide drone boats and unmanned aerial vehicles (such as Israel's Harpy weapons).
- Stop using predictable deployment patterns and locations by avoiding "heel-to-toe" deployments.

Group 2: *A Mobile Maritime Barrier in Asia*

- Take an expanded view of artificial intelligence, as an ecosystem within which the Navy and its decision makers operate, rather than holding to a view that artificial intelligence is merely another platform or technology.
- Open critical technical specialties to midcareer accessions.
- Ensure promotion is based on competence (i.e., decouple promotion from longevity).
- Make Mandarin or Russian a required major for selected USNA/NROTC midshipmen (and/or require all midshipmen to take courses in one of those languages).
- Ensure that foreign affairs officers (FAOs) have a competitive career path.
- Educate personnel in the "new" specialties of AI, information warfare, and robotics.

Group 3: *The New Conventional Triad*

- Establish a cross-Navy strategic/asymmetric thinking unit to address the new conventional triad of SOF-like fleet/UsX/cyber, and assess execution across programs.
- Increase the capabilities of OPNAV N9I to ensure that the Force Structure Assessment implements the new conventional triad.

- Mandate that cyber threats be incorporated into all wargaming scenarios.
- Mature the inclusion of AI as a tool for wargaming.

Group 4: *Organizing for National Defense*

- Institute a "National Security Service" to create a career process that promotes maximum interagency knowledge and experience and fosters cooperation between personnel assigned to different agencies.
- Develop national security SES/flag officers: well-rounded, senior DoD leaders capable of integrating whole-of-government approaches to respond to regional and global security challenges.
- Establish regional interagency authorities (RIAs) in lieu of combatant commands and civilian-agency outposts, to include (1) a senior civilian head with deep regional experience, (2) a military deputy (the former combatant commander) with authority over U.S. military actors in the region, and (3) a civilian deputy with "regional ambassador" status and coordinating authority over country ambassadors and other civilian organizations operating within the region.

APPRECIATION

The President of the Naval War College would like to express his appreciation to all the participants for their contributions to the success of the workshop, especially the following individuals: Carolyn Harney; Karen D. Sellers; Prof. John Jackson; Dr. Anand Toprani; Dr. Richard Moss; CAPT Adam Aycock, USN; Prof. William Glenney; and Dr. David Cooper.

CHAPTER 2

A "Porcupine Strategy" for Europe

The Issue

The nation and the Navy face a resurgent, revisionist Russia that seeks to challenge aspects of the existing international order that Moscow views as impediments to its prosperity and its rightful place on the international stage. To accomplish its goals, Russia is working to enhance its buffer zones (especially into the Baltic and Black Seas), to extend its reach into the eastern Mediterranean and the Arctic, and to control energy supply routes to Europe and Asia. Moscow is enhancing its buffer zones by consolidating Russian control over Crimea, fomenting instability in eastern Ukraine, encouraging fissures in NATO and the EU, and perpetuating frozen conflicts along its periphery. Moscow also seeks the "Finlandization"[2] of the Black and Baltic Sea countries, peeling these former Soviet and Warsaw Pact nations—and possibly Turkey—away from the West and NATO.

Although Russia may use forms of indirect and diverse long-distance forms of coercion, such as using energy resources as a lever, it likely does not have territorial ambitions in EU and NATO countries. Likewise, Moscow's pursuit of control over energy markets is tied to its desire for domestic stability, since much of its economy and the government's budget depend on exports of petroleum and natural gas. The concept of *hybrid warfare* and the threat of the use of tactical nuclear weapons to force conflict termination on terms favorable to Russia appear to be parts of the Russian approach.[3] Investments in international energy and the Arctic and procurement of the assets needed to protect those investments may be viewed as parts of Moscow's holistic approach to using all elements of national power.

The Questions

How does the U.S. Navy prepare itself to succeed in a 30-year competition with Russia in Europe? What roles does the Navy play in supporting the U.S. national interest in maintaining the rules-based global order in the face of the Chinese and Russian national interests in a power-based global order in which concepts of balance of power and spheres of influence prevail?

Ends: Assure, Deter, and Compel

Assure Allies and Partners—and Russia

Central to assuring allies and potential partners is the continuance of the U.S. commitment to maintain and strengthen the rules-based international order, and doing so in the face of the power-based global order that Russia and China are pursuing. The United States will continue

2. This term refers to the post–World War II situation in which Finland favored, or at least did not oppose, the Soviet Union in the economic and foreign policy spheres without being politically aligned to Moscow.
3. The point in any conflict at which Russia would consider using tactical nuclear weapons is a point of analytical contention. Terms used in this debate include *escalate to deescalate* and *escalate to terminate*.

to respect the rights of sovereign nations to choose their own political, defense, and economic relationships. In addition, the United States will foster respect for international laws and norms, including freedom of navigation and the high seas.

In addition to assuring allies and partners, the United States will work to assure Russia that the United States does not pose a demonstrable threat to Russia and will not act to undermine Russian internal stability. Likewise, the United States should convince Moscow that Russia has options other than becoming a "resource colony" for China.

The United States will work to safeguard the security of its allies and partners. In part, the United States can promote collective security by setting conditions that enable NATO and the European Union to spend more on defense, and by ensuring guarantees under article 5 of the North Atlantic Treaty.

Deter Russia

Even as the United States is reassuring Russia, it also should deter some aspects of Russian behavior that are attempting to impose Russia's will, and in so doing to limit the national sovereignty and freedom of other states.

Deterrence will be applied to prevent subversion and threats of escalation in gray-zone actions (i.e., situations in which military or paramilitary coercion is used, but cannot necessarily be attributed to Russia) that undermine NATO and other U.S. allies and partners. Actions will include specific counters to prevent Russian manipulation of supervisory control and data acquisition (SCADA) systems outside of Russia. Of particular importance will be deterring Russian actions aimed at separating Turkey from NATO.

Actions will be taken to delegitimize the concepts of *spheres of influence* and *areas of privilege,* as these concepts undermine the independence of nations and groups within those spheres and areas, and are an effort by Moscow to codify a "new normal" of dominance of its "near abroad."

Actions will be taken to deter Russian employment of overt military force as a traditional form of aggression, and other actions by Russia to neutralize maritime border states in the Baltic and Black Sea regions.

Compel Russia to Stop

Recognizing that assurance and deterrence of Russia may not be sufficient, the United States must have a set of capabilities and be ready to act to compel changes in Russian behaviors that contradict international norms. Specific behaviors that must stop include:

- Efforts to limit freedom of navigation (FON) and overflight operations in international waters and airspace, with a particular focus on stopping unsafe intercepts of foreign aircraft and dangerous overflights of NATO warships.
- Jamming radio broadcasts, cellular networks, global positioning systems, and civilian communications within neighboring states, especially during nearby Russian military exercises.

- Intruding into and interfering with domestic political systems and processes in other nations through cyberspace and disinformation campaigns.
- Fomenting unrest in neighboring states through actions by pro-Russian ethnic groups and mercenaries.
- Using energy and energy infrastructure control as a political and economic weapon.

Means

The means to carry out the porcupine strategy for Europe are not in and of themselves new, consisting as they do of a combination of conventional forces, SOFs, and cyberspace forces, all creating a competitive advantage by exploiting disruptive technologies that have been emerging from continual organizational innovation across the Department of Defense. In conventional terms, what is new is using all three forces in a coherent manner to execute the "ways" discussed below.

Ways

The series of "ways" are best addressed by the concepts of *continue, commence,* and *cease*.

Continue
The Navy should continue and grow its Forward Deployed Navy Force-Europe (FDNF-E) and tailor its traditional rotational forces for deployment to specific areas within Europe and the Middle East.

DoD should continue the European Deterrent Initiative (EDI) with investments in infrastructure, prepositioned capabilities, expanded training of combined forces, and rotation of U.S. forces. At the same time, the United States should restructure EDI away from traditional-force power-projection packages toward cost-imposing approaches through use of SOFs, electronic attack, suppression of air defenses, strike demonstrations, emplacement capabilities for improvised explosive devices, deployment of antitank weapons, training of civil-military and paramilitary forces to prevent Russian destabilization efforts, and development of civilian "total defense" resistance and resilience capabilities.

NATO should bolster NATO force integration units (NFIUs) and Multinational Division-Southeast (MND-SE) Headquarters, including the use of theater special operations command (T-SOC) planning and execution processes, to enhance NATO capabilities.

NATO should deepen cyberspace defense capabilities and enhance counter-messaging centers to project Western values and proactively provide real, truthful information to counter Russian activities.

Commence

In recognition that current U.S. capabilities and actions are not sufficient for the future, the following capabilities and activities should be started:

- Surge greater numbers of ships and aircraft into the Black Sea.
- Deploy antiship cruise missiles and air-defense systems into the Baltic and Black Seas to counter Russian power-projection capabilities. Openly stockpile land and naval mines in the region, while simultaneously preparing capabilities to clear straits and choke points to prevent Russian attempts to close off these waterways or clear them in the event of conflict.
- Enhance the readiness of NATO member forces, delegate greater military-response authorities to Supreme Allied Commander Europe (SACEUR), and streamline the North Atlantic Council's decision-making processes, all to allow for faster force generation and more-timely action. Pursue organizational innovations and implement enhanced systems to ease command and control, planning, information sharing, and crisis response.
- Formalize procedures to allow swift formation and deployment of forces from "coalitions of the willing" for situations outside of NATO purview or when NATO will not act. In support of this, experiment with subregional organizations to complement NATO efforts.
- Streamline U.S., NATO, and allied cyberspace and information operations planning and approval processes, allowing more-effective employment of offensive cyberspace and information capabilities to dissuade adversary actions and to impose fiscal and social costs on any adversary.
- Deploy nationwide warnings and message-dissemination "apps" to produce "crowd-sourced" information and to fight against disinformation.
- Conduct strategic communications and information operations into Russia to disseminate Western values and truths, while better illuminating Russian actions to disrupt U.S. and allied domestic political processes and to expose the corruption of Russian leaders.
- Distribute and disperse logistics facilities and capabilities to enhance their defense and system resilience.
- Use mountain or underground facilities to harden key command and control, operational, and war-fighting facilities and systems.
- Implement comprehensive civil-defense actions to minimize casualties and maximize resilience and recovery, should combat occur.
- Develop the capability to use swarming tactics, techniques, and technology in the gray zone and the fight, should it occur.
- Increase maritime SOF training and capability development.
- Integrate law-enforcement authorities and capabilities to better detect and act against provocations in the gray zone.

- Simplify acquisition rules and processes to speed development and deployment of new capabilities and greater capacities.

Cease
The group identified three current actions that should cease:

- Stop investments by some nations in procurement of traditional large ships, aircraft, and ground forces because they consume precious resources, yet the capabilities or capacities they provide may not needed. Instead, encourage procurement of small, inexpensive, but lethal platforms, such as suicide drone boats and unmanned aerial vehicles (such as Israel's Harpy weapons).
- Stop avoiding contested international seas and airspace—without being unduly provocative—to preserve the current rules-based international order.
- Stop using predictable deployment patterns and locations by avoiding "heel-to-toe" deployments.

Figure 1 displays a notional set of "ways" that Group #1 articulated, arranged to portray difficulty versus effectiveness. The placement of any particular "way" is for illustrative purposes only; that "way" could be adjusted on the basis of a more detailed review.

Conclusion

The Navy's ability in the future to meet the demands of U.S. national security interests depends on establishing a maritime strategy and making requisite changes in Navy culture to maintain a deterrence and war-fighting edge over Russia in a 30-year competition in the gray zone and in conventional and nuclear environments. Such changes should enable the United States to assure, deter, and compel in Europe and against Russia as a peer military and a peer nation.

PNWC Remarks

- The working group findings can be translated specifically into a "porcupine strategy" by NATO members in the Black Sea region.
- Making Russian attempts to coerce NATO members more expensive (in multiple dimensions) and countering Russian active measures would complement NATO's current posture (such as Aegis Ashore in Romania) at relatively low cost.

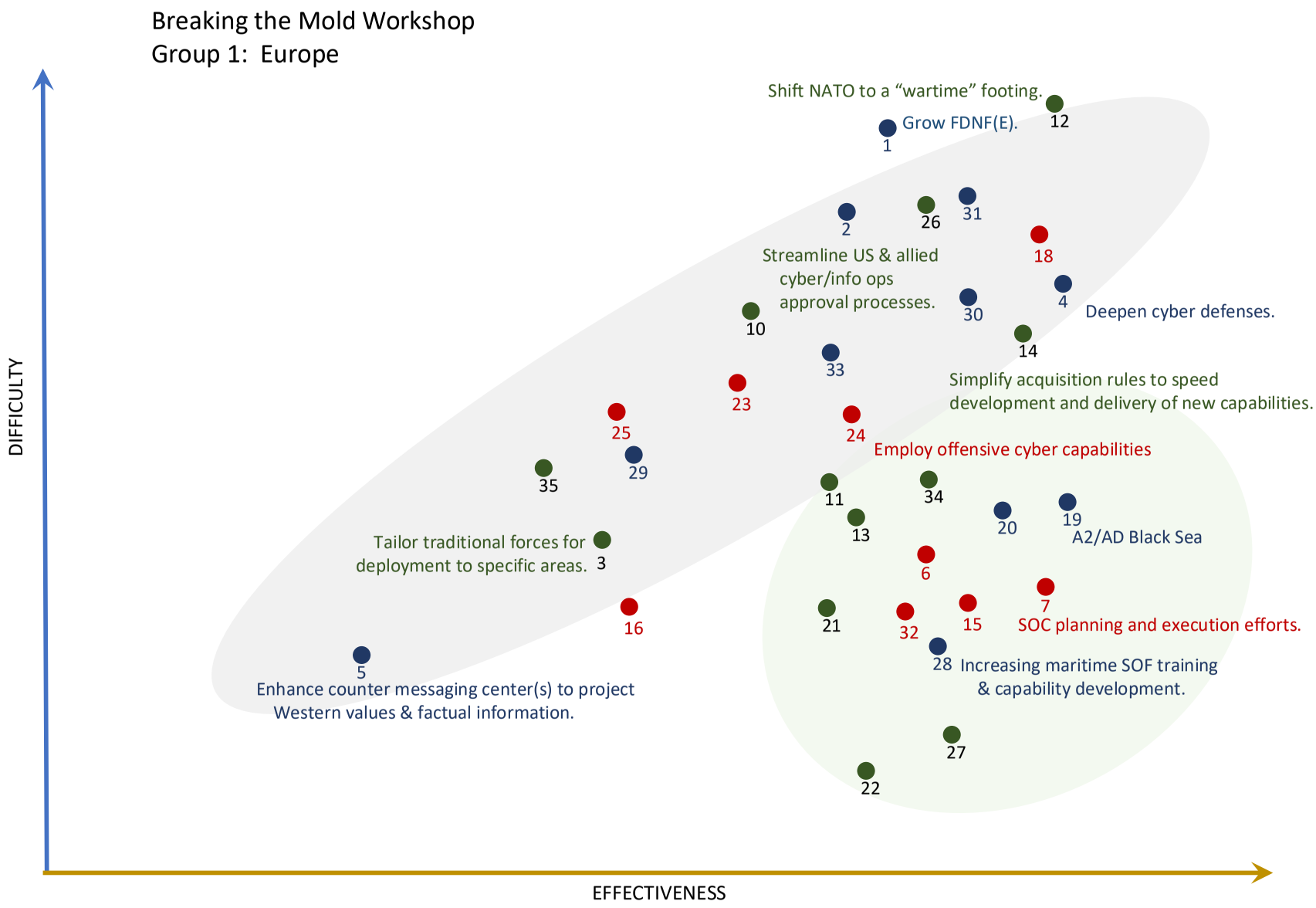

Figure 1: Potential "Ways" to Employ a "Porcupine Strategy" for Europe

	Continue
1	Grow FDNF(E).
2	Continue European Defense Initiative (EDI) in Baltics.
3	Tailor traditional forces for deployment to specific areas.
4	Deepen cyber defenses.
5	Enhance counter messaging center(s) to project Western values & factual information.
6	Employ SOF T
7	SOC planning and execution efforts.
8	Stand up NFIUs (NATO Force Integration Units) and MNF(SE) HQ.
	Commence
9	Delegate greater military response authorities to SACEUR.
10	Streamline NAC's decision making processes to prompt timely action.
11	Formalize procedures to swiftly build and deploy "coalitions of the willing."
12	Shift NATO to a "wartime" footing.
13	Implement processes to take action via groups of like minded NATO nations.
14	Simplify acquisition rules to speed development and delivery of new capabilities.
15	Surge greater numbers of ships into Black Sea to challenge Russia claims.
16	Expose Russian leadership corruption.
17	Conduct cyber intrusion into Russia to disseminate Western values and truths.
18	Apply swarm technologies and tactics
19	Deploy & distribute ASCMs & AD systems to project A2/AD capabilities over Western Black Sea to counter Russian power projection efforts.

20	Stockpile – and advertising stockpiling of land and sea mines.
21	Extend law enforcement authorities to allow arrest of potential provocateurs.
22	Implement enhanced information sharing systems to facilitate C2 and planning.
23	Conduct cyber operations to further messaging and gather intelligence.
24	Employ offensive cyber capabilities to impose costs and dissuade adversary offensive cyber operations.
25	Employ asymmetric means to counter adversary offensive cyber operations and publicize them.
26	Streamline US & allied cyber/info ops approval processes.
27	Better illuminate Russian efforts to disrupt allied and US political processes.
28	Increasing maritime SOF training & capability development.
29	Prepare strait clearance capabilities to prevent adversary blocking efforts.
30	Distribute logistics footprint for resiliency and protection.
31	Burying key capabilities.
32	Implement comprehensive civil defense efforts to minimize casualties.
33	Deploy nationwide warning and message dissemination "apps" to offset disinformation and provide "crowdsourced" information gathering.
34	Approve organizational innovation to ease cross boundary planning, information sharing, and crisis response efforts.
35	Experiment with sub-regional organizations to complement NATO efforts.

GREEN= POLICY BLUE= CAPACITY/CAPABILITY RED=PROCEDURE/OPS

Figure 1 (continued): Potential "Ways" to Employ a "Porcupine Strategy" for Europe

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Dr. Andrew Winner

Framing Thoughts: Russia's Intent

- Revise aspects of international order that keep it from prospering; claim its "rightful" place in the international stage.
- Wants to be recognized an a major power and to engage with the U.S. and others
- Enhance its buffer zones, extend its reach to Eastern Med, and control energy supply routes
- Consolidate its control over Crimea, & dominate Ukraine
- "Finlandize" (neutralize) Black Sea & Baltic states, "peel away" former-Soviet Union/Warsaw Pact-states and Turkey from the West
- Exploring long-distance coercion; don't think Russia has territorial aspirations against Romania
- Concepts of hybrid warfare and "escalate to terminate" – use nuclear weapons to terminate hostilities on their terms
- Investing in international energy concerns and Arctic capabilities; extending assets it needs to protect
- Pattern of coercion by energy manipulation. Employs all means of national power in a "holistic" strategy

Assure Allies & Partners

- Article 5 NATO guarantees will be fulfilled
- U.S. commitment to strengthen international order
- International norms & laws, including FON in international waters, respected
- Security of allies guaranteed and partners will be safeguarded
- Sovereign nations' right to choose their own defense & economic relationships respected
- West will not pose a threat to Russia; will promote an inclusive & respectful relationship
- Russia has options for its future other than becoming a "resource colony" of China
- West will not undermine Russian internal stability
- U.S. will respect international law constraints & not be a force for instability
- Arms control agreements will be respected
- NATO & EU will spend more on defense

Deter Russia

- Employing overt military force in traditional forms of aggression
- "Neutralization" of maritime border states
- Imposing its will & limiting national freedoms of other states
- Undermining allies & partners via subversion & threat of escalation
- Legitimizing "sphere of influence" concepts & "areas of privilege" thereby undermining states' independence
- Codifying a "new normal" that sanctions Russian dominance of its "near abroad"
- Manipulating SCADA systems outside Russia
- Working to separate Turkey from NATO

Compel Russia to Stop:

- Limiting freedom of navigation and overflight
  - ✓ Unsafe intercepts of aircraft and overflights of NATO warships
- Jamming broadcasts from neighboring states and in neighboring states
- Intruding via cyber means into foreign political systems/processes
- Fomenting unrest with pro-Russian ethnic groups in neighboring states
- Using energy as a political weapon

Means

- Conventional forces
- Special forces
- Cyber forces
- Disruptive technologies
- Organizational innovation

Ways – Continue:

- Growing FDNF(E).
- European Deterrent Initiative (EDI)
  - Infrastructure investment; Additional prepositioning; Expanded combined training; U.S. force rotations
- *But…restructure EDI away from traditional force power projection packages toward a cost-imposition strategy with…*
    - *Special Forces, Electronic Attack, SEAD / Strike demonstrations, IED emplacement capabilities, Anti-tank weapons; Civil-military/para-military force training to prevent destabilization efforts, "Total defense" civilian resilience/resistance*
- Tailoring traditional forces for deployment to specific areas
- Deepening cyber defenses
- Enhancing counter-messaging center(s) to project Western values & factual information
- Employing SOF T-SOC planning and execution efforts
- Bolster NFIUs (NATO Force Integration Units) and MND(SE) HQ

Ways – Commence (1):

- Enhancing readiness of NATO member forces for faster force generation
- Delegating greater military response authorities to SACEUR
- Streamlining NAC's decision-making processes to prompt timely action
- Formalizing procedures to swiftly build and deploy "coalitions of the willing"
- Simplifying acquisition rules to speed development and delivery of new capabilities
- Surging greater numbers of ships into Black Sea to challenge Russia claims
- Conducting strategic comms into Russia to disseminate Western values and truths
- Applying swarm technologies and tactics
- *Deploying & distributing ASCMs & AD systems to project A2/AD capabilities over Western Black Sea to counter Russian power projection efforts*
- Stockpiling – and advertising stockpiling – of land and sea mines
- Integrating law enforcement authorities/capabilities to detect and counter provocations
- Implementing enhanced information-sharing systems to facilitate C2 and planning
- Exposing Russian leadership corruption

Ways – Commence (2):

- Employing offensive cyber capabilities to impose costs and dissuade adversary cyber ops
- Employing asymmetric means to counter adversary offensive cyber operations and publicize them
- Streamlining U.S. & allied cyber/info ops approval processes
- Better illuminating Russian efforts to disrupt allied and US political processes
- Increasing maritime SOF training & capability development
- Preparing strait clearance capabilities to prevent adversary blocking efforts
- Distributing logistics footprint for resiliency and protection
- Burying key capabilities
- Implementing comprehensive civil-defense efforts to minimize casualties
- Deploy nation-wide warning/message dissemination "apps" to off-set disinformation and provide "crowd-sourced" information gathering
- Organizational innovation to ease cross-boundary planning, info sharing, & crisis response
- Experiment with sub-regional organizations to complement NATO efforts

Ways – Cease:

- Investments by some states in “traditional” large ships/aircraft/ground forces
- Avoidance of contested (international) seas and airspace
- Deploying “heel-to-toe” forces by way of predictable deployment patterns

Breaking the Mold Workshop
Group 1: Europe

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CHAPTER 3

A Mobile Maritime Barrier in Asia

The Issue

The nation and the Navy are involved in a 30-year, no-holds-barred competition with a peer adversary in the western Pacific. The current international mold—the rules-based global order of the post–World War II world—has been broken by the rise of China, the reemergence of Russia, and other national-level changes. Yet with regard to sea control and power projection, the U.S. Navy remains locked in its decades-old mold for maintaining and wielding maritime power.

The Questions

How does the U.S. Navy prepare itself to succeed in a 30-year competition in the gray zone, and to deny, defend, and defeat along a continuum from inside the first island chain to the mid-Pacific? What roles does the U.S. Navy play in supporting the U.S. national interest in maintaining the rules-based global order in the face of the Chinese and Russian national interests in a power-based global order?

Assumptions

Working Group #2 assumed that the nation and the U.S. Navy, over the course of a 30+-year competition with China, would be able to *prevail* (although not necessarily winning every engagement or action)—but only if the changes delineated in this paper are made, and made quickly. The length of this competition is much longer, the intensity much stronger, and its nature more diverse than anything the United States and the U.S. Navy have experienced in over a hundred years.

China and Russia are now, or soon will become, peer military threats against which the U.S. Navy must be able to fight and prevail. Even if China does not grow into a peer *military* threat, it will become one in the *economic* realm.

The group assumed that the Navy, as the protector of the rules-based world order, would have to continue to be forward-deployed and forward-postured to succeed against a continuing-to-grow China as the primary defender of a power-based world order. Furthermore, as China grows economically, it will force a change from a world economy riding the tide of globalization to an economy driven heavily by Chinese expansionism.

The group assumed that the United States would retain its 2018 treaty allies and partners in the Indo-Asian region in the face of intense Chinese pressure, because of the strength of shared interests.

The group assumed that resource constraints will become tighter, with the budget being, at best,

flat, and more likely decreasing as the impacts of the staggering $25 trillion national debt play out.

The group assumed that over the next 10–15 years the rate of change of technology will continue to increase as the cutting edge of technology runs away from DoD and the United States moves deeper into the commercial world outside of the Western Hemisphere. The United States will not have a technological advantage, and the U.S. government will not necessarily own the technology it needs for warfighting.

The Future War

For the time horizon of this work, the nature of maritime warfare in some ways will remain the same as today, and in other ways will change dramatically. What is best characterized as high-end war at sea will remain a distinct possibility. Despite promises to the contrary regarding technology, fog, friction, and uncertainty will remain, and under many conditions will be more extreme than in the past.

Nuclear war will remain a threat, to include use of tactical nuclear weapons at sea, and even if the U.S. Navy does not use them, the Navy will need to be able to operate and fight in a battle space where others may have used nuclear weapons.

The capability of state and nonstate forces to mass effects without massing forces and without massing bases will continue to increase.

The lines demarcating the military from the nonmilitary increasingly will become blurred. The differences between what is ethical and what is nonethical also will blur.

The manners in which war can and will be waged will increase, to include the employment of a variety of nonkinetic electronic-warfare, information-warfare, and artificial-intelligence weapons. Frequent reference was made to the depictions and discussions contained in "Unrestricted Warfare" by Qiao Liang and Wang Xiangsui from 1999 as being more reflective of future warfare than any other document.

The application of maritime combat power will be less about traditional platforms and more about what is best called "nonplatform-centric warfare," disconnecting the combat power from the hulls. The lines will continue to blur between military members and civilians as gray-zone activities and the forces employed in those zones expand. The ladder of escalation will be steeper and have many more rungs, presenting greater challenges to the fielding of effective forces, such as maritime militia.

The changes anticipated for future competition and future warfare will precipitate a wider variety of personnel requirements to man and support the Navy, and may well require a mobilization by society and industry to meet the personnel and material demands.

The competition, and even the war, will be continuous; the level and intensity may wax and

wane, but it will be continuous. The United States and the Navy must be ready for this duration. The Navy must develop the capability to hedge against high-end maritime warfare while competing in the gray zone, space, the electromagnetic spectrum, and cyber space, and under the sea, continuously.

Recommended Approaches and Their Implications

The group's maritime strategy is to preserve U.S. geostrategic interests in East Asia, including economic, military, and political interests, through maintenance of treaty alliances and partnerships. The overall concept, for the long term of 30 years, is to compete in the gray zone and deny, defend, and defeat along a continuum of actions, and to do so from inside the first island chain out to the mid-Pacific Ocean.

To execute this maritime concept, the Navy must grow in terms of numbers of platforms and aircraft and in terms of war-fighting capabilities, and must expand its capabilities to operate as part of a joint and coalition force. The Navy must evolve from a heavily reactive posture and force into one that is proactive—almost provocative—in meeting U.S. national interests.

The Navy will focus on the maritime threat in the Pacific as part of maintaining maritime lines of influence in the region. For the U.S. Navy, Europe will become a secondary theater. Yet the combination of U.S. budgetary limits and some degree of deglobalization may increase pressures against the Navy being forward-deployed, at least to the levels and degree seen in the past five to ten years.

This concept will provide a hedge against the high-end maritime warfare outside the first island chain, allowing the Navy to optimize its strengths and capabilities. The goal will be to avoid an *initial* high-end maritime battle within the first island chain, and then to operate within the first island chain under carefully considered and delineated conditions.

The DoD and the Navy will act to vastly improve the maritime capabilities of allies and partners in the region through continued U.S. investment, coupled with maximum investment by those allies and partners. Disruptive technologies and unmanned systems will be a critical aspect of these investments.

In addition, it will become more important that actions taken and decisions made by the United States in the face of nearer-term challenges do not foreclose options needed to be prepared for the longer term and for options needed to gain an advantage over the 30-year duration of competition.

The Navy will develop and conduct options to impress U.S. intentions on China by, for example, extending the U.S.-Philippines mutual defense treaty to include the Philippines' claims of their exclusive economic zone (EEZ) and continuing to conduct the U.S.-Japanese annual navy-to-navy ANNUALEX events, moving the location to west of the Ryukyu Islands. These options will be pursued with the full understanding that China will object vigorously—diplomatically, economically, and quite likely militarily—against these allies and partners, and likely directly against the United States.

The United States will strive for continued allied and partner support and participation to deny China sanctuary within the Yellow, East China, and South China Seas. In addition to developing and deploying low-cost maritime capabilities as necessary to maintain presence inside the first island chain and prevent the emergence of a sanctuary there, the United States and its allies and partners will signal China continuously in this regard.

Key Competitor's Likely Responses

The group's assessment was that, regardless of the actions taken by the Navy, and probably by the United States, these actions are unlikely to deter or change China's long-term plans with regard to the United States, with the result still being a fully modernized PLA and PLA(N) by 2049 or earlier. At the same time, it is likely that China will increase the speed of development and investment in military modernization and economic expansion as the international situation evolves over the next 30 years.

The Chinese will increase the use of political intimidation and economic and military pressure against U.S. allies and partners—specifically the Republic of Korea, Japan, the Philippines, Singapore, Vietnam, Malaysia, Thailand, and Australia—all to attempt to counter the U.S. strategy.

Any actions by the United States and its allies and partners that appear to change the strategic environment within the second island chain will be interpreted as threatening the power of and domestic control by the Chinese Communist Party, or as weakening Chinese sovereignty within the first island chain. This likely will cause the Chinese to react significantly and noticeably.

Arguably more important than the reaction by the Chinese will be reactions by U.S. allies and partners to U.S. actions and actions by the other allies and partners (e.g., what would be the reactions of Indonesia and the Philippines to actions by the U.S. and Japan?).

Ideas to Break the Navy Culture

The group's view was that the potential future environment and the demands placed on the Navy require that the existing Navy culture—as reflected in its capabilities and its maritime strategy—be changed in terms of its investments and divestments, as well as its approach to the 30-year competition.

Invest and Divest to Deny, Defend, and Defeat
With the potential future war-fighting environment and the need for different capabilities, the current Navy POM and related 30-year shipbuilding plan are not sufficient for the future. Not only are new investments necessary, but new divestments also are needed. Ideas to invest and divest to deny, defend, and defeat include:

- Stop purchasing and deploying short-range aircraft.
- Stop building and deploying high-signature surface warships and support ships.

- Stop acquiring systems that must rely on forward-located shore bases.
- Trade off new platforms in order to develop and deploy advanced, survivable, 21st-century battle-management tools, to include targeting, weapon-target pairing, advanced tactical decision aids, and information cloud.
- Make *John F. Kennedy* the last CVN and procure air-capable ships of different types. (Note: This will still allow the Navy to have seven CVNs in the fleet through 2047.)
- Deploy a completely autonomous, unmanned air wing by 2023.
- Deploy a completely autonomous, unmanned surface and subsurface action group by 2028.
- Develop a seabed-warfare capability (more than MIW, ASW, or USW), constructive and destructive, for attack and defense.
- Increase the payload-to-platform ratio on all warships, especially SSNs, with the use of towed payload modules.
- Develop and deploy containerized missiles and drones for placement on vessels other than USN warships.
- Develop a full range of capabilities for deception operations and decoys.
- Employ a system of missiles, mines, and unmanned systems, at sea and ashore, to establish land-based batteries across island chains in the Pacific for choke point control and denial, and localized sea control and denial.
- Consider the maritime force as conducting "nonplatform-centric warfare" or "launch-platform warfare," in which anything that can launch an unmanned system, weapon, or sensor is considered a warship, rather than the "platform-based" concept of war at sea, as in World War II. The entities of vehicles, weapons, and sensors should be considered more important than the traditional platforms.
- Take an expanded view of artificial intelligence as an ecosystem within which the Navy and its decision makers operate, rather than holding to a view that artificial intelligence is merely a platform or another technology.
- Educate personnel in Chinese languages. Make Mandarin (and Russian) required majors for selected USNA/NROTC midshipmen and/or require all midshipmen to take courses in Mandarin (or Russian).

Competing in the Gray Zone for 30 Years

Competing in the gray zone, and doing so for three decades, requires a different mind-set and approach to maritime activities than the U.S. Navy has used. The Navy should:

- Develop and deploy a U.S. maritime militia.
- Address speed of escalation, and control of that speed, as an inherent part of the competition.

- Manage national hedging strategies to encourage allies and partners to deploy maritime militias, even in the face of questionable levels of cooperation with the Philippines, Malaysia, Thailand, and others.
- Increase U.S. Coast Guard and allied coast guard operations in East Asian waters.
- Increase presence in and political leverage through port facilities in Vietnam, Indonesia, and other nations, thereby forcing China to face third-nation considerations in actions against the United States.
- Improve facilities in the Marianas, Palau, and Micronesia as logistics bases for U.S. and allied actions within the second island chain.
- Educate personnel in the "new" specialties of AI, information warfare, and robotics.
- Ensure promotion cycles are based on competence (rather than longevity).
- Consider opening skilled technical billets to midcareer hires.
- Ensure that foreign affairs officers (FAOs) have a competitive career path.

Conclusion

The Navy's ability in the future to meet the demands of U.S. national security interests is tied to a maritime strategy and requisite changes in Navy culture that allow success in a 30-year competition in the gray zone, and denying, defending, and defeating along a continuum from inside the first island chain to the mid-Pacific against China as a peer military and nation.

PNWC Remarks

Although the image of a "maritime Maginot Line plan" may seem paradoxical to those who view such a defense as failure, the actual Maginot Line was never penetrated by the Germans; they needed to outflank it to engage the Allied forces. A mobile maritime barrier could function the same way, by forcing the PLA to forgo attempting to build a global navy and confine their ambitions to the land.

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Dr. Sam Tangredi

Assumptions

- Decreasing budget: resource constraints
- Must be able to compete forward with naval power with China, whose ability will continue to grow (Rules-based order is part of US existential calculus)
- US will retain our current treaty allies in Asia, in face of Chinese competition, with shared interests
- TOT is ~30 years, during which the US is able to compete
- 10-15 years for budget, technology: rate of change will continue to go up
- US will be able to compete with China over the 30-year period, but only with required changes

The Future War

Ways War Will Change

- Increasing ways to wage war, e.g., non-kinetic (EW, IW, AI)
- Non platform-centric warfare
- Gray forces: blurring of military/civilian sectors
- Different personnel requirements: mobilization required for personnel/industry
- Steeper escalation ladder

Ways War Will Remain War

- High end war at sea will remain
- Fog/friction/uncertainty will remain
- Nuclear war will remain a threat
- Increased ability to mass effects without mass bases e.g., CVs, land)

Recommended Strategies & Their Implications

Recommendations

- Navy must grow in numbers and capabilities

*Preserve US geostrategic interests in East Asia: economic, military security, political through treaty allies

- Navy focus on maritime threat in the Pacific as part of maintaining maritime line of influence (Europe as secondary theater)
- Continue/vastly improve allied maritime capabilities with maximum indigenous investment
- Hedge against high-end maritime warfare outside the First Island Chain—optimize Navy's strength
- Develop and conduct options to impress US intentions on China (e.g., extend US-RP mutual defense treaty to include Manila's claims in the Philippines' EEZ as falling under US-RP mutual defense treaty; Conduct Annualex west of the Ryukyus)
- **Tie future investments to strategic maritime concept is to compete in the Gray Zone: deny, defend, defeat along a continuum from inside the First Island Chain to mid-Pacific**

Implications

- Disruptive technologies, unmanned systems will prevail
- US must have continued allied support/participation to deny the three seas from becoming Chinese sanctuary—and Beijing thus signaled
- US avoid initial high-end maritime battles; operate inside First Island Chain only under carefully delineated conditions
- Develop and deploy the low-cost systems necessary to maintain US/Allied presence inside First Island Chain
- USN will have to operate as part of a joint force
- China will object vigorously diplomatically and economically against the Philippines and to a degree the US

Key Competitor's Likely Responses

- Unlikely to change/deter China's long term plans with the US (i.e., fully modernized PLA by 2049)
- Chinese will react significantly and noticeably to change in the strategic environment within the Second Island Chain interpreted as a threat to their national security interests: maintaining CCP in power, guarding claimed Chinese sovereignty inside the First Island Chain
- China will increase speed of/investment in military modernization and economic expansion
- Beijing will increase efforts through political intimidation and economic/military pressure against US allies/partners–ROK, Japan, RP, Taiwan, Singapore, Vietnam, Malaysia, Thailand, and even Australia

Implications for Naval Education Review

- Promotion cycle must be based on competence, not just tenure (except in rare instances for the latter)
- Open billets to mid-career hires (military and civilian sources)
- Change incentives for officers to attend PME as well as their instructors
- Educate personnel in the "new" specialties, such as AI/IW/EW/Cyber/Robotics....
- Educate personnel to learn Mandarin or Cantonese and ensure FAO is a competitive career path
- Make alternative required major for USNA/NROTC students Mandarin/Cantonese as well as engineering/sciences

Ideas to Break the Culture: Invest/Divest to Deny, Defend, Defeat

- JFK the last CVN (7xCVN in the fleet until 2047…air-capable ships will continue)
- Halt purchasing short-range aircraft; halt high-signature surface vessels; halt acquiring systems requiring forward shore bases
- Plan to deploy a completely autonomous (unmanned) air wing within 5 years
- Plan to deploy a completely autonomous surface and sub-surface action group within 10 years (UUVs, USVs)
- Seabed warfare capability, both constructive and destructive
- Increase payload to platform ratio: e.g., SSN-towed payload modules as part of trade-off with SSNs
- Employ containerized missiles and drones on atypical craft
- Employ joint missile/mine/drone forces (sea and shore-based) to establish island chain batteries (choke point denial)
- Trade-off advanced platforms to achieve advanced, survivable 21st century battle management

Ideas to Break the Culture: Competing in the Gray Zone

- Managing national hedging strategies to encourage allied nations to deploy maritime militias (allowing for questionable cooperativeness of RP, Malaysia, Thailand, ...)
- Increase USCG and Allied CG units in East Asian waters
- Increase presence/leverage with port facilities in Vietnam, Indonesia
- Improve facilities in Marianas and Palau as Second Island Chain logistics bases

CHAPTER 4

The New Conventional Triad: A SOF-Like Fleet/Service, Unmanned Systems, and Cyber

Introduction

Shortly after Iraq invaded Kuwait in 1990, the UN Security Council imposed sanctions against Iraq through Resolution 661. With these new authorities, the Navy went to work in the Northern Arabian Gulf (NAG). The mission—sea control or blockade—might not have been new, but there were new challenges, such as those presented by the use by the adversary of cellphones and GPS, which required adaptation, innovation, and the right support to succeed. The Navy rose to the challenge. One could argue that the whole of the government rose to the challenge, if the diplomatic successes and the efforts in admiralty claims are also considered.

Fast forward to the Global War on Terror and the last ten years. This conflict has been dominated by special operations forces (SOFs). In the crucible of constant combat, SOFs have advocated for, and received, authorities for a more efficient acquisition process. They have developed tactics, techniques, and procedures that support agile operations. Embracing technology, they have become the most lethal human-machine weapon on the planet. And they have developed a professional culture that rewards (because it requires) innovative thinking. The challenge for the rest of the Navy—the institution and the fleet together—is to become "SOF-like." The fleet can do it, with institutional support, as it did "back in the NAG." According to the new National Defense Strategy and the latest Program Objective Memorandum (POM), the nation not only expects it but is putting the resources it can behind the effort. How must the Navy—the fleet and the overall institution—change?

The Issue

We are in a simmering war—operating phases of complex warfare—worldwide. The mold of our post–WWII global system is being broken, regardless of our involvement (or lack of involvement) in the process. Current acquisition processes and levels of resource allocation are neither aligned nor agile enough to effectively counter current adversary efforts. Nor can they prepare the fleet for the full spectrum of future conflicts in an innovative fashion. A new course must be set and a higher speed of advance achieved if the Navy is to remain a viable tool for the nation in future competitions and conflict.

The Questions

How do we take the lessons of the last decade from our most seasoned, combat-effective, and successful forces (i.e., SOFs) and apply them to the Navy's institutional processes and the fleet's culture to create a Navy that is as reactive, agile, and effective as SOFs; that capitalizes on the potential for cost-effective results from an integrated unmanned system (UxS)-human fleet; and

that incorporates systemic cyber resilience while also providing offensive and defensive cyber capabilities?

Discussion

> "You go to war with the army you have, not the army you might want or wish to have at a later time."
> *~ Former Secretary of Defense, the Honorable Donald Rumsfeld*

We know today that there will be future conflict. We know that the current and future fleet is likely not optimized for that future conflict. While the former SECDEF's words will always ring true, we can mitigate the negative effects of this inevitability by taking the rudder in hand today and shaping a better course for the future fleet. As it turns out, we have done this before.

Consider the challenge Marines overcame on November 25, 2001. More importantly, consider the tools the Marines had available that enabled them that day to conduct an amphibious assault more than 400 miles inland, taking the Taliban (and the world) by surprise. No beachhead was established—amphibious doctrine was thrown out the porthole. However, the conditions had to be set to make such a daring endeavor conceivable. Marine amphibious units were given additional special operations training. Capabilities such as inflight refueling were developed. Equipment, such as fuel bladders, were deployed. And most importantly, the culture throughout the Corps had been shaped to create a more SOF-like attitude, rather than a "storm the beach and catch bullets" attitude.

Wikipedia states that the purpose of the nuclear triad is "to significantly reduce the possibility that an enemy could destroy all of a nation's nuclear forces in a first-strike attack; this, in turn, ensures a credible threat of a second strike, and thus increases a nation's nuclear deterrence." Realizing a need in the short, medium, and long terms to create effects that can deter an adversary (or adversaries), a new triad of capabilities must be developed to keep the Navy, and therefore the nation, relevant in global affairs. The new triad is:

- A SOF-like fleet/service. This is about people and culture.
- Unmanned systems (UxS). This is about platforms.
- Cyber. This is about electrons.

The purpose of this new triad—in effect, the future "fleet"—is to significantly reduce the possibility that an enemy could have a lasting, permanent effect on the global order; this, in turn, ensures that the Navy and the nation (and the established global order) remain viable, and thus increases our nation's resilience and deters adversary action.

Additionally, the adversary understands the American preeminence in conventional conflicts. As a result, today's adversary(ies) have developed operations for which the United States government either does not have an option, short of response with its conventional forces, or the option is politically too costly, in the domestic or international sense. Developing the new conventional

triad provides the Navy, and the nation, with the necessary response options to adversaries' current initiatives (see figure 1 below).[4]

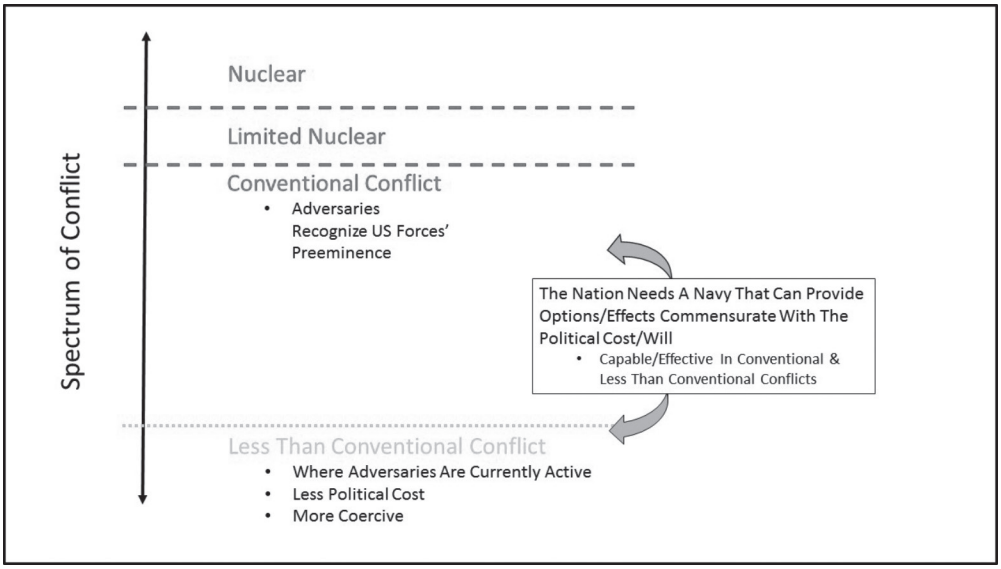

Figure 1. Modern Spectrum of Conflict

Our fleet is configured for that high-end conventional fight. As a result, many of the weapons pairings available to the fleet are not cost-effective for employment in less-than-conventional conflict. For example, a single SM-6 costs millions of dollars. Combined with the limited number of Vertical Launch System (VLS) cells in surface combatants and the competition for other weapons, such as Tomahawk, to be available, current surface combatants will not have the quantity of necessary effects available. Other solutions, such as directed energy (DE) and railgun technologies, provide affordable solutions that increase the number of rounds available at a significantly lower cost per "round," or firing. Forced to operate in the spectrum of conflict at a level that avoids confronting U.S. conventional forces, our adversaries are well aware of our weapons costs and are potentially outpacing our efforts to develop DE and railgun technologies. This appears evidenced by recent reports that China now has put to sea to test the world's first railgun. Meanwhile, the U.S. Navy's railgun—which was well ahead of China's only a couple of years ago—has been relegated to the storage yards in Dahlgren because of a lack of funding.

Next, consider the fact that the federal government no longer leads the nation in research-and-development (R&D) investment. The ratio between federal government and industry investment in R&D has essentially flipped, with industry funding over sixty cents of every investment dollar. (See figure 2 below.)

4. Derived from a discussion led by Dr. Jackie Schneider of the Center for Naval Warfare Studies, Naval War College.

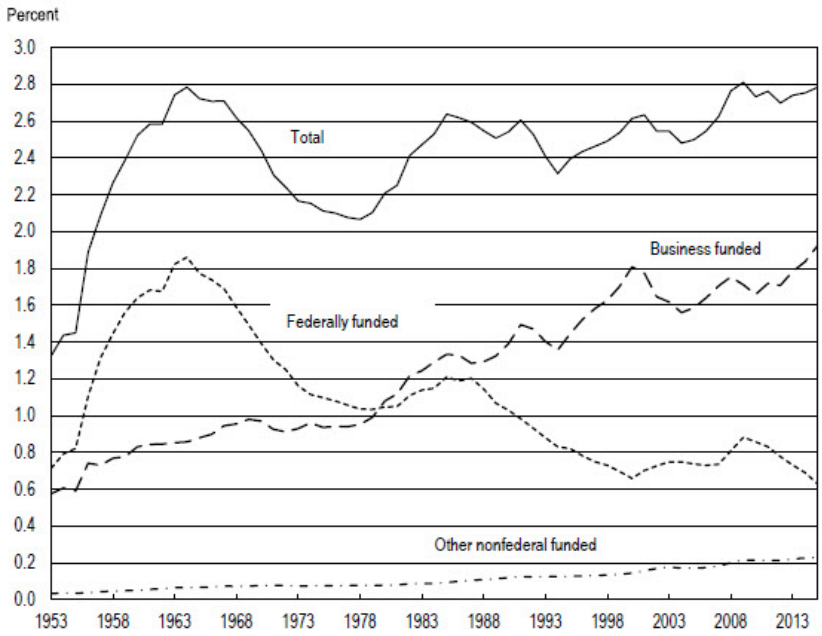

Figure 2.[5]

While there are many implications, for this discussion the salient point is that industry has capabilities that the Navy can leverage. However, this should not be done in the traditional fashion, in which the technology or capability is incorporated through Navy processes and brought into the fleet, which then goes off to the fight. Consideration should be given to making industry's R&D leaders partners in the fight. Some of those in American industry consider themselves to be in the fight already, and they have learned lessons, developed their own TTP, etc. Going into conflict with industry as a partner presents challenges with regard to authorities and access to information, but those challenges are not insurmountable.

Attributes we (should) value:

- Agility
- Physical platform constraints
- Education
- Critical thinking
- Cost-effective effects
- Distributed
- Proportionality
- EMP-hardened

5. "U.S. R&D Increased by More Than $20 Billion in Both 2013 and 2014, with Similar Increase Estimated for 2015," *National Science Foundation,* September 15, 2016, https://www.nsf.gov/statistics/2016/nsf16316/.

Assumptions/weaknesses:

- No Cold War Navy environment
- Homeland defense is of key importance
- Technology is changing rapidly
- Navy personnel system is broken
- Navy does not manage talent well
- Navy does not value education
- Poor/traditional investment strategy
- U.S. dominance is an illusion
- Navy lacks interest in new technologies
- Commercial R&D is dominant
- There is a distinction among autonomy, unmanned, and artificial intelligence—and it is not understood
- AI is not present in today's Navy
- Future engagements will look like SOF operations
- Plan on being surprised
- <3% of GDP will be spent on defense

Other points to consider:

- The fleet is a system
- Every ship is a node
- Trends should be toward more/smaller/distributed
- Combat system shouldn't know or care where the lifelines are
- Cyber doesn't care where borders are

Analysis

SOF		
As Is **(traits current SOFs exhibit that we need in the fleet/ institution**	**To Be** **(traits the future fleet/ institution should adopt from SOFs)**	**How Do We Implement?**
• Authorities • Speed • Unacknowledged • Precision • Faster flash-to-bang • Economical • Limited scalability • Phases 0, 1 & 5 • Multidimensional • Higher acceptance of risk • Q-ships	• Planning process • In plain sight • Focused/precision effects • {May not be big bang} • {May prevent big bang}	• Change culture • Integration

UxS		
As Is	**To Be**	**How Do We Develop?**
• Mostly commercial • Rigid acquisition process • Entrenched PORs resist new ideas	• Plentiful • Cheap (sort of) • Distributed • Integrated • Not perfect • Space capabilities • Open/modular	• Open/modular • Need prototype process • Evolve or die • Change acquisition process • Buy as commodity • SCN: No • Virtual/mixed reality & gaming • Training & experimenting • AI refined targeting algorithms

Cyber		
As Is **(traits of current cyber capability/forces**	**To Be** **(desired cyber capabilities/ traits)**	**How?**
• Offensive: platform agnostic • Defensive: every platform & system • Unclear C2 & integration of effects	• Ubiquitous (Red & Blue) • Supply chain vulnerability • Decomposable • Ability to operate in cyber environment • C2 & integrated effects • Clear authorities • Shared access • Systemic resilience	• Change in C2 structure • Joint • Game & exercise • Speed of light • Doctrine

Recommendations

Short-term effects:

- Establish a cross-Navy strategic/asymmetric thinking unit to address the new conventional triad to assess execution across programs
- Ensure the Force Structure Assessment implements the new conventional triad (deepen N9I)
- Develop a coherent strategy for the development and employment of the new conventional triad
- Embrace prototyping, use commercial development, focus experimentation on elemental capabilities
- Mandate incorporation of cyber threats into all wargaming scenarios
- Increase CRADAs with commercial AI businesses

Medium-term effects:

- Integrate UxS as an integral element of distributed maritime ops (DMO)
- Value the fleet as a connected/connectible entity that is able to sense, understand, affect, and adapt
- Integrate capabilities, fully develop TTP, enable prototype transitions, protect from large PORs
- Mature AI (wargaming)

Long-term effects:

- Future state: Conventional triad fully integrated as elements of a connected/connectible fleet

Conclusion

The single greatest obstacle to developing the new conventional triad—the thread that can be found in the decisions that brought us to the current reality and that prevent addressing projected future conflict—is the inflexibility of the Navy's institutional resource-allocation process. It prevents agility in acquisition processes, in developing and resourcing an essential and modern continuum of education, and in realizing potential cost efficiencies available through partnership with commercial efforts.

This must change. It must change for us to create an institution with the flexibility and agility necessary to resource a future fleet that is more SOF-like, integrated with UxS, and cyber-resilient and -capable.

PNWC Remarks

The conclusion corresponds to Under Secretary Modly's call for a focus on agility. A more agile resource-allocation process—one that is adaptable, collaborative rather than contested, and that promotes innovation—could use an iterative process to institutionalize "radical" change. If we are to be successful, change cannot be avoided. However, it need not be so disruptive as to require efforts at mediating collateral damage to combat-proven practices. The goal of "radical" thinking should include an examination of how best to implement the change, in such a way that it seems a natural evolution in capabilities. To some extent, the increase in SOFs that has occurred since 2001 *does* constitute a radically different approach to global capabilities, but it has been carried out in a way that appears to increase overall conventional capabilities. To slightly modify a traditional Chinese proverb: "About the best changes, we will say, 'We did them ourselves.'"

Working Group #3 Membership:

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Rapporteur: Dr. Robby Harris

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The New "Conventional" Triad: A SOF-like Fleet/Service, Unmanned Systems (UxS) & Cyber/AI

Background/Assumptions:

- Technology changing rapidly and beyond gov't control
- US dominance is an illusion
- Plan on being surprised
- <3% of GDP will be spent on Defense

Why: We are in a simmering war, or at least operating within some phase(s) of this complex warfare, worldwide. Said another way, the mold (our post WWII global system) is being realigned regardless of DoD's involvement (or lack of involvement) in the process.

Goal: Create tenets of a Navy that are cost-effective, proactive, agile, and precise as SOF, to capitalize on the potential of cost-effectiveness of an integrated UxS-human fleet, and that incorporates systemic cyber resilience and robust offensive and defensive capabilities.

Obstacles: Acquisition processes, mind sets, and resource allocations are neither aligned nor agile enough to effectively counter current adversary efforts or prepare for the full spectrum of future conflicts in an innovative fashion.

Recommendations

Short Term:

- Establish a cross-Navy strategic/asymmetric thinking unit to address the new conventional triad to assess the execution across programs
- Ensure the Force Structure Assessment implements the new conventional triad (deepen N9I)
- Develop a coherent strategy for the development and employment of the new conventional triad
- Embrace prototyping, use commercial development, focus experimentation on the elemental capabilities
- Mandate cyber threats incorporated into all wargaming scenarios
- Increase CRADAs with commercial AI businesses

Medium Term:

- Integrate UxS as an integral element of Distributed Maritime Ops (DMO)
- Value the Fleet as a connected/connectible entity that is able to sense, understand, effect, adapt
- Integrate capabilities, fully develop TTP, enable prototype transitions, protect from large POR
- Mature AI (wargaming)

Long Term:

- Future state: Conventional Triad fully integrated as elements of a connected/connectible Fleet

Promote people who get out in front of UxS, cyber, and SOF-like capabilities/culture.

CHAPTER 5

Organizing for National Defense

Background

The National Security Act of 1947 restructured U.S. military and intelligence agencies after World War II. The Act, since amended, combined with appropriations laws and other processes, has provided for ongoing changes to the overall national security organization.

There is substantial literature that considers the depth, breadth, and complexity of forecasted threats to national security and the internal challenges the national security organization faces to meet those threats effectively. Rather than adding to that considerable volume of work, the group focused on exploring a few key practical changes that would better serve not just the military, but the whole of government's national security efforts. While these changes may not seem bold individually, implementing them would serve to break the mold of the current national security construct, enabling unified, comprehensive delivery of U.S. national power and influence.

The Issue

While the National Security Strategy informs the National Defense Strategy, which in turn informs the National Maritime Strategy as well as the other service strategies, the bureaucracies created to execute these strategies and responsible for doing so—thereby providing whole-of-government solutions to address national security concerns—are not geographically or operationally aligned and synchronized. The development of effective whole-of-government responses is impeded further by overlaps in responsibilities and authorities, resulting in duplicative tasking, and sometimes gaps in roles and missions.

Issues that prevent developing, resourcing, and effectively and efficiently executing a unified national strategy include:

- An integrated strategy process that is not consistently aligned with budget development
- Agencies that lack the experience and relationships to integrate planning and execution
- An acquisition system that is unable to respond to anticipated and rapidly emergent threats in a timely and cost-efficient manner
- Lack of responsiveness owing to inadequate inter- and intraagency coordination and collaboration
- Poorly aligned regional responsibilities that impede suitable coordination and dynamic response across the seams
- A dire need for Congress to allow the national security apparatus to become more agile and adaptive in providing timely responses to highly dynamic and complex threats; this requires

appropriately increased levels of flexibility and decision authority

- Overcentralized logistic/sustainment processes that are inadequate to sustain responses to highly dynamic and complex threats
- An inadequate long-term strategic assessment/planning process that fails to guide, shape, change, and transform the national security apparatus at the rate necessary to address anticipated and emergent future threats

Since it is impossible to address all these (and additional) issues in any one workshop, the group focused on generating a select group of ideas that would contribute to overall improvements in the national security organization.

The Questions

What ideas would contribute to the development of an agile, whole-of-government decision-making process that would align strategy/policy/budget against a common understanding of national security threats; to the development of an acquisition/procurement/deployment process responsive to these strategies; to the development of a cost-effective sustainment/maintenance process supporting implementation of these strategies; to the development of whole-of-government delivery of American power; and to the development of a workforce capable of these crosscutting roles/tasks? Additionally, how can the national security complex evolve to meet these needs and the demands (threats and opportunities) of a new global environment?

Discussion

The bureaucracies responsible for national security have matured and grown over the course of 70 years. However, the original goals of the National Security Act of 1947—(1) breaking down compartments, (2) allowing for a comprehensive understanding of the threat environment ("the big picture"), (3) providing centralized leadership, and (4) preventing duplication and improving communication—have not been realized. Recognizing this after the war in Vietnam and some small-scale conflicts, Congress passed the Goldwater-Nichols Department of Defense (DoD) Reorganization Act in 1986. While the act did improve operational military effectiveness—as demonstrated in 1989 during Operation Just Cause in Panama—its effect was limited to the armed services in DoD. The previously discussed issues concerning the bureaucracies responsible for national security remained extant, and in some cases became increasingly problematic.

While the military services were reorganized and interservice rivalry was reduced (though not eradicated), the DoD bureaucracy continued with business as usual and its interaction with the other bureaucracies remained weak. It is therefore a poor assumption that the DoD "has it right." Forced to improve by Goldwater-Nichols, the DoD does stands out from the other bureaucracies responsible for national security. However, the appearance of relative effectiveness in DoD can be attributed as much to the ineffectiveness of the rest of the national security apparatus as it can to Goldwater-Nichols.

The issues previously identified are certainly not unknown and they are not isolated to the U.S. government's national security organization. The U.S. government's overall acquisition system is widely acknowledged to be inefficient in comparison with the private sector's. However, the nature of the congressional system and the impact of government spending on individual congressional districts obviously makes any change in organization and acquisition a political debate. Bluntly, everyone understands the preeminence of the election cycle and its negative impact on developing a comprehensive and coherent national strategy. Reforming the system remains a permanent challenge—but that does not mean such reforms should not be attempted.

Our conclusion is that the present "fragmented government" approach, particularly with respect to the national security apparatus—which won the Cold War—is not currently capable of effectively preparing for or responding to future threats. Fundamental changes can create a different reality.

Recommendations

Concept 1: *Create an Integrated National Security Strategy*
Goal: Develop an integrated, whole-of-government national security strategy based on a national security threat analysis, aligned with a unified national security budget to support the integrated security strategy.
Problem: DoD, State, Treasury, Homeland Security, and other national security–related agencies/organizations submit separate budgets that are not aligned to a unified threat analysis or a unified national security strategy, so they create overlaps and inefficiencies, and even missed missions. Congress authorizes, appropriates, and provides oversight to each budget in a similarly fragmented way, preventing holistic budgeting and oversight. The result is the lack of a unified USG approach to national security. Such difficulties became particularly apparent during the interventions in Iraq and Afghanistan. Even when there is an effective interagency, integrated strategy process, absent direct intervention by individual congressmen, any new requirements identified by the strategy may have to wait as long as two years to get funding through the current budget process.
Impediments: Agency/service/congressional committee stovepipes that are incentivized to preserve bureaucratic equities.
Solution: Create an integrated national security strategy based on a whole-of-government threat analysis, supported by a unified national security budget—all through a process managed by the president's national security advisor.

Concept 2: *Institute a "National Security Service" (NSS)*
Goal: Facilitate a solution-oriented, interagency decision-making and national power–delivery process. Codify a career process that promotes maximum interagency knowledge and experience and fosters cooperation between personnel assigned to different agencies.
Problem: Difficulties exist in comprehensive interagency coordination and unbalanced resource allocation between DoD and all other national security agencies, particularly State.
Impediments: Agency/service resistance to giving up control over resources. Lack of interagency personnel training.
Solution: Create NSS and encourage personnel to have at least one tour in an agency other than

their own. Tours in other agencies should be career-enhancing, with expanded opportunities for multiple interagency tours. Goldwater-Nichols is the inspiration for this proposal. This solution will provide a breadth of understanding of whole-of-government power, resources, and processes to senior leadership, particularly political appointees.

Concept 3: *Create Regional Interagency Authorities*
Goal: Integrate the delivery of U.S. power and influence abroad using a regionally aligned, interagency structure combining DoD and non-DoD agencies.
Problem: At present, implementing integrated U.S. strategy is ineffective and is characterized by overlapping efforts, often poorly coordinated; unbalanced resources; and lateral communication.
Impediments: Institutional resistance; international concerns regarding intent and interoperability with counterparts.
Solution: In lieu of combatant commands and civilian-agency outposts, regional interagency authorities (RIAs) should be established with a pyramidal leadership structure: (1) a senior civilian head, with deep regional experience, ideally NSS-trained; (2) a military deputy (formerly the combatant commander), with direction and coordinating authority over U.S. military actors in the region; and (3) a civilian deputy with "regional ambassador" status who has coordinating authority over country ambassadors and other civilian organizations operating within the region (e.g., Homeland Security, Treasury, Justice, Commerce, and the like). A possible interim step toward this solution (if there is insufficient consensus on establishing the RIAs) would be the appointment of a civilian deputy to the COCOM who would be responsible for all Title 22 and Title 10 security assistance and cooperation programs in the region.

Concept 4: *"Develop National Security" SES/Flag Officers*
Goal: Develop well-rounded senior DoD leaders capable of integrating whole-of-government approaches to solving regional and global security challenges.
Problem: Few senior leaders have the experience to effectively coordinate interagency solutions or manage interagency organizations/processes. The Goldwater-Nichols Act did not incorporate provisions concerning interagency cooperation.
Impediments: Current service personnel career-path requirements impede interagency interoperability to support whole-of-government solutions.
Solution: An alternative career path should be established that allows selected flag officers to serve as national security leaders in joint and interagency environments. This would constitute an effective adjunct to the proposal to institute an NSS, or the possible interim measure.

Conclusion

As the Goldwater-Nichols Act improved U.S. military effectiveness, allowing it to become the most joint, lethal, and respected military in the world, so can and should improvements be made to the overarching national security apparatus as a whole to sustain America's preeminent superpower position. This *must* be done to enable the full extent of American power to be brought to bear in a fully coordinated, effective, and agile way in addressing the increasingly formidable threats of the future, both known and unknown.

PNWC Remarks

Group 4 deliberately adopted a step-by-step approach to organizational change, not because "breaking the mold" is not needed, but because amending the National Security Act is within the purview of Congress, not DoD. However, the group explored how the Navy, the DoD, and the administration could make changes that would create an atmosphere conducive to legislative action.

Working Group Membership:

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Assumptions

- Problem: How can the national security complex evolve to meet the demands (threats and opportunities) of a new global environment?
  - Delivering American power and influence effectively requires whole of government approach.
- Obstacles/impediments:
  - Integrated strategy process not always aligned with budget.
  - Agencies lack experience and relationships to effectively integrate.
  - Acquisition death spiral: modernization increases capability and expense forcing us to buy fewer or spend more money.
  - Congress: the need to involve as many districts as possible increases expense; oversight increases reporting, thus bureaucracy, and thus expense.
  - Over-centralized logistic/sustainment processes not responsive.
  - Inadequate long-term assessment/planning.
- Solution: An agile national security decision making process that aligns strategy/policy with threat and budget; an acquisition/procurement process responsive to these strategies; and a cost effective sustainment/maintenance process that supports implementation of these strategies.

Concept 1: Integrated National Security Strategy

- Goal: Develop integrated national security aligned with one unified national security budget to support an integrated security strategy.
- Problem: DOD, State, DHS, Treasury, and other national security related agencies/organizations submit separate budgets that are not aligned and create overlap/inefficiencies.
- Impediments: agency/service/congressional committee stovepipes; incentivized to preserve equities
- Solution: unified national security budget aligned with integrated national security strategy supervised by National Security Advisor.

Concept 2: National Security Service

- Goal: Facilitate solution-oriented interagency decision-making process.
- Problem: Difficulty with comprehensive inter-agency coordination.
- Impediments: agency/service resistance to giving up control over resources.
- Solution:
  - Create national security service.
  - Tours in other agencies should be career enhancing; expand opportunities for interagency tours.
  - Civilian and military components.

Concept 3: Regional Interagency Authority

- Goal: Integrate the totality and delivery of U.S. power and influence using a regionally aligned interagency structure.
- Problem: Implementing U.S. strategy ineffective: overlapping efforts; often poorly coordinated.
- Impediments: institutional resistance; international concerns regarding intent and interoperability (counterparts).
- Solution: establish regional authority with civilian head, military deputy with direction and coordinating authority over U.S. actors in region.

Concept 4: "National Security" SES/Flag Officers

- Goal: Develop well-rounded senior leaders capable of integrating whole of government approach to regional and global security challenges.
- Problem: Few senior leaders have the experience to effectively coordinate interagency solutions or manage interagency organizations/processes.
- Impediments: Current service requirements impede inter-agency interoperability to support whole of government solutions
- Solution: Establish career path that allows flag officers to serve as national security leaders in joint and interagency environments, including one previously recommended.

APPENDIX 1

Remarks by Thomas B. Modly
Under Secretary of the Navy
Naval War College
Breaking the Mold Conference
March 7, 2018

Thank you for the kind introduction, and thank you for the honor of addressing you today at this appropriately titled "Breaking the Mold" conference. I recognize that the path each of you has taken to be included in this audience today is unique, but also remarkable and worthy of great pride and recognition. I also know that there are common threads among you or else you wouldn't be here: a love for YOUR country, a love for YOUR Navy, and an intellectual and emotional passion for helping us get it right as we consider what national and maritime security will mean in this new century. My own active-duty career in the Navy was relatively short, but I have a profound appreciation for, and connection to, those of you who started along this path around the same time I did in the late 1970s and early 1980s. Whether on active duty, as a Navy civilian, or even in the private sector, we have all witnessed profound changes together during the past four decades. These changes will impact the U.S. Navy and our nation for years to come. The changes are coming at us fast—so we need to be prepared to break free of the organizational paradigms, and behaviors, and biases that suited us in the last century. They are not well-suited for today, and certainly not for the future.

When we were first confronted by terrorism on a massive scale on 9-11, many people realized that perhaps simply "cracking the mold" was necessary to shift our focus and forces onto a new, unconventional adversary. We actually adapted our tactics and capabilities quite well to address this threat militarily, and we continue to assess and adjust how we can defeat them in the new battle spaces of social media and ideology. After sixteen years of war with this type of adversary, however, I think that simply "cracking the mold" may not be enough, because no longer are we faced with a single rogue terrorist actor; rather, today we are faced with a broad and varied spectrum of them. We see this across every area of the world in which our naval forces must engage. These transnational actors inspire each other and use the tools of modern technology and social media to build connections across borders that threaten our people and our allies and friends around the world. Some of them are actually states, like North Korea and Iran, who have recognized that their paths to survival are through an ascendance to great-power status of their own making. They both have chosen to do so by directly and indirectly confronting the United States in order to demonstrate our vulnerabilities, and in return to elevate their own prestige.

More alarming, though, in recent years we have seen changes that have eclipsed the dangers these rogue actors, and rogue nations, have presented over the past decade. If you have read our new National Defense Strategy, you will see this emerging challenge clearly articulated. Its implications are alarming, and rightly so, and they will drive investments in our defense capabilities going forward. We are entering an era of great-power competition on global scale, and so we

must be focused on responsibly developing forces that protect our people and our interests, and our friends and allies around the world.

The National Defense Strategy is a very cogent and realistic document. It is aligned with the National Security Strategy of the United States, which was published just a few weeks before the NDS, and it very plainly directs the Department of Defense to Compete, Deter, and Win alongside our allies and partners. It is a strategy that recalls President Reagan's commitment to preserve peace through strength, while enabling decisive victory in conflict if necessary. It is the department's preeminent strategic-guidance document, and it will set the course for the Department of the Navy for years to come.

As the strategy describes, great-power competition has reemerged as the central challenge to U.S. security and prosperity, and this geostrategic fact is demanding prioritization and tough strategic choices. It is increasingly clear that China and Russia want to shape a world consistent with their authoritarian model, and they will use whatever tools that are available to them, both lethal and nonlethal, legal and illegal, to gain influence and authority over other nations' economic, diplomatic, and security decisions.

Both China and Russia aim to shift the regional balances of power to their advantage. It is their stated intent to weaken or fracture the U.S.-led alliance and partnership network that has ensured security and prosperity for so many around the world. If unaddressed, the erosion of the United States' military advantage vis-à-vis China and Russia could undermine our ability to deter aggression and coercion in key strategic regions. Therefore, we must correct the trajectory of the past several years so that both countries understand that the United States is not in retreat, but that we will advance our interests and influence around the world. Those interests are primarily defined by actions that will promote global peace and prosperity, through what Secretary Mattis describes as a "Constellation of Partnerships" with nations who share our values and security interests.

While the strategy prioritizes the challenges from China and Russia, it does not ignore the growing and pervasive threats from North Korea and Iran, and it also continues our commitment to defeat violent extremism and the horrors being perpetrated in the name of Salafist-based ideologies. In essence, it is a realistic strategy, but also a very ambitious one that cannot be executed without a significant commitment of national resources and, perhaps more importantly, a significant application of national resolve and urgency—and an approach to maritime supremacy that "breaks the mold" of conventional thinking.

As Secretary Mattis has stated, "In a world awash in change and increasing threats, there is no room for complacency. History makes clear that no country has a preordained right to victory on the battlefield."

The Secretary is certainly correct that there is no preordained right to victory. Rather, it occurs when a nation is prepared not only for *the fight that it sees coming,* but also when it is prepared for *the fight that it does not.* So it follows that the NDS is structured to address the full range of adversaries we may face in this rapidly changing security environment. The future joint force

must be lethal and resilient in contested environments, disruptive to adversaries who seek advantages across the globe, and flexible enough to address and defeat threats across a broad conflict spectrum.

Fundamental to this future force will be the preeminence of our maritime superiority because America is, and will always be, a maritime nation. Command of the seas is central to our nation's security and prosperity, and our maritime forces continue to be in great demand around the globe. China and Russia are heavily investing in expanding their conventional and unconventional naval capabilities, and Iran and North Korea present challenges to our naval forces in different, but still very disruptive and dangerous, ways.

Therefore, given the increasing complexity of the competitive geostrategic landscape, the National Defense Strategy's mandate for how we construct our naval forces must address a broad range of competing challenges:

- A return to great-power competition, but not to the exclusion of other threats.
- An emphasis on lethality and readiness, but not to the exclusion of new platforms and technologies for the future fight.
- A recognition that we must advance our nation's interest and influence on the seas, but not to the exclusion of building alliances and partnerships that seek peaceful conflict resolution, with preparedness for the use of decisive force if necessary.

So what does this mean for you as think about how to break the mold of old paradigms and ways of thinking? In a word, I believe that breaking the mold will require a preeminent focus on the need for *agility*. *Agility* is the term that I believe best describes the overall organizational quality that has determined, and will determine, who and what survives in any increasingly competitive, rapidly changing, and unpredictable environment. This is the environment our Navy faces today, so I think we will ultimately be judged by how well we transition our forces and our supporting organizations to a future in which agility is their defining characteristic.

Therefore, we must advance agility when we think about and build our future force structure. We need more ships and aircraft and vehicles, but that equipment must provide flexibility, adaptability, faster development cycles, reduced maintenance requirements, greater lethality, and an industrial strategy that sustains a modern, flexible, and sustainable industrial base.

We must also advance agility in how we manage the business mission of the department. We must have faster access to accurate information and we must reduce the overhead and bureaucracy that impedes rapid decision-making. We must also understand the difference between being a smart buyer and a bad customer. We cannot build and maintain an agile organization if we promote an adversarial relationship with industry. Rather, we must promote competition, but with integrity, transparency, and collaboration around common interests.

Most importantly, we must advance agility when we think about our people. We need to recruit

and train people who are innovative and creative and courageous. People who are comfortable with uncertainty and who can collaborate and trust their teams and leaders under stressful conditions. We must also tap into the vast knowledge and spirit of the private sector as partners with our men and women in uniform, as well as our civilian workforce.

While I believe we would all agree that the Navy needs to become more agile in all the areas I just mentioned, I also think we would all agree that defining and, even more importantly, measuring agility is not a simple task. For most of us, agility is not unlike Supreme Justice Potter Stewart's famous statement about pornography. In commenting on the definition of pornography and how it related to a particular movie that was at the center of a Supreme Court case, Justice Stewart said, "I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description, and perhaps I could never succeed in intelligibly doing so. But I know it when I see it, and the motion picture involved in this case is not that."

I suspect that most of us could paraphrase this and say, "I shall not attempt to define what is embraced in the term *agility*. But I know it when I see it, and many of the things the Navy does today are not that."

But we shouldn't despair. There are some very concrete organizational qualities we can truly observe and measure to determine whether we are building and leading a more agile organization. I would like to offer five of these qualities for your consideration. This is not a comprehensive list, but I do believe that, if nurtured, each of these organizational qualities will contribute to a more agile Navy—and as we progress in building and encouraging these qualities, "we will all know when we see it."

The first of these qualities is *velocity,* or *speed*. In a time of rapid change, organizations have to learn to do things faster. Every major enterprise that has emerged as a leader in its respective industry over the last 20 years has improved in this area—and often by quantum leaps. When you started your careers, think about how long it took to shop for something in a catalog, or to book an airline ticket, or to have a package delivered. Think about how long it took to transfer money, or just get cash for spending. More significantly, think about how long it took for well-established institutions to lose their competitive advantages. Now think about Kodak, or General Motors, or Sears and Roebuck, or even a more current example of the Internet age, America Online. Once the tide and pace of change begins accelerating, it is impossible to stop it. Speed is critical to survival in such an environment. For the Navy, this speaks not only to how fast our weapons can fly or how quickly we can move forces from place to place, it has much more importance with respect to how it characterizes our processes and decision-making. When we look at our acquisition programs, for example, I think we can all agree that our lack of speed when compared to commercial industry is clearly costing us money and stifling our ability to incorporate technologies at the velocity of change. The same applies to how long it takes us to hire qualified people, or to move beyond them if they are unable to perform adequately. When compared to some of our geostrategic competitors who have discovered ways to shortcut innovation through nefarious means or who can more quickly leverage commercially available technology, our lack of speed is quickly becoming a competitive disadvantage. In the end, if we don't correct this trajectory, it *will* end up costing us much more than just money.

The second quality is *adaptability*. Agile organizations adapt quickly to changing conditions. They do not allow themselves to stagnate or be overcome by changes in their environment. Boston Consulting Group (BCG) has studied the concept of corporate *adaptiveness* and discovered that there are in fact concrete ways to measure a company's capabilities in this regard. Not surprisingly, when examined within competitive environments that are defined as particularly "turbulent," the most adaptive companies on the BCG index far outperformed those who were lower on the scale. This conclusion seems obvious, but the overarching point of this work was that a high adaptability score for such companies did not come by accident. Rather, those companies who successfully built adaptive organizations did so intentionally and invested in it commensurately. For us, this means that we must consider and invest in adaptability across the entire Navy enterprise. We must foster flexibility in our people, design and construct both adaptable platforms and force-deployment models, and ensure that both people and platforms are enabled by flexible business and operational processes. We must also encourage an understanding of the world and the geopolitical context in which we ask our forces to deploy. Our people must be able to adapt to the multiple potential environments in which they may be asked to operate—and fight. They cannot afford to be ignorant of them.

The third agility quality is *collaboration*. Collaborative cultures may appear to be on the opposite end of the spectrum from bureaucratic ones. This does not have to be the case—and we cannot allow it to be the case in our Navy. I have often observed that the Department of Defense, like most great bureaucracies, is the great "self-siloing" organization. It tends to have an aversion to working across organizational boundaries, and organizations and suborganizations have a bias toward protecting themselves—along with their domains, their budgets, their identities, and their hierarchies—fiercely. Some of this is to be expected in a culture that is inspired historically by a traditional military command and control environment, but some of it also leads to unhealthy behaviors that inhibit collaboration and resolutions that are in the best interest of the entire enterprise. Our propensity for siloing is perhaps one of the most difficult cultural challenges we have to overcome—but we have to overcome it. Agile organizations collaborate across internal and external boundaries, and most importantly up and down the chain of command. This collaboration fosters a greater enterprise appreciation of the organizational strategy, and encourages greater enterprise-focused solutions that are not simply optimized for a particular suborganization, command, ship, SYSCOM, or program. This means that leaders in our Navy, whether they are military or civil servants, must set very high standards for collaboration, openness, communication, fairness, compassion, intensity, and commitment if there is any hope of impacting culture in a positive way that enhances overall agility. Leaders must demonstrate zero tolerance for organizational silos and an aversion to the accumulation of power, while building broad coalitions that align resources and momentum in a common direction. Fostering greater collaboration as a critical cultural characteristic will also help us improve our ability to work with allies and partners around the world whom the NDS identifies as critical to our ability to secure our interests.

The fourth quality of agility on my list is *visibility*. This is a key element, as it exists in all organizations that move quickly, adapt, and share information freely. These organizations allow for the best authoritative data available to drive decisions. For us in the Navy, this has as much applicability to a theater of maritime operations as it does to the back office. The proliferation of platforms with sensors, and our ability to integrate and understand all the data they produce, will

be critical to the success of the future war-fighting mission. But all this data has to make sense, and we must figure out how best to exploit visibility to the right level and at the right time so that we increase both our lethality and our ability to defend ourselves.

The same organizational value of visibility holds true for our business environment—and in this regard I will put it quite simply: *We need to know where all our stuff is, and we need to know how much it costs, and we need to know how long it is going to take to get it where it needs to be.* Today, I don't think anyone in our organization can answer those questions with a high degree of confidence. In the future, however, lots of people in our organization *will be required* to do so. This is why the financial audit effort is such a high priority for me, and why it is so critical to the entire enterprise. The financial audit, despite its name, should never be viewed as solely a finance-driven effort. Rather, it is an enterprise imperative, because the corrections in visibility, accountability, and overall enterprise behavior will accrue to our war-fighting mission directly.

The fifth quality of agility is *innovation*. Agile organizations are adept at and comfortable with trying new things—with experimenting, failing, measuring, and trying again—all with a view toward finding new solutions to current and anticipated problems. For those of you who have not read it, but who have an interest in understanding how the breakthrough innovation of manned flight happened in the last century, I commend to you the Wright brothers biography written by David McCullough. The Wright brothers' story is remarkable. It is great history, but it is also a pure innovation case study. Even though this occurred over one hundred years ago, Orville and Wilbur Wright demonstrate that innovation is driven by constant trial and error, meticulous documentation, and the deliberate construction of a culture of learning. We need a "learning culture" in the Navy. We must embrace this as a core value. As many of you know, Ex Scientia Tridens is the motto of the Naval Academy. Those words, roughly translated, mean "Through Knowledge, Sea Power." As we think about innovation and its role in the future of our Navy and Marine Corps, no words seem more relevant than these. While we surely must invest in more ships, aircraft, submarines, armored vehicles, and new missile systems, nothing will be more important than the investment we make in knowledge—and on creating a force made up of people who thirst for it. Rapid technological advances are driving the raw technical requirements for this mandate, but knowledge is not purely defined by technical competence. For knowledge to truly produce sea power, we must create a culture in the Navy and Marine Corps that is committed to learning as a lifelong process—and a lifelong passion. Such a culture is not defined merely by certificates or degrees accumulated at regular career intervals, but rather it encourages innovation and risk taking and produces sailors and Marines who are prepared to excel in circumstances that are characterized by uncertainty, and by adversaries who are unpredictable.

This last quality has specific implications for this institution and the other educational institutions across the Navy, such as the Naval Academy, the Post Graduate School, and the Marine Corps University. We must break the mold with respect to how we think about the role of education in the career progressions of our sailors, Marines, and officer corps. In this regard, we are at a point in history not unlike that which was addressed by Captains Ernest King, Dudley Knox, and Bill Pye in their seminal report on naval education published in 1920. The report laid the foundation for the education of naval officers for years to come, with a greater emphasis on developing officers with an understanding of strategy, policy, and national security thinking. It is hard to imag-

ine an agile naval mind that is well prepared for our current turbulent security environment being able to lead without these characteristics. Therefore, I am commissioning a comprehensive clean-sheet review of naval education to determine how well we are educating—not merely training—our naval forces today, and for the future. While I do not want to presume any conclusions that may come from this "Knox-King-Pye Redux for the 21st Century," I suspect some major course corrections are in order, as they are for most every institution that expects to survive and thrive in this century. So, as you think about your tasks over these next few days, I ask that you consider agility and its components and its implications for the future of naval education when you experiment with what may result when you "break the mold."

I will conclude by citing one of the many memorable quotes of John Paul Jones, because it relates to why agile minds will matter so much in our future Navy. Jones famously said, "Men mean more than guns in the rating of a ship." It loses nothing in the translation when we say, "People mean more than weapons in the rating of a service." Jones's quote recognizes a profound point of truth that is perhaps even more relevant today than it was over two hundred years ago. Our maritime advantage is, and will continue to be, almost entirely dependent upon the quality of our people. It follows, therefore, that the agility of our future force will be almost entirely dependent upon the agility of the people we identify now to lead it. Therefore, I encourage you to think about breaking the mold in a way that allows us to recruit, train, equip, and *educate* the most quick-minded, flexible, collaborative, innovative, and transparent people we can find. If we do this, we will set the Navy on the course for maritime superiority well into this century.

The future dictates that our maritime forces will have to contend with something agile, and so we must find and develop people who are agile enough to defeat it, and give them more responsibility. I predict we will have to break the mold to do it, but if we do it will set our Navy, as it sails into uncertainty, on a course for agility and ultimate victory.

APPENDIX 2

BREAKING THE MOLD—WAR AND STRATEGY IN THE 21st CENTURY

Precepts to the Participants by Dr. Harlan Ullman

Purposes: This conference is intended to begin discussion, inquiry, and examination of how "war" may evolve in the coming decades of the 21st century and what strategies might be needed to anticipate and respond effectively and within likely resource realities. *War* is broadly defined to include strategic and theater/tactical nuclear, conventional, unconventional, space, cyber, and what Russia calls *active measures* and the United States terms *hybrid warfare*. Given that this conference is only for a day and a half, obvious limitations constrain how much can be covered. But the key words are "breaking the mold" in thinking about the future of war and strategies to respond and anticipate. The first attachment, on "A Navy the Nation Needs," is an example of how much breaking we would like to do, and an issue list and questions to help guide discussion will be distributed shortly.

The crucial guiding and operative principle is to think boldly and creatively about the future, with few restraints other than the laws of physics.

This first conference is meant to begin developing a framework for this examination and to raise critical questions, including "unknowns" about the nature and character of future war, to stimulate and provoke imaginative, even counterintuitive thinking regarding strategic responses; to strengthen the ability for critical analytical thinking and assessment; to create a range of different possible strategies for dealing with future war in all its forms, with implications for active, reserve, and guard force structure, composition, and levels; operational requirements and deployments; lethal and nonlethal capabilities; personnel and manning; education and training, especially in light of the new Defense Strategy that argues that current professional military education is "stagnant"; and the organization of national security and defense staffs at headquarters and operational levels, including the defense industrial, R&D base; a plan for the regeneration and reconstitution of forces; and other issues to be raised. It is a beginning.

Assumptions and Scenarios: The following is meant to bound the first conference with certain assumptions and descriptions of the future that by no means are definitive. While these assumptions and scenarios define a world more unstable and less attractive than today's, none of the dangers (except an unanticipated environmental catastrophe) are deemed to be existential threats to the United States and its allies. We also ask that participants not challenge the assumptions and scenarios, as some starting point is needed, and the spectrum is potentially so wide that the entire conference could be spent debating each assumption.

The conference will take a "breaking the mold of conventional thinking" approach in applying creativity, innovation, and imagination, with the following rules of the game specific for this conference (which may be altered for future meetings).

In the world of 202X:

- No antigravity or other technologically impossible solutions to problems have been invented.
- No major war has occurred between or among the largest/major powers.
- Budget appropriations will continue to be (far) less than is required to maintain the current force structure, strategic and operational requirements, and deployments, especially with the shift to major-power competition or confrontation as the priorities. Left uncorrected, this will produce a hollow force and potentially grave problems for preserving the all-volunteer force, especially in light of greater dependence on minority, LGBQT, and other socially directed recruiting.
- Power will continue to diffuse, empowering individuals and nonstate groups at the expense of traditional states.
- Serious potential threats will continue to arise from nonmilitary and nonkinetic sources, to include "active measures"; cyber; creative use of economic and mercantile policies; intimidation; misinformation, propaganda, misdirection, and interference in domestic politics from external sources; and more innovative use of military power to achieve political objectives, from classic messaging (e.g., sailing SSNs close to underwater cables and linkages; arms sales; advisors; and demonstrations of military force, such as firing Kalibr missiles from the Caspian Sea to the Mediterranean).
- Offensive, precision weapons and C4ISR will tend to dominate defenses, meaning that deception and maneuver will be more critical. So too, logistical and C4ISR networks likewise will become more vulnerable.
- Doctrine of most states with advanced weapons stresses the advantage of firing the first shot, that is, anticipating an enemy's actions and striking preemptively. These arguments have been highly criticized as too provocative, and in part the history of World War I—in light of the premise of "who mobilizes first, wins"—is used to refute this doctrine.
- Failure of nuclear arms talks—INF and New Start—and the U.S. withdrawal from the JCPOA with Iran. But modernization rather than an arms race has led to self-imposed limits on strategic forces by the United States and Russia. Meanwhile, China has pursued a more technologically advanced but still minimum nuclear deterrent.
- Continued erosion in NATO, as certain unnamed but known allies pursue different courses and BREXIT distances the United Kingdom from Europe.
- The U.S. political system remains polarized and highly divisive, and growing deficits, along with interest rate increases, represent a major, possibly crippling, constraint for the military forces.
- No global financial or environmental catastrophe has occurred.

In general terms, the world of 202X is one marked by the continued diffusion of power and globalization. Qualitatively, the military forces of the United States and several NATO and Asian allies, Russia, and China have become relatively equal in advanced capability, but with significant strategic distinctions. Russian forces remain centered on Europe and protection of Russia, with small but effective deployments abroad. China's military remains a high-low mix, with many PLA units less well-equipped than others, owing to financial constraints.

The major difference is that nonstate groups and individuals have acquired significant cyber and other electronic capabilities, including limited EMP weapons. Meanwhile, India has modernized its forces. Pakistan has become more radicalized. The U.S. presence in Afghanistan has been minimal and largely antiterrorist-oriented, as power has moved out of Kabul and a ceasefire with the Taliban has been in existence for several years.

The Gulf and Middle East remain turbulent. Saudi Arabia has experienced several incidents of major violence; Plan 2030 never achieved its objectives. The Saudi-Israeli detente ended when Israel renounced a two-state solution. The Gulf Cooperative Council finally expelled Qatar, which moved closer to Iran, whose influence in the region increased. With American withdrawal from the Joint Comprehensive Plan of Action (JCPOA), the embargoes on Iran were fully lifted in exchange for continued compliance by the other signatories, increasing the schism between Washington and those other JCPOA signatories. While Washington fumed, it had little effect. Iran continued to increase its influence in Iraq and signed a joint security treaty with Baghdad.

The Islamic State and other jihadi groups continued to make attacks in the region and gained more than footholds in Saudi Arabia, Pakistan, Indonesia, several African states, and the Philippines. Much of this activity was based on criminal activities to raise as much money as possible, largely through Internet scams and thefts.

NATO finally expelled one member that threatened to leave after claiming NATO no longer considered it an ally. Other members maintained right-wing governments, and some reduced their participation, favoring greater cooperation with Russia.

In the United States, continued growth in deficits and debt forced major cuts in defense and national security spending. The active duty force had been cut to under one million, with only a selected number of units being deemed fully operationally ready. The economy did not grow quickly enough to match the growing debt. As a result, the overall standard of living declined and the disparity between rich and poor grew larger. The two political parties remained dominated by more-extreme left- and right-wing positions, and neither party was able to control both ends of Pennsylvania Avenue such that one party could govern with a veto-proof majority.

Social media continued to have significant psychological effects on Americans and American politics. Ironically, while the under-thirty generation maintained vast social networks, interpersonal relations remained relatively minor. Political correctness continued to have an impact on society and the military. Recruitment became more difficult as fewer Americans wished to serve in uniform. Many who joined did so for specialist assignments such as cyber and AI, while a significant minority of those recruited had social, psychological, and personality characteristics that

hindered the application of traditional forms of discipline and the exercise of the strict chain of command essential to a functioning military. This required major changes within the department that continued to demand constant attention, with the media and Congress seizing on incidents of maltreatment of minorities.

Key Questions and Issues: First, because the 21st century is profoundly different from the 20th, how applicable are the critical terms and concepts from the 20th century, such as deterrence, containment, suasion, assured destruction, flexible response, and global wars on terror?

The 20th century was largely binary: Allies versus Central powers in World War I, Allies versus the Axis in World War II, East versus West, and capitalism versus communism. The world now is far more complex, interconnected, and interrelated. How then is war changing, if at all, considering this massive diffusion of power and a relative equalization of advanced military technology in which the United States no longer maintains superiority?

During the Cold War, military deterrence equaled political deterrence between East and West. But in the 21st century, military deterrence alone does not equal political deterrence. How then does the best Army, Navy, and Air Force in the world defeat adversaries who lack those forces, and who instead rely on an idea and terror to advance their interests?

How, if at all, can Russian "active measures," China's mercantile strategy of expanding into the China Seas, cyber, global jihad, and failed and failing governments that are the major dangers to mankind be deterred by military force alone, or at least as the predominant response?

While nuclear proliferation has so far been constrained, what strategic nuclear strategies may be appropriate, including a minimum deterrent matched by stronger defenses against nuclear attack or threat?

How will the political need for "immaculate war" and minimization of all casualties—not only on our side, but with regard to collateral damage and even our enemies—affect war, strategy, and the uses of force?

To what degree can autonomous systems and advanced AI compensate for humans, and what are the implications for legal, moral, operational, and rules-of-engagement considerations?

Finally, how does war in the 21st century affect how we train, recruit, maintain, and educate the military to keep pace with this rapid and continuing change?

What is needed is a strategic and operational concept or set of concepts that takes into account these profound differences between past and current realities. A "brains-based approach" to sound strategic thinking is one option and is expanded upon below. Redefining deterrence, containment, and the 20th century tool kit is another. How might this be accomplished?

Second, nonkinetic aspects of warfare may be as important in affecting will and perception as is military force. The military does not have full responsibility and authority for responding to these

challenges. While the whole-of-government approach is highly touted as a solution, it is, in fact, more rhetoric than reality. For example, who is in charge of cyber in the U.S. government?

Russian trolls and bots have made powerful inroads into domestic societies, in some cases shaping opinion. The same incursions must be expected into military domains. How do we respond, for example when the Internet is full of false information and disinformation that impugns the U.S. military with stories of misconduct, incompetence, and unsatisfactory performance?

Third, former Deputy Secretary of Defense Robert Work called for a "Third Offset" strategy, largely but not entirely to protect the network and our dependence on connectivity. This offset must be expanded in a strategic context. Here, a "porcupine defense" in dealing with Russia is one such option, and is defined below. Another is the notion of a strategy to contain potential Chinese military expansion within the first island chain, with the provocative name of "a mobile maritime Maginot Line that cannot be outflanked" (realizing that the Maginot Line was never breached frontally); this concept is also defined below.

A further option, put forward by Admiral James Stavridis, USN (Ret.), now dean of the Fletcher School of Law and Diplomacy at Tufts, calls for greater reliance on special forces, cyber, and UVs, all broadly defined. How might this be implemented?

A last option is a strategy based on redefining the National Security Act and Unified Command Plan, along with reconstitution and regeneration of forces in which a smaller but highly ready active-duty force would be dependent on a larger reserve or cadre component that could be mobilized when needed. What might these strategic options entail; what basic assumptions would undergird each; what would be the strengths and weaknesses; how would the entire defense and manpower base support each; and would each be affordable, given the reality of the resources available?

Finally, in all our thinking, we should consider how to turn adversarial strengths to weaknesses and our weaknesses into strengths. Winning or exploiting the cost-exchange ratio is one means to accomplish these reversals. The United States so far has spent about $70 billion on counter-IEDs; the enemy virtually spent pennies on the IEDs themselves. The same sort of cost-exchange ratio applies when we drop Mk 82 iron bombs on terrorists from an F-35 that costs $65,000 an hour to operate. How do we force potential adversaries into similar disadvantages without resorting to huge expenditures on our side, such as that for SDI—which did *not* bankrupt the Soviet Union?

For example, if a future Russian operational maneuver group (OMG) is organized along lines similar to today's, it has at least three major vulnerabilities. First, as the North Vietnamese learned from the battle of Ia Drang in 1965, "hugging the belt" can defeat U.S. firepower superiority (or its Russian OMG equivalent) by bringing the enemy into such proximity that friendly fire poses as much danger to own forces as to the enemy's. Second, OMGs are hugely dependent on lines of supply and logistics. How can these be cut or interrupted? Third, as with our formations, OMGs are dependent on networks and command and control systems that often restrict the exercise of initiative on the part of local commanders. These vulnerabilities and others must be understood and exploited.

The same approach is true for the PLA operating inside the first island chain. While the PLA may actually have a porcupine defense of its own for the littorals (and as far out as its DF-21 missiles can strike), beyond that perimeter it is vulnerable. This provides the basis for a strategy of denial and containment, as noted both above and below.

Similarly, what additional techniques can be used to take on Islamist radicalism? Kinetic strikes have downsides in terms of collateral damage and inciting others to join the cause for reasons stemming from revenge, anger, or desperation. This is an area ripe for further investigation.

Finally, how can we reverse the cost-exchange ratio vis-à-vis "active measures"? It may well be that in the future active measures will be part of the playbook of all adversaries, from states to nonstate groups to individuals. While this may not be primarily an issue for DoD to address, DoD does have the resources to play a vital role.

In summary, the diffusion of technology means that a number of states and nonstate groups have military capabilities at least comparable to those of the United States. The continuing assumption of technological superiority no longer applies, at least with regard to many capabilities. Capabilities for long-range precision strike and the close-in fight, including C4ISR and weapons systems, are no longer dominated by the United States and its allies, although in the aggregate NATO and non-NATO major allies still maintain the largest forces. However, particularly in AI, China has taken the lead.

The conclusion is that no longer can the United States spend its way clear of danger. It must think its way out of harm's way. Hence, a brains-based approach, or something akin to it, is vital.

A Brains-Based Approach to Strategic Thinking: Like Gaul, this concept consists of three parts. First, it must recognize that the 21st century is profoundly different from the 20th. The world is far more interconnected and interrelated. What happens in one region may, and probably will, have profound effects globally. Further, while the 20th century was largely binary in terms of war and adversaries (Allies versus Central Powers in World War I, Allies versus Axis in World War II, East versus West in the Cold War), today is far more complicated. And the tools and concepts of the 20th century—such as deterrence, containment, and suasion, for example—do not fit in the 21st and must be updated.

For example, what does it take to "deter" Russian active measures, China's mercantilism, and the danger of radical Islam? And beyond that, virtually all of the international structures in play today—from NATO to the UN, the World Bank, and the G-7—are constructs of the last century.

Second, a brains-based approach must be knowledge-based, to allow and facilitate as complete an understanding as possible when determining policy, including whether and when to use force. That knowledge must range from the basic aims to an intimate analysis of the adversary; the various possible courses of action and the assumptions underlying each; and their consequences, including their resource implications, their costs, and an objective calculation of their affordability in blood and treasure.

Third, the aim of a brains-based approach to strategic thinking must be to affect, influence, and control the will and perception of the other so as to allow our brains to beat their brains, in part by greater innovation, ingenuity, and inventiveness—often called out-of-the-box thinking.

Strategic Options and Scenarios: Against the future described above, three broad strategic options will be used to focus responses to "war" in the 21st century, and of course on breaking the mold of "conventional" thinking. The first strategy is a "porcupine defense," undertaken in part in conjunction with Naval Forces Europe and focused on Europe and Russia. The assumption here is that Russia has no interest in attacking NATO directly. Instead, Russia will rely on a combination of military threat, using its modernized conventional forces and its superiority in theater and tactical nuclear weapons; "active measures"; political intimidation and interference; and economic leverage in energy, including by seeking substantial ownership and control of western energy companies through legal business activities.

NATO's response has been to increase rotational forces' presence and training exercises, and to establish two new commands intended to ensure better awareness of and response to Russian actions. Further, NATO has moved to increase its cyber and counter-information capacity. Promises to increase defense spending have been made; however, it is unrealistic to believe that many states will reach 2 percent of GDP spending for defense. And Russia will continue to attempt to exploit cleavages within the alliance arising over Brexit, questions of actual long-term U.S. commitment, and a shift of domestic politics rightward in several member states.

The porcupine strategy and defense are built on the concept of making any attempted Russian incursion west—however unlikely that scenario may be—extremely costly, while also countering Russian "active measures." Indeed, this line of defense is not unlike the fortification of Kaliningrad through antiaccess/area denial measures, but using far more unconventional and less expensive means.

The Black Sea will provide the test cases for a porcupine defense strategy. Using Romania as a specific example, this form of defense would seek to deploy hundreds, if not thousands, of UVs across the land, sea, subsurface, and air domains; their purposes would range from providing C4ISR, to targeting and destroying, to providing deception and misdirection, to harassing any invading troops. The use of underwater UVs to carry antiship and antisubmarine missiles and torpedoes that could be predeployed is part of this approach. Long-range strike missiles would be deployed as well.

Ashore, protection of Aegis ashore and air defenses would be enhanced, as Romania has also bought Patriot. And Constanta, the major seaport, would be expanded in terms of its defenses, including the reinforcement of the marine battalion stationed nearby.

Ground forces would be organized into guerrilla-type forces that would be designed to attack the logistics and supply lines of any potential attacker, realizing that any likely incursion from the east was likely to be sea-based, given the geography and presence of Ukraine as a natural land barrier. Infrastructure would be improved to allow reception of deployable air forces and other units from allies in times of crisis. And of course, countering active measures is central.

Participants will be asked to expand on these concepts and ideas.

Despite the unfortunate associations of the name (and noting that the Maginot Line in fact was never breached, but was outflanked), a mobile maritime Maginot Line that cannot be outflanked will provide the second scenario in Asia. The strategy is based on the concept of containing Chinese military expansion to inside the first island chain, using a range of UAVs in all domains, with emphasis on submersibles that can be predeployed well in advance, armed with antiship, -air, and -submarine weapons. The use of decoys, deception, and misdirection would be extensive. Strike groups would function as a reserve, keeping out the range of China's DF-21s.

Greater reliance on special forces, cyber, and UAVs will mark the third strategy—which needs no further elaboration.

And the final strategy will look at restructuring the foundation for national security, namely the National Security Act and the Unified Command Plan, with a comprehensive approach across government that includes examining how strategies of regeneration and reconstitution might be utilized.

Organization: Four seminars will cover the scenarios noted above. Each will be led by two co-chairmen and a rapporteur, whose function will be to identify the most crucial and important points, observations, and, where appropriate, conclusions, along with any implications for "un-stagnating military education."

Seminar One: Breaking the Mold: A Porcupine Strategy of Defense in Europe

- In this seminar, Romania will be the test case for developing this strategy.

Seminar Two: Breaking the Mold: A Mobile, Maritime Maginot Line in Asia

Seminar Three: Breaking the Mold: Reliance on Special Forces, UAVs, and Cyber

Seminar Four: Breaking the Mold: Reorganizing for National Security

- This seminar will consider the drafting of a new national security act and national security organization, to include all branches of government, along with changing the structure of the Unified Command Plan and the five-sided organization of the Pentagon (SecDef; OSD; defense agencies; the CJCS, JCS, and Joint Staff; and the service secretaries and chiefs.

Handouts on each of the seminars will be distributed well in advance of the conference.

Homework: We ask each participant to bring at least one idea, concept, or hypothesis about future war and strategy to the conference and, if possible, to submit it in advance, along with at least one crucial question that can help shape our thinking. We also would appreciate it if each participant would read the rules of the road noted above carefully so that we do not spend much time in a prebrief. After that, this will be a no-holds-barred discussion on war and strategy in the 21st century.

Notes for Seminars

Background Issues and Questions for Each Group: These can be discussed separately or concurrently, but should be fully considered. Groups are free to add to or expand on this list, which is *not* meant to be fully comprehensive, but merely to provoke further discussion. And the operative word is "provoke." We really want to break the mold. We ask, however, that you read the background paper first.

What are your best guesses as to how the nature or character of war is likely to change, if at all, in the coming decades, and what does this mean for strategy and strategic alternatives?

- Do 20th-century concepts such as deterrence and defense apply to the 21st century? What does it take to deter Russia or China or North Korea or Iran, not only from war and conflict but to contain their geopolitical and economic aspirations and "active measures"? If war comes, is it even possible to defeat Russia or China, and if so what does it take?
- As technology becomes more fungible and available, will the diffusion of power across the board offer far greater military capability to smaller states and nonstate actors? Does Moore's Law apply beyond zeroes and ones, greatly reducing the technological lead of the United States and its NATO and other allies? Or can the United States and the West maintain their technological advantage and superiority?
- Will future defenses overpower offenses in terms of creating more favorable cost-exchange ratios, or will the offense give more credence to preemption?
- Will the real increases in the costs of people and advanced weapons systems lead to smaller militaries, but will they benefit from reduced costs for low-earth satellites and breakthroughs in other technology areas?
- Will the greatest leverage in war reside in advances in knowledge and understanding of battle and conflict conditions, somewhat removing the fog and friction—the Bill Owens aspiration?
- Will deception, misinformation, and misdirection become areas for the greatest improvements in lethality and military advantage, as "active measures" become more widespread across more militaries?
- Will future wars likely be longer or shorter, and will they be subject to escalation or limitation?
- Will fewer bigger or more smaller platforms and systems dominate force planning, and how will the distribution of capability and capacity across all forces—sea, air, special, space, and cyber—likely evolve?
- Will the "narrative" gain greater strategic and political value in war and conflict, so much so that the "battle of the narrative" dominates outcomes?
- Will the aversion to casualties, collateral as well as military, become a more important factor?
- Will allies and publics be persuaded to support such changes?

- What may be the reactions and responses of potential adversaries to U.S. strategic changes?
- What does this mean for strategy and strategic options, and for the roles of naval power specifically?
- What does this mean for organizing for national security; the UCP; the so-called comprehensive approach across government; and NATO? What might be a more effective organization? How might Congress be more intimately engaged? Does intelligence need yet another reorganization?
- What are the biggest unknowns and the biggest ideas, as takeaways?
- What conclusions does this lead to for naval education, given that the Under Secretary is launching a "clean sheet" review of these assets?

Seminar 1: A Porcupine Defense

The porcupine defense is based on three assumptions: first, the geography of the Black Sea and the Dardanelles; second, the ability of local states, supported by NATO, to bloody badly and halt potential aggression and attack, including in the form of active measures; and third, that reinforcement and the threat of escalation from NATO provide further deterrent and reassurance value. In essence, this is a variant of the so-called antiaccess/area-denial concept, using a more active defense that must include counters to active measures, information and electronic warfare, subversion, "little green men," and intimidation.

If Kaliningrad is included as part of Russia, only six NATO states border on or are proximate to Russian territory: the three Baltic states; Poland; Norway, at its northern tip; and the United States, by way of the tip of Alaska's Aleutian Islands. In the Black Sea, any Russian military action against NATO states—Romania, Turkey, and Bulgaria—must come through Ukraine, Georgia, or Azerbaijan, or by sea and air.

This strategy discussion will focus on Romania and the fortifying of its position on the Black Sea, centered on Constanta, along with other NATO assets in the region and country. The strategy will concentrate on Russian land, air, and naval weaknesses and strengths; those of both the operational maneuver group and active measures; using largely Romanian forces, supported with C4ISR in support of NATO forces. It will concentrate heavily on the extensive use of perhaps thousands of unmanned systems; longer-range cruise and other missiles; thousands of antivehicle and air munitions, such as Javelins and Stingers; local GPS and less jammable C4I; inexpensive, low-earth-orbit satellites; local partisan or guerrilla-like forces; and mobile land/air quick-response units. The Russian order of battle (OOB) can be taken from the *Military Balance* and updated to reflect some time in the future, but with no revolutionary changes.

Constanta will be reinforced with these systems, in conjunction with M-K Aegis ashore and Patriot batteries, the new logistic air base, and the NATO multinational brigade HQ at Craiova, with a series of concentric defenses that can reach at least 200 miles into the Black Sea. If Russia were to mount a land assault, it would have to do so by invading west through Ukraine, which would be costly and time-consuming, given the likelihood of Ukrainian resistance.

While military options are configured using the above criteria, a broader geopolitical strategy of using NATO forces in support is needed, with a time frame of one to two years to develop and field the required capabilities, to include the new logistics command. Strategic use of Turkey and Bulgaria also must be considered, including possible revision of the 1936 Montreux Convention—one can argue that the convention is obsolete, given that many of the original signatories are gone (such as the Soviet Union, although Russia claims sovereign continuity) and Georgia and Ukraine are new Black Sea states.

Seminar 2: A Mobile Maritime Maginot Line in Asia

First, people will object to a reference to the Maginot Line. But the Maginot Line was never breached; it was outflanked. This approach will not suffer from that weakness, as the line of defense will extend from the Aleutians to Vietnam.

The basic assumptions are, first, geographical; second, a greater dependence on regional states and allies; and third, confining Chinese military expansion to the first island chain. Elsewhere, this has been called the Archipelago Defense. This strategy turns Japan, South Korea, Taiwan, the Philippines, Vietnam, and Indonesia into potential large aircraft carriers and fortresses,—the linchpins and foundations for a mobile maritime defense.

To what degree can we fashion a new form of containment strategy using allies and potential partners such as Vietnam to put in place air, sea, land, and electronic barriers to a Chinese breakout? Clearly, the Philippines are an interesting challenge, given the personality of its president. Similarly, making greater strategic use of Indonesia poses parallel challenges.

Such a strategy obviously would entail naval and shore-based elements, to include long-range missiles, air defenses, and mine capability, and likely would require potential deployments of land-based forces to augment local and regional defenses.

The overarching policy would be a variant of the old Nixon Doctrine. The United States would provide the strategic capability, assisting and supporting regional states, onto whom more-local security responsibilities would shift.

Seminar 3: A New Triad—Greater Reliance on Unmanned Systems, Special Forces, and Cyber, Writ Large

Assume that the United States maintains the ability to deploy forces (including deployed joint forces) of about 100,000–150,000 on each coast, to cover two contingencies; and the strategic nuclear balance is maintained. This strategy would place far more emphasis on special forces, increasing their numbers from a total of 82,000 uniformed and civilian personnel to a larger figure, in part by making regular forces more "special." The purpose of this emphasis would be to provide more capability to conduct counterterror, training-and-assistance, and other missions not requiring heavier forces.

Far more reliance would be placed on unmanned systems. Likewise, cyber as well as informational and electronic-warfare roles would be allocated substantial resources of people and money, particularly to counter "active measures."

What would be the strategy for this emphasis; what would it say about future war; and what roles and missions would it fill?

Seminar 4: Revising the Organization for National Defense

National defense is organized around the 1947 act, as amended, and of course other major legislation, including annual authorization and appropriation laws that have imposed changes on the overall organization. However, clearly, the overall organization is huge, redundant, and overlapping; usually too slow in making decisions, and often incapable of providing necessary knowledge and intelligence in a timely fashion; and ill-prepared to cope with the challenges of cyber, active measures, and other issues.

It is interesting that the key national security bureaucracies—those of DoD, State, the NSC, the DCI, CIA, Congress, Homeland Security, Justice, and the Treasury—have no common regional or functional organizations, meaning that there is large overlap. The Unified Command Plan still reflects much of the Cold War mind-set, and the presence of multiple jurisdictions—Africa, for example. The problems resulting from these aspects normally are rectified by virtue of particular personalities and command relationships—which are not necessarily permanent.

The Pentagon itself has as more key parts than it has sides: the Secretary of Defense and OSD; the Chairman, Joint Chiefs, and Joint Staff; the service secretaries and their staffs; combatant commands; and defense agencies. Does this organization require major change?

Defense acquisition, despite countless commissions, reviews, and studies, remains too slow, bureaucratic, expensive, and cumbersome, and incapable of bringing needed capabilities into service on a timely basis.

Assuming we are starting from a clean sheet, and including the necessary players and organizations as inputs, what might constitute a new national security act and national security organization, including the organization of Congress? With Armed Services Committees and a plethora of subcommittees and divided jurisdiction over intelligence, money, budgets, homeland security, and the like, can anything be done to rationalize this organization?

Finally, what is the strategy for advancing the need for reorganization? Obviously, the narrative and means to convince, cajole, or coerce support is vital. The focus must be on DoD and combatant commands; however, understanding the broader makeup of national security is essential to any reorganization.

Attachment 1: Action Plan for a Navy the Nation Needs

Subj: Crash Action Plan for a Navy the Nation Needs

If we are serious about pursuing a more lethal Navy, we need to break the mold of past thinking because under those conditions, without a huge and virtually impossible increase in budgets, that goal is not achievable, certainly for decades. This means that both ends of Pennsylvania Avenue must be given options that extend well beyond the bounds of conventional and traditional thinking. If these turn out to politically a bridge too far, then decision makers know that this goal will be just that.

Here are a range of options that "break the mold:"

- First, change our maritime strategies and deployments/requirements to include a porcupine defense in Europe and a mobile flexible Maginot Line plan in Asia, with clear force-level consequences.
- Examine the need for opposed-entry amphibious operations, to create options.
- Shift to a truly high-low mix for ships and aircraft:

  —more, smaller "hunter-killer" combatants of 1000 tons or less; diesel-electric
  —submarines for both SS and SSB; Corsair III tactical aircraft
  —CVLs/sea-control ships with 15–20 F-35s
  —far more UAVs of all classes
  —lighter-than-air ships/blimps

- Buying foreign hulls and using commercial standards, using U.S. weapons and electronics systems.
- Relying more on a strategy of reconstitution and regeneration of forces to reduce costs, to include placing certain large combatants and even SSNs in a "cadre" status, to be recalled when needed—saving ONM costs.
- Placing more reliance on allies and the 1000 ship navy or maritime partnerships to compensate for and complement U.S. needs.
- Placing more reliance on cover, deception, and new ways of doing operational business, such as carrier battle decoy groups and other means of deception.
- Having a better narrative. If forming Task Force 355 to emphasize the commitment to growing the Navy cannot be done, elevate this goal to the highest levels of the Navy and Marine Corps.
- Inducing a revolution in naval education to ensure that the naval service is well prepared intellectually, strategically, and operationally for the future.

APPENDIX 3

"Breaking the Mold" Workshop—Point Papers

"Adopting Swarming USV Operations in European Waters: The Jeune Ecole ('the Young School') Meets the 21st Century," by Dr. Richard Moss

"A Flotilla to Support a Strategy of Offshore Control," by Dean Emeritus Wayne Hughes and Professor of Practice Jeff Kline

"Seabed Warfare and the Evaporation of Submarine Stealth," by Professor Bill Glenney

"Amphibious Warships in the Sea Control Battle," by Dr. Sam Tangredi

"Adding Sea-Based Intermediate-Range Ballistic Missiles (IRBMs) to the U.S. Navy Future Fleet," by Dr. Sam Tangredi

"Shifting From Sea Control to Ocean/Global Commons Control: Preventing PRC Global Maritime Operations," by Dr. Sam Tangredi

"Utilizing a Prototype Mobile Offshore Base (MOB) to Reestablish Global Norms in the South China Sea," by Dr. Sam Tangredi

"Transcendent Wars of the 21st Century," by Dr. Lewis M. Duncan, Provost

"Employing Artificial Intelligence (AI) in Naval Warfare (Not Naval Weapons)," by CAPT Adam Aycock

"The Big Idea: Modern Multi-Mission Airships," by Professor John Jackson

"The Future Force: Blue Hair in the Gray Zone," by Dr. Jacquelyn Schneider

"Rethinking Forward Presence and Forward Defense," by Dr. Peter Dombrowski

POINT PAPER

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ADOPTING SWARMING USVs OPERATIONS IN EUROPEAN WATERS: JEUNE ECOLE ("THE YOUNG SCHOOL") MEETS THE 21st CENTURY

BACKGROUND

- With its layered-defense umbrella of surface-to-air missiles, lethal anti-ship cruise missiles (ASCMs), and precision long-range strike, Russia is positioned to deny air and sea lines of communication to the US Navy and its allies across the Black and Baltic Seas.
- Simply put, the United States and its NATO allies occupy the weaker position vis-à-vis Russia in these waters, and it is time to adopt an approach that recognizes this reality. History may provide some insights.

DISCUSSION

- French Vice Admiral Hyacinthe-Laurent-Theophile Aube, one of the fathers of late-nineteenth-century France's *Jeune Ecole*—the Young School—recognized France's relative economic and military weakness vis-à-vis Great Britain. Instead of matching Great Britain ship class to ship class (i.e., battleship to battleship) and in tonnage, Aube advocated the use of emerging technologies, clever tactics, and a large fleet of smaller ships, such as torpedo boats, to beat a stronger adversary. Although France never got to test Aube's ideas out against Great Britain, the ideas of the Young School still resonate in asymmetric situations.
- While Iran is not usually seen as a model for emulation, the Islamic Revolutionary Guards Corps Navy's (IRGCN's) concept of swarming large, multi-mission ships with heavily armed watercraft in constricted waterways is worth considering. It would be unwise to ignore the real threat that the IRGCN's arming its small craft with anti-ship cruise missiles, torpedoes, rockets and heavy machine guns presents.
- Imperial Japan's kamikaze planes (and boats) during World War Two, the explosive-laden suicide boat attack on the *U.S.S. Cole* in 2000, and a Houthi suicide-boat attack on a Saudi ship off the coast of Yemen in 2017 demonstrate how a weaker, desperate attacker can impose serious costs on a stronger opponent. In addition to killing 17 sailors and wounding 39 more, the attack on the *Cole* disabled the ship and cost $250 million to bring back to service (and upgrade).
- Rather than having NATO forces conduct suicide attacks during conflict, perhaps the application of Yankee ingenuity and technology can play off the old theme. The Israel Aerospace Industry's Harpy drone—also known as a loitering munition—provides an example of current technologies, albeit applied to aircraft. The Harpy's small size and low radar signature make it

difficult for air defense networks to detect and target. It is versatile and can be launched from ground or air, and can operate autonomously or with a human in the loop.

- Swarms of small, fast, inexpensive, and stealthy robotic boats/unmanned surface vehicles (USVs) armed with ASCMs, torpedoes—or themselves the weapon, kamikaze style—could tie down an adversary's larger ships and drain their resources.
- Numerous automated boat platforms already exist in the U.S. and NATO defense industries. Anticipating a GPS-denied environment, systems could operate autonomously and rely on stellar, inertial, electro-optical, or infrared sensors, or some combination thereof.
- The boats could be stealthy by minimizing height above the waterline, running the exhaust underwater, and having a diminutive footprint by omitting accommodations for human operators. Likewise, the boats could be constructed with low-radar-cross-section fiberglass and high-powered commercial-off-the-shelf motors like Latin American "Picuda" (Caribbean Spanish for "barracuda") drug runners.
- The question is not whether the US and/or its allies should adopt such procedures, but rather what would provide a balance between regular, peacetime operations (like presence missions) and the use of such systems in wartime.

RECOMMENDATION

- Instead of encouraging NATO partners, like Romania, to try to match Russia, perhaps the United States should take a page from Aube's playbook and encourage allies to think about larger numbers of inexpensive—but stealthy and extremely lethal—small craft. Likewise, US NATO allies may look to tactics and platforms weaker opponents have adopted against stronger adversaries.

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POINT PAPER

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11 January 2018

A FLOTILLA TO SUPPORT A STRATEGY OF OFFSHORE CONTROL

BACKGROUND

Written by Hughes and Kline under the auspices of OSD Office of Net Assessment in 2012, *A Flotilla to Support a Strategy of Offshore Control* proposes an affordable way to increase the fleet's offensive capacity and resilience in the littorals. The report draws on NPS student theses, faculty research in the NPS Littoral Operations Center, and outcomes of ten years of Joint Campaign Analysis capstone work. This paper summarizes the report.

DISCUSSION

- A flotilla of small missile corvettes should be a low cost, high reward component of the U.S. fleet. It can be designed to be effective in littoral waters and cul de sacs around the world in times of cooperation, competition, confrontation, or regional conflict. Squadrons from the flotilla can support friends and constrain prospective enemies.
- Squadron tactics should be quickly developed, including experiments with manned-unmanned systems operating cooperatively.
- Ships of the flotilla can be deployable in numbers appropriate to existing but often-changing geopolitical conditions anywhere but not everywhere. In other words, the flotilla offers much greater adaptability than the existing but shrinking fleet of large, expensive, multipurpose warships. It is designed to relieve the big-ship component of some littoral responsibilities and supplement their capabilities.
- The flotilla component can be built with less than 5% of the SCN budget and, because of low manning and maintenance costs, will be easier to maintain forward base than the big ship fleet.
- The missile corvettes do not carry expensive defensive missile systems or aircraft, They survive by point defense, soft kill, stealth, concealment along coastlines, and by blending into coastal shipping and fishing boats.
- The feasibility of logistics support, sea worthiness, and deployability has been demonstrated in detail but must be tailored to local conditions, region by region.
- As a rough estimate, an affordable flotilla might comprise 64 vessels.
- Detailed ship designs made by Total Ship System Engineering classes at NPS that match different classes of similar vessels in the world's navies indicate the following characteristics:

- About 500 tons, costing less than $80 million to construct in series production, with a 15-year service life so that new designs can be quickly built to respond to technology advances.
- An affordable monohull with little or no expenditures for stealth properties will result in corvettes with about 30 knots speed and shallow draft.
- Armament is eight Harpoon-sized ASCMs, 24 or more short-range dual-purpose missiles, and a 57 mm rapid-fire gun.
- The combat crew is 12 for short-durations offensive strikes, but there are 25 berths for extended peacetime cruising.
- When a ship is put out of action by a missile, the crew does not do damage control but is swiftly taken off by a consort vessel while the damaged ship sinks.
- A strategy of offshore control conducted by squadrons of the flotilla envisions participation by Marine and Special Force elements along with search by aerial unmanned vehicles tailored for scouting, tracking, and targeting. The result can be offensively oriented air-sea- ground task groups deployed at low cost for deterrence, distributable attacks, and survivability in dangerous waters.
- The flotilla's contribution to the U. S. fleet include greater offensive capability, capacity, and coverage, greater resilience in contested waters, and more diversified engagement flexibility.

ADDITIONAL OBSERVATIONS

- A flotilla-size vessel provides the opportunity for early command, and to hone leadership and seamanship skills at an earlier rank.
- The flotilla provides a venue for manned-unmanned teaming of MDUSV, LDUSV, and manned ships experimentation and operation
- A flotilla offers the opportunity for bi-lateral manning and/or exercises with close allies who may also base the ships

BREAKING THE MOLD
A Workshop on War and Strategy in the 21st Century

POINT PAPER

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SEABED WARFARE AND THE EVAPORATION OF SUBMARINE STEALTH

BACKGROUND

- World energy markets will be driven to the seabed to drill on smaller and smaller oil fields, and to harvest the vast methane hydrate supplies.
- Supplies of readily accessible and refinable rare earth materials on land are consumed, and China exerts greater control over their supplies driving industry and commercial entities to the seabed.
- International regimes for handling seabed activities, such as the United Nations' International Seabed Authority, will be only marginally effective. Vast areas of the seabed will become feral.
- The Blue Economy will be driven by undersea cables, seabed infrastructure, fish and other natural resources, and power generation and transmission
- The Chinese will complete their nearly impenetrable "Undersea Great Wall" encompassing the entire ECS and SCS, and most of the SOJ and PHILSEA.
- The proliferation of commercially-developed seabed monitoring systems, ROVs and UUVs means anybody who wants to monitor the seabed can do so at reasonable cost. Every seabed commercial venture will patrol and protect their facilities.
- Every seabed and undersea system will be enabled by robust connectivity, mostly undersea and virtually undetectable, and strong artificial intelligence and machine learning ensembles.
- Much of the ocean, and particularly areas of significant commercial investment and value will have seabed systems that can detect large, manned submarines, and even much smaller ROVs or UUVs.
- In short, the sea, especially the seabed, will become significantly more important to the health of the global economy and more important to the perceived strength of global actors, not just nation-states. U.S. undersea dominance will be a thing of the past.
- These changes will impact the U.S. ability to use and own the undersea. The SSN(X) and COLUMBIA SSBN will be of marginal tactical and strategic value, respectively, as most areas of interest of the world's oceans will have become "informationally transparent" while remaining "optically opaque".

DISCUSSION

- Historically, the U.S. Navy has operated under the assumption that "playing the away game"—being forward deployed—was sufficient to protect and defend U.S. home waters. Regardless of the status of the "away game," the U.S. Navy had to also "play the home game" including the home seabed game.

- In addition, when conflict arose regardless of it geographic location, the U.S. Navy has to be able to move out of the CONUS homeports, through U.S. home waters out into the open ocean unhindered and before it could prepare to fight its way into the away battlespace. Seabed warfare demands the Navy fight its way to the open ocean and continue the fight even while adversaries were in the U.S. Navy's flanks and rear—the CONUS home waters— all enabled by seabed capabilities.

- The basic assumption of air and surface supremacy in all of the Navy's and Joint Forces' planning is invalid in the face of Chinese and Russian capabilities. The experiences of 15 or more years fighting near and over Iraq and Afghanistan does not apply in the western Pacific and Baltic waters.

- Aviators have to re-learn how to suppress enemy air defenses, and re-learn how to fight in the face of a competent adversary—how to take hits and losses, and keep on fighting. Surface warriors had to learn how to fight despite being "out-sticked" by longer-range and better-capability weapons.

- The basic assumption that was used in the design, procurement, and tactical operations of U.S. Submarine Force—"owning" the top 1,000 feet or so of the water column ensured undersea supremacy anywhere in the world, and allowed the execution of sea denial to surface forces everywhere— now invalid, ineffective and wrong, will no longer be useful and will be counterproductive.

- From the end of the first Cold War, the Navy and the Submarine Force "whistled past the graveyard," routinely dismissing out of hand the threat from sea mines.

  > Nations and commercial entities will routinely map underwater terrain to support their interests and activities, usually down to the sub-meter resolution, and covering nearly 85 percent of the world's oceans. This level of detail allows detailed planning for and placement of systems and devices on the ocean floor, undetectable and immune from attack.

- The proliferation of commercially developed undersea and seabed systems make them readily available to anyone with even a modest amount of funding. These systems had long ago departed being a resource only for a rich nation-state.

- And, non-U.S. militaries and nonmilitary security forces were quick to procure and modify the commercial undersea and seabed systems for their uses.

- Some systems will be capable against other seabed systems or other undersea systems. Other seabed systems will be designed and deployed to use against surface, air, and land systems—bringing another cross- or multidomain dimension to warfare. Naval forces will be forced to

consider not only the role of seabed and undersea forces in warfare on the seabed and in the undersea, but also the role of those forces in warfare on the sea surface, in the air and space, and on land.

- The U. S. Submarine Force will have to abandon its assumption that being in the undersea made submarines immune from attack from anywhere except in the undersea. The interrelationship amongst the warfighting domains made the cross-domain approaches of Combined Arms ASW from the Cold War look like simple arithmetic in comparison to advanced algebra.
- The USN Submarine Force and its other undersea and seabed forces have to prepare to compete—fight—against a bunch of adversaries for every part of the undersea and seabed.
- Three technologies are especially important to making the ocean informationally transparent and causing the evaporation of submarine stealth: quantum sensors, neutrino sensors, and living sensors.

RECOMMENDATION

The fundamental conduct of warfare in the undersea is changing significantly, and doing so in a perfectly predictable manner to include the seabed. This change warrants equally significant changes in the forces and systems that will fight in the undersea and on the seabed in the second half of the 21st century. The DOD should act now to take up the challenge of being able to compete in the deep undersea and on the seabed.

POINT PAPER

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AMPHIBIOUS WARSHIPS IN THE SEA-CONTROL BATTLE

BACKGROUND

Statement of the problem: (1) current U.S. naval forces do not possess the weapons inventory to conduct the volume of fire necessary for a high-intensity engagement against a militarily-capable regional power in a near sea; (2) such an engagement will require strikes against land-based targets, reducing the focus available for sea control mission areas; (3) weapons resupply of engaged combatants is difficult in a high-intensity engagement without removal of the combatants; (4) current fleet size requires deployment of the majority of USN assets to the region of engagement, exposing other regions of interest to exploitation; (5) combatants cannot be simultaneously tasked with providing protection to amphibious/expeditionary forces.

DISCUSSION

- A low-cost potential solution for increasing deployed weapons volume in either a land strike or sea control situation is by installing strike weapons on existing platforms that are not currently equipped. This would also accord with the concept of "distributed lethality."
- The Littoral Combat Ship cannot satisfy this requirement without significant increase in range, an ability to operate for extended periods at sea, and extensive reconfiguration.
- Given volume, manning, and C2 capabilities, existing amphibious warships (particularly LPDs and LSDs) appear the best candidates for such a distributed lethality extension.
- During the Cold War, the U.S. Navy gained practical experience in the installation of box and canister launchers on ships, providing them with antiship and land strike capabilities.
- In 1997, the U.S. Marine Corps tested the at-sea employment of "high-mobility artillery rockets" (HIMARS) fired from a road-mobile launcher griped to the deck of USS *Anchorage* (LPD-23) against a land target.
- Commandant, USMC has suggested that the HIMARS launcher can be eventually equipped with antiship missiles.
- In the open arms market, Russia proposed sales of the KLUB-K system, a missile-launching system contained within a standard multimodal container (CONEX) box that can be accommodated by most merchant container-ships and griped to the decks of amphibious warships.
- Box, canister, and container launchers—along with the necessary C2—can be added to existing ships at a fraction of the cost of back-fitting vertical launch tubes (VLS) or *new construction*.

- Although such installations may not provide the more extensive capabilities of CGs/DDGs, they can augment fleet capabilities, with CGs/DDGs, E-2Ds, or other airborne system providing targeting data and midcourse correction directly to the missiles.

OBSERVATIONS

- In order to employ amphibious warships in multi-mission operations, USN and USMC will need to overcome ingrained limits to current doctrine concerning the employment of amphibious warships.
- USN surface force will need to overcome existing "tribal cultures" that separate cruisers-destroyers (CRUDES) and amphibious forces and inhibits the multimission use of amphibious warships.
- Since the war-at-sea capabilities of amphibious warships that are back-fitted with box/canister launchers would be inherently less than those of VLS-equipped CGs/DDGs, an alternative method of employment would be for amphibious warships to replace DDGs within other COCOM areas of responsibility (AORs) in order to allow the CRUDES force to concentrate on an area or crisis. For example, LSDs/LPDs could replace DDGs and perform sea-control missions in the CENTCOM AOR in the event of a crisis in the Pacific.

RECOMMENDATIONS

- USN should immediately conduct a series of experiments utilizing existing box/canister and land-mobile launchers onboard amphibious warships to determine effective employment, C2 and tactics in their use in sea-control and land-attack missions.
- Following installation on amphibious warships, USN should proceed beyond the current planning and cultural limits to "distributed lethality" and immediately conduct experimentation, engineering, and tactical studies for employment of box/canister launchers on all USN/USNS vessels capable of installation (excepting hospital ships).

POINT PAPER

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15 November 2017

ADDING SEA-BASED INTERMEDIATE-RANGE BALLISTIC MISSILES (IRBMs) TO THE U.S. NAVY FUTURE FLEET*

BACKGROUND / STATEMENT OF THE PROBLEM

- Antiaccess/area-denial (A2/AD) systems appear to be forcing U.S. Naval surface forces away from the littoral regions. Emblematic of that is the (perceived) threat posed by the PLA DF-21D/DF-26 antiship ballistic missiles. Both missiles fall under the category of intermediate-range ballistic missiles (IRBMs) as defined by the INF Treaty, which covers missiles with a range of 1000–5500 kilometers (622–3418 land miles). *Note: The A2/AD term will be used in this assessment because it is a well-recognized acronym with DoD. However, as identified by the CNO, there are problematic implications for the term.*

- Operations research conducted at the Naval Postgraduate School indicates that naval warfare favors the side that can "attack effectively first" (particularly in the missile age), but the range of A2/AD weapons exceeds that of U.S. Naval aviation, forcing U.S. Naval air and surface forces to operate on the defensive as they comes within strike range. SSN/SSGNs can operate within the opponents A2/AD envelope, but the number of the platforms are limited and will necessarily be expected to carry out other missions.

- Naval strike weapons that can attack from outside A2/AD range, such as sea-launched cruise missiles (*Tomahawk*) are precise, but *not* timely, and appear to have limited capabilities against mobile and buried/hardened targets. This includes *Tomahawk*s carried on SSN/SSGNs. *Tomahawk* speed-to-target is roughly Mach 0.7. In contrast, IRBMs (such as DF-21/26) can achieve post-boost phase speeds of Mach 20 (actual speed-over-ground is somewhat lower).

The relatively slow speed of *Tomahawk* has been perceived as a weakness in that weapon's use during the war on terrorism (particularly operations in Afghanistan). Although *Tomahawk* has been used against fixed targets, such a terrorist training camp infrastructure, its speed has limited its use against real-time mobile targets such as terrorist personnel. This has prompted support for a prompt global strike (PGS) system of conventionally armed intercontinental ballistic missiles (ICBMs) to be fired from the continental U.S. against terrorist targets. Such a system, however, would have serious implications for nuclear arms control and might be considered limited by current treaties (START).

- The U.S. Navy currently does not possess a weapon that can conduct prompt strike against mobile or hardened targets from outside the A2/AD range of potential opponents. Such strikes would rely on carrier aviation or joint assets.

- Current carrier strike aircraft (F/A-18E/F) have an approximate combat radius of 390 nautical miles (NM)/722 kilometers (km) without aerial tanking. F-35C rated combat radius is 600

NM/1112 km without aerial tanking. Combat radius varies based on weapons load. Current per unit acquisition cost of F-35C is estimated at $116 million. [Note: Life-cycle costs for manned aircraft far exceeds that of missiles.] PLA DF-21D range is estimated at 780 NM/1450 km. *Extending the range of strike aircraft in the future is possible; older carrier strike aircraft had rated unrefueled combat radii in excess of 1000 NM.*

DISCUSSION

- A conventionally armed (nonnuclear) sea-based IRBM capability for surface warships and submarines holds the potential to out-range the PLA land-based missiles and provide an effective counterbattery strike capability, thereby enhancing regional deterrence. The primary purpose would be strikes against land targets, but such a weapon could be directed against opposing fleet concentration areas. (This statement assumes the existence of sensors and battle-management systems necessary for effective targeting.)

- There are no arms-control treaties or international laws that restrict the construction and deployment of sea-based IRBMs (whether conventionally or nuclear armed). It is possible that development of sea-based IRBMs may facilitate the creation of a future regional arms-control regime in similar fashion to those governing nuclear-capable land-based IRBMs and ground-launched cruise missiles in Europe.

- On 2 November 2017, the U.S. Navy Strategic Systems Program reported that an unarmed submarine-launched (intercontinental) ballistic missile (SLBM) was launched from an *Ohio*-class nuclear guided missile submarine (SSGN) to test a naval option for the "conventional prompt global strike capability." The use of nuclear-capable intercontinental range SLBMs for conventional strike is an alternative that is perceived as problematic for the prevention of nuclear escalation. However, it would appear that the capability of launching a conventionally-armed SLBM is similar to the capability to launch a conventionally-armed IRBM.

- A conventionally armed, sea-based IRBM based on the design of the former land-based *Pershing II* missile may be a cost-effective solution in comparison with other technologies. IRBMs represent mature technologies that do not require an extensive research-and- development cycle. *However*, engineering a land-based *Pershing II*-type missile to operate at sea would involve technical risk, and many aspects of the effort would require extensive technical studies.

- Without extensive technical studies it is impossible to estimate the development and per unit costs of sea-based IRBMS. However, a MITRE report provides a per unit cost estimate of $15 million. Per unit cost for *Pershing II* converted to 2017 dollars was $19 million.

- It is conceivable that deploying sea-based IRBMs in deck-mounted box launchers might allow their integration in existing U.S. Navy (USN) and U.S. Naval Service (USNS) ships, precluding the need to design specialized platforms.

- It is conceivable that a smaller, sea-based IRBM might be developed using modern digital and miniaturization technologies that could fit the Mk 41 VLS launcher.

- Integration of sea-based IRBM fire control into current naval tactical networks to enable effective use against real-time targets is difficult (as with other over-the-horizon weapons systems), but certainly not an insurmountable engineering challenge. There are various methods of systems integration; similarly, there are alternative methods of targeting and control.

RECOMMENDATIONS

- OPNAV N3/5 should conduct a study of the effects of including sea-based IRBMs in the future fleet in terms of strategic requirements.
- OPNAV N8 should conduct campaign analysis and modeling related to the integration of sea-based IRBMs into the future fleet architecture.
- OPNAV N9 should initiate discussions concerning the appropriate sponsor of a sea-based IRBM program and how such a program would develop across weapons and platform-sponsor boundaries.
- Commander, Naval Surface Force (COMNAVSURFOR) should initiate a series of experiments in employing ground mobile missile systems—beginning with relatively small and short-range missiles—on USN and USNS ships.
- Commander, Naval Submarine Force (COMNAVSUBFOR) and/or other appropriate undersea warfare commands should examine the feasibility of converting *Ohio*-class submarines to conventional IRBM launch platforms, similar to their conversion to cruise missile SSGNs.
- Commander, Naval Air Systems Command should begin preliminary technical feasibility studies on the adaptation of *Pershing II*-type systems for sea launch.
- Commander, Naval Sea Systems Command (NAVSEA) should begin preliminary technical feasibility studies and analysis of alternatives for sea-basing IRBMs on existing vessels and future designs.

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* A more detailed analysis of this proposal (including alternatives, costs, and risks) is available as NWC Institute for Future Warfare Studies Working Paper #1-17-1a.

POINT PAPER

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26 February 2018

SHIFTING FROM SEA CONTROL TO OCEAN/GLOBAL COMMONS CONTROL: PREVENTING PRC GLOBAL MARITIME OPERATIONS

BACKGROUND / STATEMENT OF PROBLEM

- The U.S. cannot achieve *sea control* in the South China Sea (SCS) without striking land targets in mainland China (PRC).

  –The primary threats to the U.S. Navy in the SCS are People's Liberation Army (PLA) Rocket Forces and land-based tactical aviation, not the People's Liberation Army Navy (PLAN). The PRC will attempt "to use the land to control the sea."*
  –PLAN does not need to sortie for the PRC to conduct sea-denial operations in the SCS.

- Neutralization of the artificial islands in the Spratly area can mitigate PLA sea-denial capabilities in the southern SCS, but the volume of PLA weapons likely makes the northern area untenable.

- However, the U.S. Navy can conduct sea-denial operations in SCS, ensuring that the PLAN cannot operate without attrition, and preventing resupply of the artificial islands.

- Sea-denial capability may be sufficient to deter PRC/PLA regional intimidation.

- Nevertheless, NCA may consider a potentially stalemated conflict within the confines of SCS as not in the U.S. interest, ceding de factor control over the SCS in face of the threat of conflict.

DISCUSSION

- Although the PRC can achieve denial and possibly dominance in near seas (SCS), geography ensures that it must transit the choke points and limited waters of the "first (and second) island chain."

  –When PRC commentators first used the term "first island chain," they did not refer to PLA antiaccess capabilities, but to the ability for opponents to close the oceans/maritime commons to the PLAN.

RECOMMENDATIONS

- USN should refocus its investment in attempting to ensure the capability needed to achieve sea control over the SCS, and instead focus on creating a GUIK-type barrier to PLAN deployment beyond the first island chain in any conflict.

- Having a barrier that includes fixed SOSUS follow-on installations, forward-deployed forces, routine area operations, and firm alliance relations would ensure that the PRC recognizes that their access to the global maritime commons in peacetime is at the sufferance of the U.S. and its allies, thereby having a conventional deterrence effect.

  –The U.S. found this a successful approach in the Cold War.
  –Potentially this is a less costly strategy than the major increase in weapons and platforms required to achieve sea control in the SCS.
  –Although the PRC may seek to construct land trade and resource routes, the costs of such infrastructure dwarfs the costs of maritime transport, thereby forcing the PRC to spend resources that could be invested in military growth.

- The key element of an ocean/global maritime commons denial strategy is maintaining the trust and cooperation of regional allies and assuring them of U.S. support in any conflict with the PRC.

  –This requires maintaining combat-credible naval (and joint military) power in the region.
  –This may also require diplomatically "taking sides" in SCS and East China Sea disputes, something the U.S. government has thus far avoided.

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* Andrew S. Erickson and David D. Yang, "Using the Land to Control the Sea? Chinese Analysts Consider the Anti- Ship Ballistic Missile," *Naval War College Review* 62, no. 4 (Autumn 2009), pp. 53–86.

POINT PAPER

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UTILIZING A PROTOTYPE MOBILE OFFSHORE BASE (MOB) TO REESTABLISH GLOBAL NORMS IN THE SOUTH CHINA SEA

BACKGROUND

Statement of the problem:

- In violation of international law and global norms, the People's Republic of China (PRC) has essentially "captured" the South China Sea (SCS). While not interfering—at least at present—with most commercial transit, PRC law has declared the South China Sea to be the equivalent of territorial waters.

- PRC has constructed a series of islands on reefs and awash shallows within international waters and within the disputed Exclusive Economic Zones (EEZs) of other nations. These artificial islands—sometimes dubbed the "great wall of sand"—have runways and are armed with antiair weapons, with indications that tunnels for additional weapons and hardened shelters for strike missiles are now being built.[1]

- In order to counter PRC claims, the U.S. Navy conducts a series of freedom of navigation (FON) operations, a practice that it has conducted many times over the years to challenge the (il)legality of such claims. However, FON ops are by necessity short-term actions that no longer seem to achieve the public-diplomatic effect of the Cold War era and even the recent past.[2] As necessary as they may be from an international legal perspective, they are slowly becoming but a part of the background noise of the narrative.[3] If the PRC wants to relegate them completely to the background noise, all it has to do is ignore the FONs. (Only lawyers would remember.)

Potential solution:

- A potentially low-cost, albeit higher-risk solution would be for the U.S. and its allies to take "bit-more-permanent" approach to reestablishing law and norms and emplace a mobile offshore base (MOB) to create an "island of freedom" in the SCS. The likely position would be 100 miles from nearest land on the Macclesfield Bank or in Dangerous Ground to the west of Palawan, Philippines.

- This MOB—a concept discussed in the late 1990s—could start as a single (inoperative) oil rig manned by a "peace contingent" of U.S. and partner Coast Guardsmen and NOAA civilians. Officially it would be an aid to navigation in what is indeed very dangerous ground.

DISCUSSION

- The concept of large mobile offshore bases—as a means of maritime presence and projecting joint forces into a region of crises—gained temporary prominence through the writings of

then-JCS Vice Chairman Admiral Bill Owens in the mid-1990s. As conceived by Admiral Owens, MOBs (also referred to as Joint Mobile Offshore Bases) would be "built from the experience and technology associated with offshore oil-drilling platforms…perhaps we would build them by assembling components that arrive separately in the region of concern."[4]

- At the high end, proponents envisioned linked-together oil rig–type platforms (generally self-stabilizing and not bottom-tethered) that could create runways long enough to land C-140, or even C-17 aircraft (6000-ft length).
- The technology necessary to link several floating oil rig platforms was demonstrated and experiments and studies were conducted (some funded by the Office of Naval Research) that suggested such links—combined with self-positioning propulsion—could prove effective even in challenging sea states.[5]
- However, the initial effort would consist of a single used oil platform (minus all oil-drilling equipment), with the potential of increasing the size if necessary for the effort at tacit negotiations. The ultimate goal is to induce the PRC to reduce their military presence on their artificial islands and acknowledge global norms in the SCS.
- There is currently a glut of used/decommissioned oil rigs on the market, with auction prices dipping to 10% of the original construction costs.

OBSERVATIONS

- A sovereign vessel/platform positioned in an area in which there is no exposed land and conducting nonmilitary missions that does not exploit resources considered protected by an EEZ is protected under international law.
- For the purposes of controlling the narrative, the U.S. government could express interest in turning the platform over to an international organization as an "island of peace."
- The action would represent the willingness of the U.S. to act in a relatively nonconfrontational way and reassure the smaller states that the U.S. will not allow international law to devolve into a Melian dialog.
- It would buttress FON operations with a permanent regional presence.
- It would be designed as a bargaining chip; if the PRC is uncomfortable with such a platform emplaced in the SCS (and the potential for others), it could consider down-scoping its presence on the artificial islands.
- It represents a tool for "escalating to deescalate," a tactic now associated with Russian foreign policy, but which has less-nefarious potential.

RISKS

The state-run PRC media and proxies will "scream bloody murder" in denouncing the action—"U.S./Western imperialism," "affronts to Chinese sovereignty," continuation of the "100 years of humiliation"—all the rhetoric routinely used when another nation takes any action the

PRC dislikes. In response, world media will profess shock and concern with alarmist reports that "war might be imminent" and that the U.S. is being unnecessarily provocative. (Theater like that sells advertising.)

- Obviously, most important is the physical reaction of the PRC government. Critics of this proposal would see an immediate and escalating confrontation, with PRC vessels blockading and forces storming the platform. Such an action would indeed by a horrendous result, but strategic positioning of naval assets in international waters should mitigate this threat.
- The question is: would the PRC threaten war with the United States because of a platform sitting in what the rest of the world considers international waters, when the consequences are predictable:

  –Disruption of the PRC's international trade
  –Probable nuclearization of Japan and other Asian states
  –A permanent Western effort to contain the PRC, in the style of the Cold War
  –Potential internal Chinese discord that could challenge the CCP's absolute control on political power. (Many in the new mainland Chinese business community may not see drastic action in their interest, patriotism or not.)

- The MOB would be continually subject to harassment and interference by the People's Liberation Army Navy (PLAN), PRC coast guard agencies, and the maritime militia.

  –However, the reality is that such dangers *already* exist in the region, with PLA aircrews killed and American crews endangered, not to mention the many other national fleets that have been harassed.
  –It is possible that harassment would increase in intensity, but since such activity has become "normalized" in the South China Sea, it could increase in intensity at any moment, MOB emplaced or not.

RECOMMENDATIONS

- The U.S. should emplace an "island of freedom and peace" in the SCS.
- The initial MOB platform would remain demilitarized, with the exception of water cannon and the normal protective arms carried by the U.S. Coast Guard, and be rated as an aid to navigation and research platform. It should not appear capable of exploiting undersea resources, although it could support environmental research. Protection from harassment should be provided by the U.S. Navy in the current manner in which it operates in the SCS.
- The U.S. should restart research and development in major MOB technologies, developing the ability to expand the demilitarized platform into an actual military-capable MOB—analogous to what the PRC has done in the Paracels and Spratleys.
- The U.S. should commence negotiations: if the PRC wants to expand their activities to close the South China Sea, the U.S. could expand its activities to keep it open. If the PRC wishes to reduce potential tensions, it could stop constructing artificial islands, demilitarize them, and turn their control over to an international organization.

- In comparison to large military acquisition programs and operations, the cost of buying, refurbishing, towing, and maintaining the platform/MOB would be nominal.
- As part of the diplomatic effort, the U.S. should make it clear that it intends to eventually turn control of the platform over to the United Nations or the Association of Southeast Asian Nations (ASEAN), if the PRC indicates a sincere willingness to negotiate on an end to island building and militarization.

NOTES:

1. Asia Maritime Transparency Initiative, "A Constructive Year for Chinese Base Building," December 14, 2017, https://amti.csis.org/constructive-year-Chinese-building

2. An argument that the "consistent practice of free navigation" is as effective (or not) as formal FON operations can be found in Peter A. Dutton and Isaac B. Kardon, "Forget the FONOPs—Just Fly, Sail, Operate Wherever International Law Allows," *Lawfare* (blog), June 10, 2017, https://lawfareblog.com/forget-fonops-%E2%80%94- just-fly-sail-and-operate-whereever -international-law-allows.

3. See discussion in Ralph Jennings, "China Calmed Asian Maritime Dispute in 2017 without Ceding Sovereignty," *Voice of America News,* December 11, 2017, https://www.voanews.com/a/south-china-sea-disputes-calming- down/4158167.html.

4. Admiral William A. Owens, USN, *High Seas: The Naval Passage to an Uncharted World* (Annapolis, MD: Naval Institute Press, 1995), pp. 162–63.

5. Studies include: Ronald N. Kostoff, *Floating Ocean Platform* (Office of Naval Research, c. 1991), Anouck R. Girard, et al., *An Experimental Testbed for Mobile Offshore Base Control Concepts* (Berkeley: Univ. of California, 2001), https://whale.fe.up.pt/Papers/2001/PAPER _HAWAII2001.pdf, and W. L. Greer, project leader, *Mobile Offshore Base Operational Utility and Cost Study*, IDA Paper P-3573 (Alexandria, VA: Institute for Defense Analyses, January 2001).

POINT PAPER

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1 March 2018

TRANSCENDENT WARS OF THE 21st CENTURY

BACKGROUND

- Competition is fundamental to evolutionary life, conflict habitual to human nature. Ours is a history of shared interests and disputed differences, a collective heritage cultivated through progressive partnerships of cooperation and commerce, yet punctuated by the exclamations of war and conquest.
- Acknowledging that force inevitably begets force, military strength in mutually assured destructive balance has now manifested more than a half century of global armistice, despite disrupting outbursts of regional instability that previously might have conscripted allies into broader conflict. Though we continue to live under the shadow of nuclear confrontation, it is this assured response of overwhelming retaliatory devastation that has served well in preserving international security and our domestic welfare.
- But today something fundamental has changed. Projections of past strategic concepts of domain dominance and force deployment are increasingly antiquated in a world of geographic inconsequence, non-nation-state actors, global information connectivity, and exponential technological change.
- Resultant emerging technologies inevitably precipitate new opportunities and new threats. Radical new technologies are appearing at the convergence of accelerating progress in nanotechnologies, biotechnologies, and information technologies. They express themselves in applications exploiting advanced molecular materials, microfabrication, genetic engineering, robotics, artificial intelligence and quantum computing. Their accompanying innovations already can be recognized in the expansive "internet of things," the omniscient informatics of big data, the ominous creations of synthetic biology, and the promises and perils of autonomous thinking machines. Their new domains of operation extend from cyberspace to outer space, and into the neuroscience of our minds.

Advanced technology weapons are becoming smaller, faster, cheaper, smarter and increasingly autonomous, more (or less) lethal, distributed, resilient, adaptable, and accessible.

- We have reached an inflection point of transcendent technological advantage that alters the foundational principles of deterrence, domain supremacy and operational warfare. Conventional force deployment and utilization are increasingly vulnerable to countermanding attack using emerging technology weapons.
- Furthermore, such military advancements are no longer the primary stimulus for disruptive technology research and development, but increasingly exploit adaptations of innovation migrating first from the readily accessible commercial sector.

- Also notably, the speed of appearance, adoption and adaptation of these new weapons systems far outpaces current practices for traditional military technology acquisition and deployment.
- Across all domains of war, technology accelerates exponentially. Unilateral dominance at all times across all potential domains of conflict - land, sea, air, space and cyberspace – is unsustainable without unrealistically substantial investments of financial and intellectual capital. How will our national defense strategies adjust in a volatile world of unstable balances, with adversaries who in some domains of conflict for some periods of time may hold superior, even potentially decisive, advantage?

DISCUSSION

- In the dynamic domain of space, remote-sensing technologies, especially those deployed using small satellite swarms at low Earth orbit, allow continuous detection, location and monitoring of conventional warfighting assets for friends and foes alike.
- Besides ensuring the militarization of near-Earth space, such observational information makes large deployed platforms such as aircraft carriers highly vulnerable if not operationally impractical.
- Even our most secure nuclear deterrent asset, submerged nuclear submarines, will soon become trackable and susceptible to attack.
- In this near future, the scales of military action and counteraction, of risk and cost, of threat and consequence, collectively will become dangerously imbalanced.
- Quietly, the next world war may have already begun, to be found on the battlefields of information.
- Beyond conventional warfare, the intrinsic dependence of civilian and military systems and supporting infrastructures on operations in cyberspace open whole new pathways for information gathering and operational exploitation, disruption and harm.
- Cyberwarfare already occurs today, though still below the threshold of direct kinetic conflict. It has become a competitive domain unto itself, and is increasingly recognized as a dynamic component of conflict in all other warfighting domains as well.
- Moreover, in unconstrained warfare, sustained information dominance across the electromagnetic spectrum may not be possible.
- Similarly, the material logistics of war are evolving rapidly. In nanotechnologies, emergent molecular materials unimagined even a decade ago are beginning to revolutionize the design and construction of new civilian and military systems, especially as controls over electromagnetics, photonics and heat. Already advanced manufacturing technologies such as 3-D printing enable on-location on-demand delivery of essential equipment and parts while bypassing traditional supply chain logistics and associated limitations. Additionally, microfabrication technologies support the rapid construction of self-configuring nanobots operating with distributed intelligence on miniature to molecular scales, with a growing inventory of achievable tasks and applications.

- In biotechnology, repair or whole replacement of injured and diseased organs is near, both from use of engineered prosthetics and the promise of undifferentiated stem cell therapies. More profoundly, we are now moving beyond simply reading genetic code to effectively writing new code. In the emergent field of synthetic biology, code writers can make use of a genetic alphabet supplemented beyond the traditional four nucleotide bases bequeathed to us by natural evolution. In addition to supporting genetic refinements and innovative treatments for medical conditions and diseases, these synthetic biology applications can also create unconstrained designer variations of lethal or debilitating pathogens with extended latency, against which we have no human immunity and no immediate preventive or remediating treatments. Associated biological weapons can be created in small research laboratories and delivered to target populations using nothing more sophisticated than a jar full of mosquitoes. How will we respond when such technologies are used to incapacitate military forces or to carry out ethnically targeted genocide with genetic identity precision?

- Arguably the greatest emerging technological threat and greatest ascending opportunity is in the field of artificial intelligence. Machines learning from us, with us, and ultimately without us, represent the transcendence of sentient intelligence beyond the limitations of our biological brains. All that we have achieved as humans has been accomplished using a biocomputer that operates with an 8Hz central processor and inefficient peripheral interfaces, requires continuous oxygen and chemical energy supplies, suffers substantial maintenance down time (normally about eight hours every day) with faulty neuro-wiring and high error rate performance, and must withstand a soft-target susceptibility to injury or destruction.

RECOMMENDATIONS

- Of immediate importance, we must find new and compelling deterrents to the perceived advantages of preemptive first strike and technological extortions for geopolitical submission or the world may once again find itself at the brink of war.

- We should work resolutely with all nations invested in space activities to expand cooperative partnerships, extend "open skies" policies and develop international space law standards that emulate our maritime "open seas" agreements.

- Command, control and communications are increasingly subject to interception, distortion or denial. In the absence of such reliable information connectivity, mission-centered leadership and quasi-autonomous decision-making will be vital for operational success. Concurrently, we will require a force structure that supports both agile joint service leadership operating across all domains, and deep technological expertise for personnel operating within those domains.

- Furthermore, in any coming conflict, the creative energy for rapid innovation that is a defining characteristic of many American technology companies today will be as important a national asset as was our manufacturing industrial base throughout World War II. Specifically, the purposeful partnership and integration of civilian and military space and cyberspace industries should not wait.

- The “stuff of war” will be dramatically different even a decade from now, but only if we embrace the exponential pace of change reinventing the material world.
- While our attention and strategic investments principally have been focused on incremental projections of past warfighting concepts into the near future, new domains of emergent warfare have arisen that promise soon to eclipse our essential understanding of conflict and its conduct. “Breaking the mold” of incremental thinking and projections of existing force structure challenges us to recognize that we must not simply “think out of the box,” but appreciate that in the very near technologically accelerating future, “the box” no longer exists. And with this understanding comes the questions that we truly need to be asking.

BREAKING THE MOLD
A Workshop on War and Strategy in the 21st Century

POINT PAPER

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EMPLOYING ARTIFICIAL INTELLIGENCE (AI) IN NAVAL WARFARE (NOT NAVAL WEAPONS)

BACKGROUND

- We have a long way to go before we can have a reliable AI in the cockpits, conning towers and on the bridges of our future Fleet. Regardless of the seemingly insurmountable resource investment in time, effort hardware and money, we must start the process now in order to identify the challenges and limitations, learn from mistakes, wrestle with legal and policy questions (which must also be identified), catch up to our adversary, and be prepared to use AI to win at sea.
- State of Development:

DISCUSSION

- IBM Watson vs. Jeopardy. After years of development, IBM's AI defeated Jeopardy champions.
- AlphaGo, AlphaGo Zero, AlphaGo Zero + Humans. Using the most ancient/difficult strategy board game, an AI was taught the game using previous matches (AlphaGo beat the Go Champ 4 to 1), then given only the rules (AlphaGo Zero beat AlphaGo 100 to 0), then partnered with humans to become the best.
- IBM Watson & Oncology. By feeding IBM's Watson foundational works, training it through analysis of answers, providing thousands of previous cases, and continuously adding to its known literature, leading American oncologists have an AI that can save tremendous amounts of time in the identification of cancer cure regimens. (Admittedly, there have been some challenges that IBM and oncologists are still working to solve on a global basis).
- China's AI-powered robot Xiaoyi passed the country's medical licensing exam (before IBM Watson).
- **The Good News:** Capabilities are available and ready for partnering with institutions to start humans' and machines' learning and knowledge refinement processes.

RECOMMENDATION

That the Navy partner with IBM to utilize Watson in the analysis of naval warfare, education, and acquisition decisions using two steps and focusing on three application areas.

- **Two Steps**

1. Under a Cooperative Research & Development Agreement (CRADA), provide the corpus for Naval Warfare and refine the machines' understanding of the subject
2. Using historic examples of naval battles, further refine the machines' expertise

- **Three Applications** ('*' Indicates 1 or 2 recommended focus areas for the CRADA)

1. Wargaming & Warfighting

- Use AI as a reference/advice tool. With the Naval War College's library at its fingertips, it can provide referenced answers to questions within seconds
- Provide trained/refined AI to Fleet & Strike Group Staffs for plan development.
- * Refinement of unmanned systems' (UxS) mission planning and targeting algorithms to drive mission success and target selection accuracy to acceptable levels

2. Education & Innovation

- Introduce trained/refined AI into PXO/PCO, TAO & Staff Courses to begin the human education process and explore potential AI uses
- Explore UxS TTP and AI assisted decision-making in mixed reality & gaming environments
- Combined AI/UxS strike group in Norfolk (multinational?) for experimentation

3. Acquisition/Recruiting with Strategy

- * Provide AI 'rules' for acquisition, allow the AI to produce an independent acquisition plan & determine probability of success against 2045 adversary
- Provide AI retention/attrition rates & validate/refine recruiting quotas using current fleet acquisition model & AI generated model
- **Challenges/Concerns:** Job security (need for experts increases); copyright infringement (not an issue in past AI endeavors); the subject is too vast and would take too long (what better reason to start now!)

Bottom line: A trained & educated AI can provide timely, unemotional, unbiased assessments, feedback, and recommendations through informed analytical rigor at scale. Humans determine the worth of the AI's input, but must then justify their own decisions as compared against the AI's referenced analysis.

POINT PAPER

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26 February 2018

THE BIG IDEA: MODERN MULTIMISSION AIRSHIPS

BACKGROUND

- 1,000 cubic feet of helium can lift 65 pounds into the air.
- In 1933, the rigid airship USS *Macon* (ZRS 5) used 7 million cubic feet of helium to carry five Sparrow Hawk scout aircraft and a crew of 60 at speeds up to 75 knots over ranges of up to 6,000 miles.
- None of the 89,000 ships (in convoys) escorted by blimps in World War II were sunk.
- On March 15, 1957, after having flown 9,448 miles in 264 hours (just over 10 days), the *Snow Bird* (ZPG 2) landed at Naval Air Station Key West, Florida. The flight had crossed the Atlantic, flown over the western shores of Africa and Europe, and then crossed the Atlantic from east to west. In the process it set new records for unrefueled distance and flight time. Airships frequently flew when heavier-than-air planes were grounded due to bad weather.
- In 1960, the Navy's nonrigid ZPG-3W airship carried 100,000 pounds aloft using a 1.5 million cubic foot envelope. It carried a crew of 22 on missions of up to 58 hours of uninterrupted and unrefueled flight.

DISCUSSION

- Lockheed Martin's "skunk works" has been test-flying a hybrid airship prototype (P 791) since 2006, and has recently received a contract to build 12 hybrid airships, each capable of carrying a payload of 47,000 pounds (including up to 19 passengers) at a cruising speed of 60 knots with a range of 1,400 nautical miles.

Google co-founder Sergey Brin is currently constructing a $100-million rigid airship in the same Moffatt Field hangar that housed the USS *Macon* more than nine decades ago. The purpose for which the airship is being built has not been publicly announced, but use as a disaster response vehicle and/or a private air yacht have been rumored.

United Kingdom's Hybrid Air Vehicles, Ltd., is repurposing the aircraft built for the U.S. Army's Long Endurance Multi-Sensor Vehicle (LEMV), which was conceptualized as an unmanned ISR platform designed to execute surveillance missions of up to three weeks over a given target. The Airlander-10 is being converted into a manned passenger-carry aircraft.

QUESTIONS FOR CONSIDERATION:

1. Could a large-scale airship, utilizing modern materials, ballast-control systems, and lightweight yet powerful engines, be used for the following?
   a. Long-range and long-endurance maritime patrol.
   b. Launching large quantities of missiles and/or unmanned aerial vehicles (UAVs) and UAV swarms.
   c. Heavy-lift cargo transportation at speeds faster than ships and at much reduced fuel costs per ton-mile.
   d. C4ISR missions. The large gas envelop and lifting capacity could support large antenna arrays, huge sensor suites, and extended mission profiles.

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2. Could such vehicles be survivable in combat and/or combat-support situations?

3. Could modern airships operate in weather conditions likely to be encountered in routine operations?

4. Could modern airships be operated in unmanned or optionally manned modes?

POINT PAPER

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THE FUTURE FORCE: BLUE HAIR IN THE GRAY ZONE*

BACKGROUND

What does the warrior of the future look like? What are the roles and missions the United States will need to prepare its people for? What are the technologies those warriors must master in order to succeed at their mission? According to the advocates of the Third Offset, the victors of future war will be those states that are best able to harness autonomy and human-machine integration. However, the Department of Defense is struggling with how to recruit and retain these best and brightest of emerging technology. This discussion examines how military culture and perceptions of what the military warrior looks like could impact the United States' long term strategic competition with rising adversaries.

DISCUSSION

Third Offset, autonomy, and the future force:

- Third Offset argues for a focus on autonomy. Harnessing autonomous research for national defense will be the role of technologists, not technologies. The future force of warriors will be made up of computer programmers, air defense commanders with expertise on the algorithms that undergird their weapon systems, sailors able to reconfigure battle networks while taking fire, hackers in deployed locations and at home, and big-data analysts in forward operating bases and staff commands. Whether the future warriors are directing technology on the battlefield or remotely, they will need to adapt to high-tech threats and high-tech machines in real time.
- Further, while manpower problems are often framed as an issue for existential conflicts, solving manpower issues is increasingly vital to winning conflicts in the gray zone. Gray-zone conflicts—defined by limited wars, coercive missions, and deterrence—are increasingly dominated by technological innovation. Cyber, space, the electromagnetic spectrum, and information are all contested on a day-to-day basis. Winning in the gray zone, unlike the large armies of territorial conflict, is battled from long distances by remote operators who influence and change adversary behaviors from behind keyboards instead of from gun sights.
- Role of culture and society in perceptions of military caste. So much of what we as a society think is a military warrior is based on our cultural understandings of what the military caste looks like—a problem that may be exacerbated as the civil-military divide continues to grow. Standards for tattoos, beards, hair length/color, and makeup for women have all changed over time with changes in society and fashion.
- Are physical fitness standards not tied to mission requirements also arbitrarily exclusive?

RECOMMENDATION

- Conduct reexamination of the kind of talent we need to win future wars

  —How do we recruit this talent and retain them?
  —What is their role (civilian, contractor, on the battlefield, at home) in war?
  —Are they lawful combatants?

- Continue to implement creative ways to on-board special talent into the military
- Identify must-fill technology skill sets beyond "cyber" or "information assurance"

  —I.e., network architects, software developers, artificial intelligence scientists, etc.

- Develop a way to assess the qualitative technological capability of DoD employees
- Examine whether physical fitness and grooming standards represent the needs of the mission, not a perception of "discipline" or what a military member "should" look like

*A detailed discussion of this paper is published as: https://warontherocks.com/2018/01/blue-hair-gray-zone/

POINT PAPER

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RETHINKING FORWARD PRESENCE AND FORWARD DEFENSE

BACKGROUND

The U.S. Navy is committed to providing forward presence and, in extremis, forward defense, globally (although it focuses most closely on the European, Greater Middle Eastern, and western Pacific AORs). Given the limited number of naval assets available, forward presence leads to high operating tempos, forward-based forces, recruitment and retention issues, as well as demands for greater numbers of platforms. Moreover, if deterrence fails and forward-deployed naval forces must fight, the focus on fighting forward is a risky strategy. If war breaks out in an A2/AD environment while U.S. naval forces are conducting ordinary presence missions, the risks to the fleet are high if fighting occurs inside the "range rings" or they are required to "fight their way back in." Rethinking forward presence/forward defense and adopting a different posture could lead to a more effective and efficient way to use scarce USN resources and ensure that the battle of the first salvo or a short-sharp fight does not endanger U.S. naval supremacy, regionally or globally.

DISCUSSION

- Per the Trump administration's National Security Strategy (NSS) and National Defense Strategy (NDS), great-power war is now the primary focus of U.S. naval forces
- The two prospective great powers (China and Russia) and several so-called rogue states (e.g., Iran) possess advanced A2/AD systems and practice asymmetric tactics.
- Within deep range of adversary land-based air and missile-reconnaissance-strike systems, USN forces are highly vulnerable.
- There is a trade-off between forward presence to reassure friends and allies and the operational requirements of deterring and winning wars against great powers deploying A2/AD systems.
- Taking a maximalist approach to the concept of operating forward leads to strategies, plans, and acquisition approaches that are expensive and dangerous.
- American national interests do not require forward presence, much less forward defense, in the maritime domain.

RECOMMENDATION

The U.S. Navy should rethink how it supports the NSS and NDS. During the Cold War, the Navy did not generally (with regularity) operate within close range of the Soviet Union. It should not do so within certain geographic parameters with regard to China and Russia today.

APPENDIX 4

"Breaking the Mold: War and Strategy in the 21st Century"

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BREAKING THE MOLD

A Workshop on War and Strategy in the 21st Century