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Robert C. Rubel

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RESEARCH & DEBATE

THE MEDIUM IS THE MESSAGE WEAVING WARGAMING MORE TIGHTLY INTO THE FABRIC OF THE NAVY

Robert C. Rubel

By now, the challenge and threat of a rising and contentious China and an increasingly hostile Russia have penetrated the Navy's corporate consciousness, and current leaders are taking steps to shift the service from a purely power-projection posture to one that focuses again on defending American command of the sea. The Navy is initiating adjustments to fleet design and architecture as well as a rebirth of fleet experimentation. While perhaps late in coming, these responses to the emergent challenges of our time are encouraging.

However, more is needed. In the years since the fall of the Soviet Union, the professional culture of the Navy has migrated from one that was founded on the dynamics of war at sea to one shaped by global policing and constrained budgets. The service is tasked heavily with presence duties, including support for conflicts ashore, and increasingly is constrained by having fewer ships and personnel. In light of this, the Navy has focused on efficiency and execution while creating a culture whose character is in stark contrast to the one that emerged in the years between 1890 and the start of World War II.[1] That earlier culture has been characterized as a learning culture, one that prepared the service for successfully fighting against the Imperial Japanese Navy and overcoming the threat of German U-boats.[2] Perhaps the most difficult task Navy leadership will face in the coming years is shifting the current culture to one that shares certain key characteristics with the culture that produced the officers and sailors who

Robert C. Rubel is a retired Navy captain and professor emeritus of the Naval War College. He served on active duty in the Navy as a light attack / strike fighter aviator. At the Naval War College he served in various positions, including planning and decision-making instructor, joint education adviser, chairman of the Wargaming Department, and dean of the Center for Naval Warfare Studies. He retired in 2014, but on occasion continues to serve as a special adviser to the Chief of Naval Operations. He has published over thirty journal articles and several book chapters.

led the Navy to victory in World War II. There will be many elements involved in that effort, including major adjustments to personnel policies, training schedules, and education requirements. Wargaming will be one powerful instrument for transforming the Navy's culture. It was so from 1887 to 1942, and can be again. But to achieve the necessary power and influence for wargaming, the Navy's approach to it must change; the practice must be woven more tightly into the fabric of the Navy's professional culture.

To many, the idea that the Navy would need to improve its wargaming posture might seem strange, if not downright ludicrous. After all, the Navy's reputation for wargaming is almost legendary, and the history of wargaming at the Naval War College is a key element of one of the standard written works on wargaming. The author of that work contends that "the Naval War College, of all U.S. professional gaming organizations, has most consistently and successfully espoused the use of wargaming as both an educational and analytical tool."[3]

Indeed, the Navy has used, and still does use, wargaming, at times very effectively. However, wargaming's relationship to the fabric of professional development and culture has changed over the years, a consequence of the changes in the Navy's culture brought about by the factors previously mentioned. In the earlier era, wargames fused education and research, and Naval War College students used them as a central component of the curriculum. In contrast, during the post–World War II era, gaming for research gradually became divorced from gaming for education. A research and analysis department was established at the College in 1951, concurrently with the introduction of a new advanced course on strategy. The department was designed to support other academic areas by developing tools for more-effective solutions to operational problems and conducting specific research projects.[4] Wargaming, always an important part of the teaching curriculum, became a tool for illustrating and synthesizing concepts taught in seminar, a policy Vice Admiral Stansfield Turner reinforced when he assumed the presidency of the College in 1972.[5] Turner established an advanced research department to support a few students who wished to conduct more-specific research and to support outside scholars.[6] This later became the Center for Advanced Research and, in 1981, the Center for Naval Warfare Studies.

The separation of game-based research from education at the College, except for a few, specially selected students, had important Navy-wide consequences over time. In the first four decades of the twentieth century, Naval War College games were "sandboxes" in which students could try things out in an environment of "psychological safety" and new ideas could be advanced and differences of opinion could be aired without fear of embarrassment or punishment.[7] Ideas emanating from the games found their way into fleet experimentation, either by

direct translation or through the actions of emergent leaders who were educated via the games.[8]

Once gaming for education became focused on skill building and research gaming became the province of specialized faculty and outside agencies, the sandbox nature of student gaming disappeared. This both reflected and facilitated the shift in the locus of innovation from a professional consortium consisting of the Naval War College, the General Board of the Navy, and the fleet, to the laboratories. Innovation became almost entirely technological and the province of technical specialists. In this environment, the authoritative voice behind fleet design and fleet architecture was computer-based analysis to justify budgets, rather than informed experimentation. The result has been that in the ends-ways-means syllogism of strategy, ways have become divorced—institutionally—from means. In a permissive geopolitical environment, this disconnect did not have grave consequences; in today's world of emerging naval threat, it could prove disastrous. In the late 1930s, Congress authorized the construction of a fleet, the design of which was derived from lessons learned through wargaming and fleet experimentation. Soon, the nature of the threats from China and Russia likely will spur Congress to take action, but it will do so without the template created by a tapestry woven from education, gaming, and fleet experimentation. The fleet that emerges from this potential congressional action is at risk of being ill suited to the challenges it will face.

The separation of research and education in the arena of wargaming is evident in a 1960 manual on the subject written by Francis McHugh, an experienced wargamer who served at the Naval War College from the 1930s to the 1970s. He asserted that a game should be directed toward one of two purposes: to provide military commanders with decision-making experience or to provide military commanders with decision-making information.[9] While he does go on to admit that the very nature of gaming includes both elements to some degree, the idea that a game should, for purposes of effectiveness, be oriented toward one or the other reflects a kind of fragmentation of gaming institutionally. McHugh's breakdown of purposes reflects the content of gaming, whereas his comment on the fusion of education and research has to do, as he said, with the very nature of gaming. Distinguishing these two elements, content and nature, is key to understanding how wargaming can be integrated better into the professional fabric of the Navy and how it can contribute to a rebirth of effective innovation.

THE MEDIUM IS THE MESSAGE
The 1960s Canadian communications guru Marshall McLuhan defined a medium as *an extension of some human faculty*.[10] So, for example, a hammer is an

extension of the human hand, the wheel is an extension of the human foot, and so on. In his view, virtually any human invention is in some way a medium. He went on to say—in his well-known phrase—that "the medium is the message"; that is, irrespective of any content the medium may carry, the medium itself has a profound effect on humans. His most famous research focused on mass media such as radio and television, but he critically analyzed a wide range of media, including print, photography, automobiles, telephones, and many other human inventions. More relevantly, art and science, including their component disciplines and techniques, can be considered media.

Following this logic, we can regard wargaming as a medium. But what kind of medium? McLuhan distinguishes between hot and cold media. A hot medium leaves very little to the imagination of the listener, while a cold one elicits participation or completion by the audience. From this it is clear that wargaming is a cold medium, requiring participation and completion by players and others associated with it. McLuhan regards hot media as fragmenting and exclusive, while cold media are inclusive and promote synthesis.[11] This may be fairly self-evident, but probing deeper into the way wargames are used by the Navy (and, to be sure, the other services as well) reveals that wargaming's nominal identity as a cold medium is distorted by its separation into education and research types, with the consequence that the medium's potential value and influence are not achieved. In essence, wargaming as a medium is a thinking tool, and that perspective can have important implications for wargaming policy. In framing the discussion we will distinguish, as McLuhan would do, between the content of gaming and the nature of the medium itself. Game content, for our purposes, includes not only the scenario, orders of battle, and rules but the wider process of design, execution, analysis, and reporting. The nature of the medium is thus less concrete and material; it consists of the idea of competition in the context of simulation and, perhaps more importantly, the fact that it is something people do—it is a verb as well as a noun.

We have asserted already that the nature of wargaming is defined by two elements, competition and simulation. However, there is another aspect of gaming's inherent nature: its character as a weakly structured tool. By "weakly structured" we mean that because of their dependency on human decisions in the context of competition, games do not produce the same output from the same inputs when they are played repeatedly. This aspect of gaming was brought out by Dr. John T. Hanley Jr. in his Yale University dissertation *On Wargaming*. Hanley relates the inherent nature and structure of wargaming to the kind of indeterminacy attending a problem. Indeterminacy encompasses those things we do not know about either the initial state of the relevant elements of the problem or the effects of our

potential actions to solve it. Hanley establishes a spectrum of indeterminacy that contains the following categories:

- None: The elements of the problem are known and are amenable to engineering solutions.

- Statistical indeterminacy: The initial state is a random variable whose statistics we know and the effects of our actions on it can be determined.

- Stochastic indeterminacy: The initial state may be known, but the process by which it transitions to a new state via our actions is subject to statistical variation.

- Strategic indeterminacy: The initial state is known but there are two or more competing "players" whose independent choices govern the end state.

- Structural indeterminacy: There are significant elements of the problem that are not known, to the point that we cannot define the problem in terms of the other forms of indeterminacy. "This covers indeterminacy in current state, the kinematics of the process, the acts of nature, the available response time and the perceptions, beliefs and values of the decision makers."[12]

Hanley describes wargaming as a weakly structured tool that is appropriate for application to weakly structured problems.[13] To be more specific, wargames are inherently exploratory mechanisms that reveal rather than prove. They provide indications of what is possible, although they cannot be regarded as predictive. The primary mechanism through which wargames produce such knowledge is visualization in one form or another. The games allow players and observers to see relationships that otherwise would be difficult or impossible to discern— geographic, temporal, functional, political, and other types. Seeing and understanding these relationships prepare the mind for making decisions in a complex environment. Moreover, such exploration occurs in an environment of uncertainty and competition, particularly in two-sided games, enhancing the mental benefits derived from participation. This holds true whether the purposes of the game are educational or research.[14]

This last observation leads us back to McLuhan's argument that a medium has an effect on its beholder or participant, quite apart from any content the medium contains. It is one thing to say that gaming prepares the mind for making decisions—a rather straightforward effect of practice—but there is more depth to the matter than that, salutary as it is. If we look back again at the period from the onset of gaming at the Naval War College to the outbreak of World War II, we see that games, regardless of their content or purpose, shaped the culture of the officer corps. The games did this in part by constituting a constraint—something that imposes limits in the context of a complex-adaptive system—on the

evolving Navy officer corps of the time. That is, as a medium, gaming offered an alternative to other avenues of research and education that could have been pursued. "Constraints are essential to complex-adaptive systems. They channel the behavior of individuals in the system and focus their efforts. This activity can often foster the development of new approaches."[15] Gaming in the curriculum of the Naval War College fostered and facilitated an environment of exploration and open-minded critique, which led to and helped ensure the success of the subsequent series of fleet battle experiments. The net effect, as Hone points out, was the evolution of the Navy from a traditional, lore-based organization to a modern, learning one.

IMPLICATIONS FOR POLICY

The Navy has long used wargames as useful research and educational tools, but current policy is formed on the basis of their content, not their nature. While the content of games is the bread and butter of their utility, it is their nature as a medium that holds the potential for transforming the nature of the Navy's professional culture. There have been calls for strengthening gaming in the Department of Defense generally, but the gist of these recommendations for improvement focuses on content.[16] How would such recommendations look if they were focused on gaming as a medium?

The first recommendation would target those who sponsor games. The normal process is that a high-level leader determines that a game of some sort is needed and requests one from a gaming organization—for instance, the Naval War College Wargaming Department. The wargamers work with those in the sponsor's organization to determine game objectives and design—content. The game then is executed using players, perhaps from the sponsor's organization or ones from elsewhere who have the requisite knowledge. At the end of the game it is common for the sponsor to show up to take part in the "hot wash," a discussion and critique session that focuses on lessons learned. Sometimes the sponsor does not even participate in the hot wash but simply reads the game report. This converts the medium of a game to the medium of a conference or simply the printed word—thus losing the effect of the game as a medium.

Therefore, to leverage the game as a medium, the sponsor should participate in it as a player, or at least an observer. Notable examples of sponsors gaining important value from direct participation in games include Admiral Scott H. Swift, whose experience in a series of global wargames led him to establish the Pacific Fleet experiment program; Vice Admiral Thomas S. Rowden, whose participation in a game focused on the littoral combat ship prompted him to develop the distributed lethality concept; and Rear Admiral Thomas E. Zelibor, who used his participation in a global wargame to leverage a networked situational awareness

tool designed for the game to command the naval aviation element in the initial phases of Operation ENDURING FREEDOM.[17] Lack of sponsor participation can be attributed to the pace of operations in the fleet and the intensity of administrative work inside the Pentagon; it is difficult for senior officers and civilian officials to block out time for gaming, which is time-consuming. However, the examples of Admirals Swift, Rowden, and Zelibor indicate that the missing element is true understanding of the value of personal game participation and the concomitant commitment to just do it.

Second, true two-sided gaming should be a widespread and essential part of the professional education process, from precommissioning through senior service colleges and even flag-level courses. Although it constitutes an example that some might question, the German army in the 1920s and 1930s made gaming a central part of its rebuilding process. "In the training schedule of the officer candidate schools and the War College a large part of the time was set aside for war games."[18] The efficiency of the Wehrmacht, especially in the early campaigns of World War II, has become legendary. The currently trending concept of mission command comes from the German *Auftragstaktik* (order tactics), which requires independent thinking throughout the chain of command. "Mission command is built on subordinate leaders at all echelons who exercise disciplined initiative and act aggressively and independently to accomplish the mission."[19] Endemic wargaming can help build a culture in which the mission command philosophy can flourish.

There are several reasons that wargaming facilitates such a productive environment. First, a routine diet of two-sided gaming can generate and hone the ability to reason competitively. In the first several decades of the twentieth century the Navy used competitive gaming effectively. Through the games, officers "tested their techniques on each other; unlike games in most other services, the Navy's problems employed opposing teams of officers. This provided valuable practice and helped emphasize the importance of creativity—essential to the art of command—rather than canned solutions. . . . The system of war games at the [Naval War] college . . . promoted continual learning and ever-increasing complexity."[20] It is all too common in today's professional military education (PME) system for students to be taught only principles and "school solutions." Former Secretary of Defense James Mattis leveled a rather devastating criticism of the current system: "PME has stagnated, focused more on the accomplishment of mandatory credit at the expense of lethality and ingenuity."[21] Wargames as generally practiced today in PME tend to be one-sided affairs in which the faculty maintains control to ensure course objectives are achieved. In this environment, how can "genius," in the sense that Carl von Clausewitz uses it, be cultivated and recognized?

Making two-sided gaming the default PME vehicle will help to re-create a sandbox in which innovative reflexes can be developed. The constraint of two-sided gaming produces a particular kind of problem solving that is unique to the competitive environment. As players assess a situation and look for avenues of advantage, they engage in what can be termed *divergent thinking;* that is, they search for options. This process can lead to novel solutions. However, the players understand that they then must engage in *convergent thinking*—analyzing and selecting one option they think will work.

Repeated struggling in competitive situations is more likely to produce new ideas and insights, especially if such experience is widespread in the officer corps. The author has encountered this phenomenon repeatedly in two-sided games he has designed and directed. Beyond the potential for out-of-the-box thinking and "black swans," cultivating competitive problem solving would help to inculcate the kind of ingenuity for which the former Secretary of Defense called.

But there are challenges. Two-sided gaming is not easy. Design of such games must take care to channel competitive instincts properly. Moreover, in two-sided games featuring free play moves, control becomes more difficult, making the achievement of preplanned objectives problematic and demanding greater confidence and ability to ad-lib on the part of faculty. It is in no small part for these reasons that PME institutions generally have abandoned two-sided gaming. But such gaming is entirely feasible, given command commitment. The Naval War College possesses a highly capable wargaming organization that can design and direct such games.

TOWARD A FIGHTING CULTURE

Each of the Navy's principal warfare communities possesses a robust training infrastructure that focuses on tactical proficiency. The personal competitive element is essential, especially in fighter aviation and special operations. However, technical and tactical excellence does not translate automatically into an overall professional culture predicated on high-end naval combat. For at least the past quarter century—a similar span of time to that from 1865 to 1890—the Navy, like its post–Civil War forebear, has been engaged in policing. Alfred Thayer Mahan made a statement then that can be applied directly to today's conditions:

> How changed present conditions, how entirely concentration—which is military—has taken the place of dispersion, it is needless to insist. This is an effect of Naval Strategy, adapted to changes in conditions; but it is fair, in drawing attention to the change, to repeat that the principles of Naval Strategy have not altered. They have merely received elucidation by experience and by reflection. Men's minds have turned—it will be more accurate to say, have returned—to ideas and practices which

were familiar enough to our predecessors, who had been to school to War itself; but which, in the absence of that most excellent instructor, had lapsed out of mind.[22]

The shift in culture from a dispersed, presence-oriented service to one focused on concentration for war at sea required insurgency in the officer corps back then, and likely will require it again in some form.[23] The earlier insurgents, such as Admirals William S. Sims and Joseph M. Reeves, leveraged wargaming as part of their campaign to transform the Navy. It is not simply the number, kind, and quality of games that matter; it is the recognition that the wargame, as a medium, has an intrinsic effect on the corporate culture of the Navy, one that can be enhanced through determined policy and support.

Similar to the officers and sailors of the early twentieth century, we do not have a clear picture of the nature of future naval combat; for instance, few officers in the earlier era had an inkling of how aircraft and radar would transform war at sea in the 1940s. But the culture that had been built through wargaming and fleet exercises produced an organization and leaders that could learn quickly and adapt to the circumstances of war. That kind of culture must be built again today.

NOTES

1. See, for example, Dmitry Filipoff, "How the Fleet Forgot to Fight: Pt. 1 Combat Training," *Center for International Maritime Security (CIMSEC),* September 17, 2018, cimsec.org/.

2. Trent Hone, *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898–1945* (Annapolis, MD: Naval Institute Press, 2018), pp. xiv–xvi.

3. Peter P. Perla, *The Art of Wargaming: A Guide for Professionals and Hobbyists* (Annapolis, MD: Naval Institute Press, 1990), p. 8.

4. John B. Hattendorf, B. Mitchell Simpson III, and John R. Wadleigh, *Sailors and Scholars: The Centennial History of the U.S. Naval War College* (Newport, RI: Naval War College Press, 1984), pp. 205–206.

5. Perla, *The Art of Wargaming,* p. 89.

6. Hattendorf, Simpson, and Wadleigh, *Sailors and Scholars,* p. 293.

7. Hone, *Learning War,* p. 329.

8. Albert A. Nofi, *To Train the Fleet for War: The U.S. Navy Fleet Problems, 1923–1940,* Historical Monograph 18 (Newport, RI: Naval War College Press, 2010), p. 20.

9. Francis J. McHugh, *Fundamentals of War Gaming* (1966; repr. Newport, RI: Naval War College, 2011), p. 8.

10. Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1964; repr. Corte Madera, CA: Gingko Press, 2003), pp. 19–20.

11. Ibid., chaps. 1–3, pp. 17–60. McLuhan's argument is challenging to follow, because it is composed intensely of many novel elements. Perhaps like other dense but sophisticated arguments, such as those of Carl von Clausewitz in his book *On War,* multiple readings and considerable thought are required to understand fully the author's argument and its implications.

12. John T. Hanley Jr., *On Wargaming: A Critique of Strategic Operational Gaming* (Ann Arbor, MI: Univ. Microfilms International, 1991).

13. Ibid., pp. 19–25.

14. Robert C. Rubel, "The Epistemology of Wargaming," *Naval War College Review* 59, no. 2 (Spring 2006), p. 112.

15. Hone, *Learning War,* p. 4.

16. See, for example, Deputy Secretary of Defense to Secretaries of the Military Departments et al., memorandum, "*Wargaming and Innovation,*" February 9, 2015.

17. John Gartska et al., *Task Force 50 during Operation ENDURING FREEDOM* (Washington, DC: Office of Force Transformation, March 2006), available at ctnsp.dodlive.mil/.

18. General der Infanterie Rudolf M. Hofmann, *War Games,* trans. P. Luetzken, MS P-094 (U.S. Army Historical Division, 1952), p. 3.

19. U.S. Defense Dept., *Joint Operations,* JP 3-0 (Washington, DC: Joint Staff, January 17, 2017), p. II-2.

20. Hone, *Learning War,* pp. 99–100.

21. U.S. Defense Dept., *Summary of the 2018 National Defense Strategy* (Washington, DC: 2018), p. 8.

22. Alfred Thayer Mahan, *Naval Strategy* (1911; repr. Westport, CT: Greenwood, 1975), p. 5.

23. Hone, *Learning War,* pp. 17–21.