Revitalizing Wargaming is Necessary to Be Prepared for Future Wars

Few historical periods match the dynamic technological disruption of the inter-war years of the 1920s and 1930s. During these decades, militaries the world over struggled to adapt to new inventions such as radar and sonar, as well as rapid improvements in wireless communications, mechanization, aviation, aircraft carriers, submarines, and a host of other militarily relevant technologies. Military planners and theorists intuitively understood that all these new technologies, systems, and advances would drive new ways of fighting, but they were forced to envision what future battlefields would look like with few clues to go by.

To help navigate through this period of disruptive change, the United States military made extensive use of analytical wargaming. Wargames were an inexpensive tool during a period of suppressed defense spending to help planners cope with the high degree of contemporary technological and operational uncertainty. They were used to explore a range of possible warfighting futures, generate innovative ideas, and consider how to integrate new technologies into doctrine, operations, and force structure. For example, faculty and students at the Naval War College integrated wargaming into their entire course of study, analyzing the then-novel concept of carrier task force operations, the role of submarines in scouting and raiding, and how to provide logistics support to fleet operations spread over the vast Pacific Ocean. Wargames in classrooms at Quantico helped the Marine Corps develop new concepts for amphibious warfare and conceive of new techniques for capturing advanced naval

bases. Wargamers at the Army War College explored how to employ tanks and artillery on infantry-dominated battlefields and examined the logistical challenges of fighting a war far from American shores.

As valuable as they were, wargames were not in and of themselves sufficient to prompt organizational and operational change. As such, all of the services worked hard to test wargame results in fleet and field exercises. Exercises were used to verify game insights using systems at hand or with surrogates that represented desired advanced capabilities identified during game play. The observations and lessons learned in exercises were in turn fed back into new wargames, thus creating a cycle of creative ideas and innovation that generated requirements for new systems, suggested new operation concepts, and influenced force design.

Once the Second World War began, those warfighting communities that had pursued wargaming and exercises with vigor proved far better prepared for modern combat than those that did not. For example, of the three major warfighting communities in the Navy — naval aviation, surface warfare, and submarine — the naval aviation community carried out the most innovative pre-war experimentation and exercises. Although aircraft carriers were originally envisioned as operating in support of the fleet battle line, carrier aviators explored a wide range of futures, including independent carrier operations. As a result, the U.S. carrier force was ready on day one of the Pacific war, and within six months had inflicted a major, lasting defeat on the superior Japanese carrier force at the Battle of Midway. By contrast, pre-war wargames and exercises in the submarine community had emphasized rote doctrine using the submarine fleet as a scouting force for the main battle line, and policy strictures dampened any exploration of independent submarine operations. Unsurprisingly, then, the submarine community proved unprepared for the tactics, techniques, and procedures needed to execute unrestricted warfare on Japanese merchant shipping. Similarly, surface warfare wargames failed to anticipate long-range torpedoes or account for the Japanese emphasis on night surface action. As a consequence, they suffered badly in early clashes against a highly trained Japanese cruiser and destroyer force that excelled at night fighting and was armed with the deadly, long-range Long Lance torpedo.

Today, we are living in a time of rapid technological change and constrained defense spending, not unlike that of the inter-war years. Successfully navigating through this complex and dynamic competitive environment will once again require us to push the boundaries of technology while ensuring that innovation remains rooted in operationally realistic doctrine and capabilities. One way to do both is to re-prime and re-stoke the department's wargaming engine.

We want to make clear that there is currently quite a bit of wargaming activity going on in the Department of Defense, and much of it is quite good. However, our review of service and joint wargaming revealed a lack of coordination within the wargaming community and the absence of any direct link between the insights gained from wargaming and the department's programmatic action. Wargame results are neither shared laterally across the defense enterprise nor up the chain to influence senior level decision-making. In other words, even if wargames are generating innovative insights and suggesting needed operational and organizational changes, the people in position to act upon them are generally unaware of the insights or their import.

This must change. As the inter-war period suggests, wargaming is one of the most effective means available to offer senior leaders a glimpse of future conflict, however incomplete. Wargames provide opportunities to test new ideas and explore the art of the possible. They help us imagine alternative ways of operating and envision new capabilities that might make a difference on future battlefields. When creatively and rigorously applied, wargames help us to think through and begin to resolve complex military challenges, foster the testing of new strategic and operational concepts, stimulate debate, and inform investments in new capabilities.

Wargames help strip down a strategic, operational, or tactical problem and reduce its complexity in order to identify the few, important factors that constrain us or an opponent. They provide structured, measured, rigorous — but intellectually liberating — environments to help us explore what works (winning) and what doesn't (losing) across all dimensions of warfighting. They permit hypotheses to be challenged and theories to be tested during either adjudicated moves or free play settings, thereby allowing current and future leaders to expand the boundaries of warfare theory. And they provide players with the opportunity to make critical mistakes and learn from them — and to perhaps reveal breakthrough strategies and tactics when doing so.

Wargames are all the more important in an era of multiple strategic challenges requiring joint, multi-dimensional

approaches. Today, we face the challenges of Russian aggression in Eastern Europe, managing the rise of China, checking Iran's malign influence, and remaining prepared to respond to North Korean provocations, all while waging a global counterterrorism campaign. Wargames can help us explore all of these challenges, in isolation and combination, and assess the best ways to confront them. By holistically reviewing the results of all games together, we will have the best chance of correctly identifying the most relevant technological trends, most likely future challenges, and most probable military competitions — and how best to exploit or prepare for them.

When conducting these wargames, it is important to always remember the best of them seek to duplicate the realm of human judgment. War is fundamentally about human decision-making in an adversarial environment under conditions of danger, stress, uncertainty, and unpredictability. Having human players deciding their best actions, given their circumstances and expectations of what their adversary will do in response, is essential to effective wargames. In this, they are distinct from the typical mathematical or campaign modeling that largely seeks to remove dynamic human action from consideration.

The best wargames thus seek to create an environment for applying critical reasoning techniques and diagnosing the characteristics of competition under the "fog" and "friction" of war where incomplete and imperfect knowledge prevails. Players should be exposed to the chaos, pressures, and uncertainty encountered in real military competitions, or as closely as can be replicated. Most importantly, players should be able to observe and live with the consequences of their actions (where possible, based on previous rigorous analysis) in the face of a thinking and reacting competitor, and so come to understand dynamic military competition from the perspective of opposing sides. Actions taken by the players on both sides must have tangible consequences that are determined — where possible — by the actual performance of weapons and sensors in the real world, backed by a rigorous adjudication process using the best available analysis and professional judgment.

The natural interaction between thinking adversaries in wartime is best duplicated when wargames are conducted in an iterative series of moves, wherein decisions and their outcomes in one move informs the starting conditions for the next. Another technique is to repeat a step as many times as necessary until a way is found to address a vexing problem. In either case, the "play" aspect of wargaming is important because it allows participants to fail, fail again, experience the loss, adapt, innovate, and then get it right.

While wargames can never eliminate the chance of battlefield surprises, when done right they can prepare an entire organization for the demands of a future conflict. As the famed Navy Admiral Chester Nimitz said after the Second World War had ended:

> *During the war, the war with Japan had been re-enacted in the game rooms [at the Naval War College] by so many people and in so many different ways that nothing that happened during the war was a surprise — absolutely nothing except the kamikaze tactics toward the end of the war; we had not visualized those.*

The secret to the Navy's success was a deliberate, longstanding commitment to wargames and exercises, and promulgating the lessons learned across the entire fleet.

Another key to the Navy's success was a wargaming enterprise that largely avoided rigging games to favor a specific outcome, or created self-fulfilling, self-congratulatory, self-deluding, or self-limiting prophecies. But even their general success was marred by conspicuous failures such as the submarine community's blind acceptance it would never be tasked to conduct unrestricted undersea warfare.

To avoid such mistakes, wargames must include a dynamic and aggressive red team — immersed in the thinking and capabilities of our potential opponents — that challenges assumptions, realistically represents adversary actions, intentions, and capabilities, and is poised to ruthlessly pounce on any mistake or vulnerability. Vigorous red teaming should reveal the scope of an adversary's military options as well as expose critical strengths and vulnerabilities on both sides — particularly our own.

Similarly, wargames must resist the tendency to feed our ingrained biases for a preferred American way of war or

our embedded preferences for certain styles of warfighting. Instead, they should explore entirely new ways of operating. America's adversaries and competitors have spent decades studying the American way of war, and developing asymmetric approaches to thwart it. We want to present any adversary with the unexpected, and wargames provide an effective tool to develop new, innovative, and cost-imposing warfighting concepts. Here, we should look once again to the lessons of the interwar period, during which the services used wargaming to help evolve preexisting tactics, techniques, and procedures into more adaptive doctrine relevant to future war.

With this background in mind, we are taking three immediate steps to help restore the practice of wargaming to its historic prominence, embed wargaming more firmly in the suite of analytical approaches used by the Department of Defense, and better share wargame insights with senior departmental leadership. This effort is part of our broader commitment to foster greater innovation within the department, make the most of increasingly constrained resources, and avoid operational or technological surprise in tomorrow's dynamic security environment.

Our first initiative, currently underway, is to establish a wargaming repository to better understand and guide existing wargaming efforts and to share derived insights across the defense enterprise. This effort seeks to provide key stakeholders with a single location to access wargame results and insights as well as find announcements of upcoming wargames and table top exercises. Already, the results of more than 250 wargames have been populated into the repository.

Our second initiative is to form a Defense Wargaming Alignment Group (DWAG). It is important that wargames be allowed to thrive outside of the planning, programming, budget, and execution (PPBE) process so that natural bureaucratic forces cannot subvert them. That said, it is equally important that wargame insights be better presented, understood, and used by departmental leadership to critique and inform that process. To help accomplish this, the DWAG will share the priorities of senior leaders with the wargaming enterprise and help ensure there is feedback and insights gained from relevant wargames associated with top departmental priorities. In addition, the DWAG will undertake an inventory of wargaming capacity and capability across the department, particularly among the Services and the Combatant Commands, to identify potential gaps that need addressing. It will also institute a series of regularly occurring senior leader wargaming events.

Finally, because we rely so heavily on our allies and partners in almost everything the Department of Defense does, the department will examine how to better include our close allies and partners in our wargaming efforts and how to best share results. Wargames provide a useful tool to explore integration of allied capabilities and help develop cooperative concepts of operation, as we did during the Cold War with NATO's Follow on Forces Attack. We have also seen wargames play an increasingly critical role in informing our interagency partners of the complexities and challenges we would face in a high-end conflict against a great power. For example, we recently held a specific wargame on space that illuminated some of the challenges and opportunities we could face if the conflict extended into that domain. Going forward, we will work to more closely involve our interagency partners in our wargames.

As we look to reinvigorate wargaming across the defense enterprise, there is another lesson from the inter-war period that we would do well to heed. In the years leading up to the Second World War, we energized our war colleges and schools to think about how we would fight differently in future conflicts, and wargaming was central to this effort. All students and officers returning as instructors were taught how to run a wargame. The constant cycling of officers from the schoolhouse to the operating forces not only created great wargames, but great wargamers — many of whom turned out to be great wartime commanders.

Today, given the demand of Joint Professional Military Education (JPME), wargaming courses are generally electives. Should we instead think about using wargames that explore joint multidimensional combat operations to pursue our JPME objectives? Building school curriculums around wargaming might help spark innovation and inculcate the entire Joint Force with a better appreciation and understanding of trans-regional, cross-domain, multidimensional combat. Similarly, a new generation of young men and women are entering the force whose exposure to commercial multi-player gaming exceeds that of any previous generation. Should they be introduced to wargaming in their accession programs? We have not yet answered these questions. But we are considering them, as well as other initiatives to reinvigorate wargaming across the department.

Innovation thrives in a culture that embraces experimentation and tolerates — better yet, encourages — dissent

and risk-taking. We must create an environment in the Department of Defense that encourages exactly this type of thinking. Building a reinvigorated wargaming enterprise is a major step toward that goal.

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