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EXPLORING THE OPTIONS

The Development of USN Tactical Doctrine, 1913–23

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In the decade between 1913 and 1923, the U.S. Navy leveraged deliberate experimentation in the Atlantic Fleet, theoretical analysis at the Naval War College, and practical experience in World War I to explore potential options for coordinating a modern fleet in battle. These efforts allowed effective doctrinal concepts to emerge from the bottom up, from the experiences of more-junior officers, and they triggered the development of the U.S. Navy's first coherent tactical doctrine, issued in the Atlantic Fleet's *Destroyer Instructions* of 1921 and the U.S. Navy's *War Instructions* of 1923. These manuals—and the implicit assumptions embedded within them—mark a watershed moment in the U.S. Navy's approach to combat. They provided the foundation for doctrinal development in the interwar period (1919–39) and influenced USN tactical concepts through the end of World War II. The emphasis placed on bottom-up doctrinal development was one reason the U.S. Navy was so effective at identifying and harnessing new techniques during this period.

This article examines the processes that led to those manuals. It explores the work of the Naval War College and explains how it enhanced the effectiveness of the fleet. It also analyzes the Atlantic Fleet's tactical exercises, detailing how they refined the thinking of senior commanders and fostered experimentation by more-junior officers. Furthermore, it discusses the U.S. Navy's experience in World War I, the valuable lessons learned, and how these lessons were documented effectively in the immediate postwar period.

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The development and refinement of the U.S. Navy's tactical doctrine from 1913 to 1923 are a clear example of effective organizational learning. Before the start of World War I, the U.S. Navy possessed a modern battle fleet but had very little experience or knowledge of how to handle it in battle. Through experimentation, analysis, and practical experience, officers developed an integrated set of concepts for coordinating their actions and functioning as a cohesive unit. These ideas became the foundation of the U.S. Navy's tactical doctrine and served the U.S. Navy effectively for decades.[1]

DOCTRINE DEFINED

Before this article analyzes the Navy's doctrinal development, it is important to define the concept of doctrine explicitly. Generally speaking, *doctrine* is the set of implicit and explicit assumptions that govern the behavior of a military force. Doctrine guides decisions in the absence of precise instructions. In this sense, it is similar to *culture, ethos,* and *mind-set,* but is much more specific. Doctrine is the collection of habits and behaviors that influence decision-making in combat.

The most important goals of doctrine are to ensure coordinated action in battle and to enhance the ability of ships and sailors to act toward the same end, even in circumstances in which the ability to communicate instructions is limited or impossible. Effective doctrine increases fighting power and helps overcome the friction of combat. As a 1938 manual explained, the Navy clearly understood doctrine this way: "The purpose of a written battle doctrine is to promote effective coordinated action in battle through mutual understanding. In the absence of instructions the doctrine should serve as a guide to sound decisions and appropriate actions in battle. The written doctrine should, therefore, set forth those methods and principles of action that have been tested and found to produce the most advantageous results."[2]

Ineffective doctrines, in contrast, inhibit coordinated action. They tend to suffer from one of two extremes: either they stifle initiative by providing guidance that is too rigid and too exhaustive, or they limit coordination by failing to foster aligned decision-making. Effective doctrines are challenging to develop because they must strike a balance; they must create alignment while simultaneously avoiding rigid instructions that inhibit individual initiative.

This was the essence of the Navy's struggle. Was it possible to create a framework that allowed sufficient room for individual initiative while concurrently ensuring alignment of decentralized decision-making? In the years before World War I, American naval officers explored the options for coordinating a large, distributed battle fleet in combat. Their solution was a learning system that led to a sophisticated approach to doctrinal development.

ANALYSIS AT THE NAVAL WAR COLLEGE

At the dawn of the twentieth century, naval tactics focused on coordinating the movements of a fleet in battle. Coordinated movement was critical; without it, ships fought as individuals and not as a cohesive whole. A formation fighting as individual ships was far less effective than a formation that maneuvered and fought together. However, an inability to experiment effectively at sea with large-scale, coordinated, tactical maneuvers hampered the Navy's development of effective approaches for coordinating the movements of large formations. At that time, the Navy was organized into numerous squadrons and distributed around the globe. The ships of those squadrons often were sent on independent missions, making tactical exercises with more than a handful of ships a near impossibility.[3]

Victory over Spain in 1898 made the United States a world power. As the fleet increased in size and capability, it was expected to be able to project naval power into the Caribbean and across the Pacific to protect American interests. In 1898, the Navy had just four modern battleships in commission; by 1905, there were twelve, with twelve more under construction. These ships had to be prepared to operate as a fleet and to fight and win a naval battle against a sophisticated opponent, such as Germany (the focus of War Plan BLACK) or Japan (the enemy of War Plan ORANGE). Yet without the ability to practice fleet operations, American naval officers had no clear sense of how best to ensure coordinated action in a modern naval battle.[4]

The rapid pace of technological change compounded the problem. Advances in fire control increased the effective range of ships' guns, turbine engines and oil fuel made ships faster, face-hardened armor and new armor schemes made them more survivable, and advances in the design of shells and torpedoes made them more deadly. Radio technology allowed fleets to coordinate their movements over much greater distances in almost real time. New, specialized platforms—scout cruisers, destroyers, submarines, and aircraft—augmented the more traditional battleships and armored cruisers. Modern fleets would move faster, strike harder, and operate over a much greater area than ever before. Naval combat was being revolutionized.

To determine how best to command and coordinate such a fleet in battle, the Navy experimented with a variety of mechanisms. Initially, because there was no large body of ships at sea, simulations at the Naval War College were used to test hypotheses, model new techniques, and provide tactical experience for officers. A crucial step was the introduction of strategic and tactical problems. Captain Henry C. Taylor, USN, who became President of the Naval War College in November 1893, worked with William McCarty Little, a retired lieutenant on

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the College's staff, to develop adversarial problems that encouraged the development of new tactical approaches and improved the Navy's ability to assess them.[5]

Ronald Spector described their approach as follows: "Through these methods the graduates of the Naval War College became accustomed to making quick decisions to cope with rapidly changing situations. The war problems, although somewhat unrealistic in nature, were nonetheless invaluable in giving the officer students the 'feel' of war situations and in teaching them the techniques of command."[6] The primary purpose of the problems was to further the education of officers, but they had a secondary effect. By exposing officers to simulated combat conditions, the problems uncovered new techniques that increased the Navy's ability to coordinate forces in battle. Two specific techniques were essential to future developments.

The Conference Method

The first was the introduction of the *conference method*. Conferences were used first to evaluate potential solutions to strategic and tactical problems. Once the assigned solutions were complete, a conference was called. During the conference, officers openly critiqued each solution and discussed the best approaches. Eventually, the conference method became the standard technique for sharing information and collectively making sense of a complex situation.[7] Conferences then were used to explore options at the start of a problem, before a specific solution had been devised. Prior to committing to a course of action, members of each opposing side would gather together in a conference and use their collective knowledge and experience to identify opportunities, courses of action, and potential solutions. Although a clearly established hierarchy would command the simulated forces during the execution of the problem, a flatter, more collaborative, team-based structure became the norm for developing plans.[8]

The growing use of the conference method was a direct result of the collaborative nature of the Navy's wargaming process. Unlike those in most other services, the Navy's games employed active competition. Teams of opposing officers played different sides and actively tried to outmaneuver and outwit each other. This approach provided valuable practice and revealed the importance of creativity, or what the College's most famous President, Rear Admiral Alfred Thayer Mahan, USN, called the "art of command." For Mahan and his successors, artful execution of naval command required contextual interpretation of the underlying principles of naval warfare.[9] As Rear Admiral Bradley A. Fiske, USN, summarized in his influential work, *The Navy as a Fighting Machine:* "In any human art and science—say medicine, music, or navigation—it is the art and not the science by which one gets results. . . . [T]he science is merely the foundation on which the art reposes, and . . . it is by the practice of the art and not

the knowledge of the science that skill is gained."[10] The collaborative approach introduced by the conference method helped ensure that attendees of the Naval War College became more experienced in that art.

Estimate of the Situation

The second critical technique was the *estimate of the situation*. Introduced in 1910, the estimate was a structured approach to problem solving that provided a common frame for conceptualizing and discussing approaches to wartime—or simulated wartime—conditions. It guided the work of officers who came together in a conference to develop plans and solve a problem. In a 1912 lecture on the subject, Commander Frank H. Schofield, USN, defined the estimate this way: "It is a method of applying knowledge and judgment to concrete situations. It is a natural method, one used unconsciously in every day life. A situation arises requiring action. We decide what the situation requires. We think of what difficulties have to be overcome, what ways we have of overcoming them, and finally how we will go about the task."[11]

The estimate had four basic components: *the mission, an assessment of enemy forces, an evaluation of own forces,* and finally *the decision*. The mission was the starting point; it usually was derived from instructions or orders from a superior. At the Naval War College, it was the foundation of the problem. Officers became practiced at reviewing their instructions thoroughly to produce a clear, and common, view of the mission. Schofield continued: "Experience has shown that the statement of a problem to men whose strategic and tactical ideas have not been coordinated by training will result in marked diversity in the statements of the *mission*. . . . We are working for unity of action. If the statement of the same problem to all can provoke the same statement of mission from each, then we have taken a sure and necessary step toward *unity of action*" (emphasis original).[12]

Although Schofield did not use the term *doctrine* in his lecture, he clearly was aiming for the results that an effective doctrine would produce. The process of producing the estimate was intended to create a common conceptual frame, so that all officers would derive similar missions from the same problem statement. This was an important step for fostering alignment and cooperation toward a common goal. Collaboration in conference helped ensure that outcome.

Once the mission was identified, officers explored how the enemy could prevent its accomplishment. In the enemy forces step, they examined the strength of enemy forces, their disposition, and their probable intentions. The most important aspect of this step was assessing the situation from the enemy's perspective to reduce the possibility of surprise. Schofield described the appropriate mindset as follows: "The effort should be . . . to arrive at the enemy's point of view, to think as he would think of us, to consider all the plans that he would consider,

and to estimate which of those plans would be most injurious to us. . . . One must endeavor never to be caught in a situation that has not been foreseen and considered as a possibility. It is only by a thorough and pains taking [*sic*] consideration of the enemy's probable intentions that surprise can be avoided."[13]

Once the enemy's most dangerous course of action had been considered, the next step was to examine the options available to one's own forces. Officers were expected to analyze all avenues that could achieve the mission. One of these would be chosen, and that would become the decision—the foundation of orders for subordinates. Schofield emphasized that it was important to make the decision conclusive and resolute, so that it would inspire concerted action. However, he emphasized also that the decision should not project a plan too far into the future; a balance had to be struck so that the force could adjust and exploit unanticipated opportunities.[14]

Creating a Command Framework

Through the conference method and the estimate of the situation, the Naval War College created an initial conceptual framework for command in war. Although these specific approaches fell short of a doctrine, they did expose naval officers to a common methodology for structuring plans and orders, instill the value of working through strategic and tactical problems collaboratively, and uncover the challenges involved in the art of command. Practice using the conference method and the estimate of the situation also impressed on officers the importance of fostering aligned, decentralized decision-making. This would be essential in actual combat with a large, modern battle fleet. Experimentation in the Atlantic Fleet would build on this foundation and lead to the Navy's first deliberate experiments with creating a doctrine.

EXPERIMENTATION IN THE ATLANTIC FLEET

The inability of American naval officers to gain experience coordinating a large fleet at sea ended with the establishment of the Atlantic Fleet in April 1907. Formed by President Theodore Roosevelt and commanded initially by Admiral Robley D. Evans, USN, the Atlantic Fleet was employed as a platform for deliberate experimentation in the ten years before the American entry into World War I.

Although many officers had become familiar with strategic and tactical problems at the Naval War College prior to the creation of the Atlantic Fleet, there had been no way to engage in similar exercises at sea. Once the Atlantic Fleet returned from its voyage around the world (often called the cruise of the Great White Fleet) in February 1909, contested exercises at sea began. The initial versions of *Instructions for Battle Plan Exercises* were published in 1910. In 1913, the Atlantic Fleet's commander, Rear Admiral Charles J. Badger, USN, issued the

more sophisticated "Rules for Battle Maneuvers"; this marked the beginning of a new paradigm.

Badger's 1913 "Rules" emphasized that the game board and fleet exercises complemented each other. The board was best at demonstrating tactical concepts; exercises with the fleet provided practical experience. This mirrored the concepts of Bradley Fiske, a rear admiral serving as Secretary of the Navy George von Lengerke Meyer's aide for operations. It is likely that Fiske influenced Badger's "Rules."[15] This specified the following objectives for fleet exercises:

a) To acquire familiarity with the aspect of a modern sea battle ground

b) To give experience in handling squadrons, divisions, and ships

c) To afford practice in quickly recognizing conditions and changes of conditions and in the appreciation of tactical principles

d) To afford experience in noting and appreciating the actual physical features of wind, spray, smoke, sun, etc., and their influence

e) To afford opportunity for gunnery training and particularly for the exercise of range finder, plotting, and fire control parties under battle conditions

f) To exercise signal and radio parties[16]

While simulations and wargames could explore the theory of naval combat, exercises at sea were essential for developing the practical experience required to command the fleet effectively in battle. Accordingly, the exercises focused on coordinating the movements of the entire fleet: "When all ships work together . . . when each knows that his neighbor knows what he is doing, because they have all been given sound practical methods, then much of the difficulty of handling formations will disappear, and a few simple signals, by flags or by radio, or by both will suffice to handle naval forces. This will require the thorough constant practice, which will produce satisfaction and confidence born of efficiency."[17]

To help run the exercises and ensure the rules were applied appropriately, each ship appointed an umpire. Umpires kept track of the action and scored the appropriate damage. Dice were used to assess the impact of gun and torpedo fire. Lights and flag signals designated targets. The accuracy of the exercise and therefore its value as a learning tool depended on the performance of the umpires. Badger's "Rules" noted that "careless or inaccurate scoring may vitiate the results of an otherwise excellently conducted maneuver."[18]

Larger-scale maneuvers were held on an annual basis, in either the Atlantic or the Caribbean. The most sophisticated of these foreshadowed the more-famous fleet problems of the interwar period. Strategic Maneuver 3, conducted August 20–31, 1916, was a good example. It simulated an effort by a European power to

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seize a base on the East Coast of the United States. These kinds of exercises, in which one fleet aggressively challenged the Monroe Doctrine, were commonplace. They helped the Navy improve fleet tactics and provided valuable experience in coordinating the movements of dispersed forces over a large area. One of the most important lessons learned in these exercises was that the Navy lacked effective scouting vessels; destroyers were pressed into the role, but the small ships often had difficulty maintaining speed in the heavy Atlantic seas.

Some exercises investigated specific topics; *fast wing* tactics were some of the most common. The Navy lacked battle cruisers, a new ship type that the Royal Navy (RN) introduced with its *Invincible* class, and the Americans were curious to understand how they could be used. Battle cruisers combined the firepower of a battleship with high speed, but sacrificed protective armor. The Navy explored how these ships might operate—and how best to fight against them—by using substitute vessels; they generally were positioned as a fast wing ahead of the battle fleet. These maneuvers repeatedly illustrated the importance of concentrated firepower; the fast ships often found themselves isolated from the support of their main body. Opponents that remained together and fought as an integrated unit generally overwhelmed them.[19]

However, that was not always the case. Tactical Problem 33-13 of July 25, 1913, pitted the fleet's destroyers, representing a force of high-speed battleships, against the fleet's battleships. The destroyers split into three divisions, and although they did not remain concentrated, they coordinated their maneuvers so as to come into action almost simultaneously. The battleships also split into three divisions, but one of the flank divisions failed to keep the destroyers on the beam and was judged to have been damaged seriously. The commentary on the problem considered it "interesting and instructive as a tactical exercise" because it "presented several features which had not been previously brought out during fleet maneuvers."[20] Much of this may have been because of the new techniques that the commander of the destroyers was employing with his subordinates.

That commander was Captain William S. Sims, USN, who had come to the Atlantic Fleet's Torpedo Flotilla earlier that month. He was responsible for the fleet's destroyers, and prior to assuming command of the flotilla Sims had attended the Naval War College. While there, he met Lieutenant Commander Dudley W. Knox, USN, who had been agitating for the development of a uniform doctrine of command. Knox's March 1913 prizewinning essay on the subject emphasized that the existing approach of issuing lengthy orders was insufficient to "produce the unity of effort—the concert of action—demanded by modern conditions in a large fleet." Instead, it killed initiative and engendered a spirit of "blind obedience."[21]

Sims appreciated this perspective and brought Knox with him to the Atlantic Fleet as his aide. Other talented officers joined them. Commander William V. Pratt, USN, another acquaintance from Sims's time at the Naval War College, served as Sims's chief of staff. Lieutenant John V. Babcock, USN, served as their operations officer. Together, these four officers turned the flotilla into a laboratory for the development of tactical doctrine. Sims explained his concept in a letter: "The torpedo fleet could be made an enormous game board—an exceedingly valuable school for trying out all kinds of maneuvers at small expense. There is a lot to be learned. None of us knows much about it yet. But one thing is sure, and that is that it can only be learned by study combined with actual maneuvers with the Fleet."[22]

Sims recognized that his command had limited practical experience. His young destroyer commanders were knowledgeable, talented, and prepared to be aggressive, but they lacked a uniform approach to tactical situations. Their actions were not cohesive, and they were unable to work together to turn their small ships' powerful torpedoes into potent weapons. Doctrine became the means by which Sims fostered collaboration and brought cohesion to his force, increasing their offensive potential.

> To create a flotilla doctrine, Sims inaugurated the use of the conference method for staff study and work with the destroyermen. . . . [Sims] recognized that the Navy's hierarchical system would not permit his subordinates to disagree with him very vigorously or advance their own ideas unless he changed the ground rules. Thus he called for setting aside rank in conference—ideas would be studied on their merits irrespective of origin. Dissent and argument became the rule of the conference until consensus occurred; then all were expected to give complete loyalty to the operating plan and the guiding doctrine.[23]

Sims leveraged his experience with the conference method and the estimate of the situation at the Naval War College and brought these ideas to the flotilla. They enabled him to draw on the skills and abilities of his subordinates and develop effective plans collaboratively. They discussed upcoming exercises and experimented with options during tabletop wargames aboard Sims's flagship. This led to greater cohesion in maneuvers and exercises; it also increased familiarity and trust within the flotilla. Sims's subordinates learned how to act as a unit. Regular conferences, repeated practice, and constant refinement led to the development of a common doctrine.[24] This foundation helped the destroyer commanders outmaneuver their opponents repeatedly in tactical exercises.

Destroyer torpedoes were powerful weapons, but their range was limited. Destroyers had to close with larger, more-powerful ships to attack effectively, and it was much easier to do so under the cover of darkness. Coordinated night attacks

were very difficult, but with practice, Sims's captains became extremely adept at them.[25] Their well-coordinated night torpedo attacks illustrated that battleship formations were vulnerable, even when screened by other ships.[26] Sims reported on one such attack in March 1915: "During recent exercises, the flotilla attacked the double screened battleship fleet with actual torpedoes. Eighteen torpedoes were fired, and 11 and probably 13 hits were made. Six or seven battleships, including three dreadnaughts [*sic*] were struck from one to three times. . . . [T]he problem . . . was a question of protecting a fleet by having its main body screened against the attack of torpedo destroyers."[27]

This remarkable result—sinking or disabling at least six battleships—was made possible by the Torpedo Flotilla's new doctrine. Sims was making the most of his small ships and the aggressive spirit of his captains. A general plan, framed by the estimate of the situation, provided high-level coordination. The habits and routines developed through repeated exercises aligned decision-making at the tactical level and eliminated the need for detailed orders. This approach allowed Sims to maximize the individual initiative of his captains while focusing them on a common goal.

In his comments on Tactical Problem 35-13, held in July 1913, Sims described one of the methods he used to develop doctrine: "Previous to the maneuver, two forenoons were spent by the Flotilla Commander and all destroyer captains in playing the problem on the maneuver board on the [flagship] *Dixie,* and it is believed that this training was of great benefit to the officers concerned in actually executing the problem on the water."[28] These kinds of exercises helped officers develop a shared sense of how to approach specific situations, but they were not intended to provide rote solutions. Sims's goal was to align decision-making. Repeated exercises on the game board and at sea were coupled with frequent conferences to share lessons and discuss alternatives, leading to constant improvements and refinements.

One of the most important aspects of the flotilla's doctrine was the stress it placed on aggressive action. According to Thomas Hughes, "under Sims, destroyer men adopted an aggressive ethic based on speed, agility, and daring."[29] By emphasizing individual initiative, the officers of the flotilla maximized their potential for aggressive action; it became the essence of their doctrine and was very influential. Many of the Navy's future leaders, including Ernest J. King, Harold Stark, Rufus Zogbaum Jr., Aubrey Fitch, Harris Laning, George Cook, John Newton, William Halsey, Franck T. Evans, and Frank Jack Fletcher, were immersed in Sims's laboratory and influenced by the flotilla's tactics and doctrine; they would take these ideas with them as they moved on to greater responsibilities.

In the summer of 1914, Sims returned to the Naval War College to give a lecture that described how the "principles and methods developed . . . at the college

have been applied in the administration of the Flotilla and in the development of its tactics." Sims emphasized the benefits of the conference method. There was, in his words, "no possible excuse for not utilizing . . . all the knowledge, experience, energy, and brains that the organization contains." The conferences drew out this knowledge, leading to more-effective solutions. They also fostered a "team spirit and a team loyalty" that created greater alignment throughout the organization.[30] In his lecture, Sims highlighted the development of the flotilla's new night search-and-attack doctrine, which was refined and analyzed in a series of exercises and numerous conferences before it was truly effective.

By 1915, enough experience had been gained with the flotilla's doctrine to codify it. The *General Service Instructions* for the flotilla, issued in 1915, described its mission, organization, and doctrine as developed under Sims.[31] The increasing sophistication of the flotilla's approach, and its well-considered doctrine, provided a mechanism for coordinating distributed action in battle and led to an increasing emphasis on the potential for destroyers to contribute to major fleet engagements. This was reflected in the Atlantic Fleet's 1916 "Battle Instructions," in which destroyers were recognized as a core offensive weapon of the fleet—a testament to the effectiveness of the flotilla's doctrine.[32]

The 1916 "Battle Instructions" was issued by Rear Admiral Frank Friday Fletcher, USN (uncle of the destroyer captain Frank Jack Fletcher), in May. It reflected his experience as Atlantic Fleet commander over the previous sixteen months. In the "Instructions," Fletcher emphasized the importance of concentrated firepower. This had been a standard element of the Navy's approach for years, but Fletcher's take on it was different.[33] He emphasized concentrating all the weapons of the entire fleet, not only the gunfire of its battleships. This was a new paradigm, one that would remain at the core of the Navy's tactical approach through the end of World War II.[34] It was the success of the flotilla's doctrine that led to an emphasis on using all arms to destroy the enemy in battle.

Fletcher's "Instructions" also introduced a new, more flexible approach to command. He assumed that the conditions of battle would be fundamentally uncertain. Although detailed plans could be developed, the assumptions embedded in them would not survive for long. Therefore, Fletcher expected to foster collaboration among his subordinates by issuing a high-level battle plan. The plan would not provide detailed instructions; instead, it would give sufficient background to explain his intentions. Commanders were expected to remain flexible and adjust depending on specific circumstances. Fletcher expected them to exploit emerging opportunities.

> A plan of battle will specify the role to be played by each subdivision of the fleet in the situation which the plan is intended to cover; it will fix the direction . . . from

> which the enemy is to be attacked; the speed of the force; . . . the direction in which the enemy is to be turned or the turn that is to be denied; whether the attack is to be pressed home to short range or kept at long range; whether a quick decision is to be sought for or containing tactics adopted; whether destroyers are to attack the enemy, deny him a certain area, or remain in reserve as a means of giving a coup de grace.[35]

Fletcher's approach dovetailed perfectly with that of Sims. Both men relied on the concept of a high-level plan to provide context for their subordinates. But rather than prescribing specific actions, they embraced the more flexible approach fostered by the estimate of the situation, which stressed communicating intentions and general concepts so that subordinates could use their own initiative to further progress toward the desired outcome.

Doctrine complemented this approach. In 1914, Commander Pratt took a break from his work with the flotilla and lectured at the Naval War College.[36] Together with Lieutenant Commander Harry E. Yarnell, USN, Pratt refined the theory behind the flotilla's methods and brought it to a broader pool of officers. Yarnell continued this work, providing a fledgling definition of doctrine to the College's class of 1915: "A doctrine is simply a code of rules upon which we act spontaneously and without order, for the accomplishment of the mission. To be of value the doctrine must be based on correct principles and methods of conducting war. Then it must be instilled by study and actual fleet training into the minds of officers until it becomes almost a reflex action."[37]

Among a small pool of officers, this concept was becoming the preferred mechanism for ensuring coordinated action without the need for precise orders or firm control. Yarnell, Sims, Pratt, Knox, and others believed that doctrine was the key to unity of action in a modern, diverse, and distributed battle fleet. As Yarnell described: "From skill and doctrine flows the initiative of the subordinate. Give the subordinate a proper understanding of the mission and proper training, and he may be relied upon to act correctly in an emergency when orders or instructions from higher authority are not available."[38] Knox's conception was similar; he argued that "doctrine gives birth to harmonized methods, rules, and actions" and that doctrine "is necessary before concerted action . . . is possible; it is an indispensable element of command, and an essential prelude to great success in war."[39]

This emerging concept of doctrine integrated well with Fletcher's new approach to battle plans. Fletcher expected his plans to provide context and explain his objectives; he would leave his subordinate commanders free to act on their own initiative in furtherance of them. This method allowed those officers to adjust to changing circumstances. If a common doctrine was available to guide them, they would have a shared context for decision-making, ensuring greater alignment in the confusion of battle. Like Yarnell, Captain Albert P. Niblack,

USN, argued in favor of such an approach. "Once the action is joined the subordinates are dependent upon their own initiative, because signaling in battle is difficult, and hence arises the necessity for *battle doctrine*. In the rapidly changing phases of battle . . . decisions must be made and must be executed without the loss of the time necessary to signal to higher authority. . . . Thus arises the principle of the initiative of the subordinate, growing out of battle doctrine, the plan of battle, and indoctrination" (emphasis original).[40]

If the work of the Torpedo Flotilla was not convincing enough, there were numerous historical examples—by now a staple of Naval War College analyses—that could be used to justify the development of a common doctrine.

> A tentative doctrine has been established in the Torpedo Flotilla, and a very able officer of high rank has pronounced it the greatest single achievement he has seen in thirty years' service. . . . We cannot recall to mind too often the splendid examples of doctrine supplied by the life of Nelson, or the victories that resulted in 1870 through the doctrine of German commanders to enter eagerly into battle, to support each other, to deny defeat and to grasp victory through concert of action and unity of mission—the destruction of the enemy.[41]

However, this concept was new, and its importance was not recognized widely. Most officers still viewed tactics as a discipline involving precise maneuvering rather than a shared contextual understanding. It would be years before the fledgling doctrine developed by Sims's flotilla became the Navy's dominant approach to coordinated action in combat.[42]

EXPERIENCE IN WORLD WAR I

Participation in World War I provided the Navy with valuable experience while at the same time invalidating many existing assumptions about naval warfare. Unexpectedly, the most pressing enemy was not the German battle line but the tenacious U-boats; when the United States entered the war, the Navy was ill equipped to deal with this threat. However, the nascent destroyer doctrine developed in the Atlantic Fleet proved a valuable guide. Experience partnering with Great Britain's Royal Navy also provided a unique learning opportunity, exposing American officers to a wealth of wartime lessons.

Battleship Division 9 of Rear Admiral Hugh Rodman, USN—consisting of *New York, Delaware, Florida,* and *Wyoming*—arrived at Scapa Flow, the RN base in the Orkney Islands, north of Scotland, on December 7, 1917.[43] The ships became the 6th Battle Squadron of the Royal Navy's Grand Fleet. Operations with the Grand Fleet provided valuable experience for Rodman and eventually the entire Navy through exposure to "British signals, radio codes, maneuvering orders, fire control methods, and battle instructions."[44]

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In battle, the Grand Fleet coordinated its movements through a sophisticated set of instructions and plans. To keep the battleships concentrated, they cruised in a compact formation of parallel columns. In battle they deployed, generally by turning ninety degrees and forming a single line, perpendicular to the bearing of the enemy—a formation similar to those the Navy had been using since the creation of the Atlantic Fleet. The Grand Fleet's light forces—destroyers and cruisers—would arrange themselves on the flanks of the battle line, slightly closer to the enemy. From these positions, they could protect the flanks from enemy attack and also be ready to close the enemy line and attack with torpedoes. These formations were clear and well suited to an action between battle fleets. The Navy adopted similar battle formations after the war, arranging its ships to maximize concentrated firepower against the enemy battle line.[45]

However, the Navy's officers viewed the Grand Fleet's large set of instructions less favorably. This was particularly true when viewed against the outcome of the war's largest naval battle, the Battle of Jutland, fought in May 1916. Almost as soon as the battle was over, American officers began to examine it in the hope of drawing out effective lessons. Lieutenant Holloway H. Frost, USN, was one of them. He entered the Naval War College in 1916 and, in cooperation with Yarnell and Niblack, conducted a wargame to re-create the battle in September 1916. Sims and Knox traveled to Newport to join them and learn from the exercise. In November, Frost produced an official College report on the battle.[46]

Frost's greatest criticism, as it developed in later years, was that the Grand Fleet's guiding orders and principles emphasized the avoidance of risk and the preservation of the fleet. Decisive action would be sought only if a positive outcome could be guaranteed.[47] Captain Harris Laning, USN, who learned about the importance of doctrine under Sims in the Torpedo Flotilla and later taught tactics at the Naval War College, stressed that the Grand Fleet's commander, Admiral John R. Jellicoe, RN, adopted a defensive posture and that he was "unwilling to pay . . . for the victory which . . . lay in his grasp," despite placing his force "in one of the most powerful positions ever obtained."[48]

Frost, Laning, and other American officers who examined Jutland highlighted the fact that RN officers failed to act with the necessary initiative. They missed opportunities to damage the enemy; failed accurately to report sightings to higher authority; and embraced a risk-averse attitude that, with a few notable exceptions, seemed to dominate Jellicoe's fleet.[49] Part of the reason was believed to be the Grand Fleet's detailed instructions, which were blamed for restricting the initiative of subordinates. Laning explained it this way: "The British failed to gain decisive victory . . . because their higher commanders . . . had not prepared themselves and their subordinates to win."[50]

It is important to note, however, that there are alternative explanations for the outcome at Jutland; David G. Morgan-Owen's recent study of British war planning, for example, argues that the Royal Navy became focused on defense of the British Isles, limiting opportunities to use the Grand Fleet offensively.[51] Regardless, the U.S. Navy resolved to take a very different approach and stressed the importance of capitalizing on opportunities by deliberately developing methods that promoted subordinate commanders' aggressive action.

Sims's doctrine provided a sound basis for this. Before the American entry into the war, he commanded battleship *Nevada* and was promoted to rear admiral. He became President of the Naval War College in January 1917 but was ordered to London at the end of March. His mission was to liaise with officers of the Royal Navy and prepare for the American entry into the war. When that occurred in April, Sims was made commander of American naval forces in Europe, and in May he received a temporary promotion to vice admiral. It was an ideal opportunity to spread his approach to doctrine, and he wasted no time.

Sims and his staff—which included Knox, Yarnell, Schofield, and Babcock—issued a doctrine to his European command that stressed two critical components derived from his experiences in the Atlantic Fleet and time at the College. The first was the use of a mission and general plan. These focused the attention of subordinates on critical objectives and promoted mutual understanding, both of which were essential for fostering individual initiative.

> It is manifestly impossible for the Commander of the operation to give detailed instructions in advance that will cover all emergencies; it is equally impossible for the Commander of an operation to give these instructions on the spot to meet adequately a local situation suddenly developed. Hence the importance of having the immediate Mission and General Plan clearly understood in advance, and the necessity for leaving as wide an area of discretion to subordinates as possible.[52]

That discretion was the second critical component. Sims stressed the need for individual initiative to overcome uncertainty in battle: "No officer should fail to exercise his initiative and judgment in support of the General Plan when confronted by unexpected conditions." Sims expected this doctrine to be "a bond of mutual understanding governing the application of principles to circumstances."[53] The creative energies of subordinates would translate the mission and general plan into desired outcomes through coordinated action.

It worked. Sims collaborated with his subordinates and the British to develop effective doctrines for hunting U-boats, combating German raiders, and escorting convoys. These were augmented by an emphasis on the kind of wargames and shipboard exercises he had employed in the Atlantic Fleet.[54] Through these mechanisms, many more officers—particularly destroyer captains—became

familiar with Sims's approach to doctrinal development. The success of these methods in war validated them, and they served as a basis for future development in the early interwar period.

DOCTRINE DELIBERATELY CREATED

In 1919, after the war ended, Sims returned to the Naval War College. It had been closed during the war, and his first task was to reestablish it. He wanted it to become a more influential institution and to allow a broader pool of officers to benefit from its methods. He asked Secretary of the Navy Josephus Daniels to increase class sizes, augment the staff, and assign higher-ranking officers to head the major departments. Daniels was a firm believer in education, and he readily agreed to make the necessary changes.[55]

By the end of 1921, about half the admirals within the fleet and their chiefs of staff were graduates of the College, a testament to Sims's efforts and a reflection of the growing influence of the institution.[56] Sims made sure that these officers were exposed to the doctrinal approaches that the Atlantic Fleet had pioneered before the war by selecting now-captain Dudley Knox as his chief of staff. During their tenure, Sims and Knox continued to emphasize the use of wargames and the conference method that had been a staple of the College for years: "The applicatory system of Captain [William McCarty] Little, built upon the use of the game board to illustrate problems of strategy and tactics, continued as the basic method of instruction."[57] Collaborative learning and problem solving continued, as John M. Lillard explains: "War College leadership, faculty, and students all contributed toward creating a climate that encouraged experimentation and learning in a group setting."[58]

The efforts of Sims and Knox were aided by some very specific recommendations made by a board that Knox chaired in 1919. The Knox-Pye-King Board—staffed by Knox, Captain Ernest J. King, USN, and Commander William S. Pye, USN—examined the current state of officer instruction and argued for a junior Naval War College course that would ensure "the whole body of commanding officers and of unit commanders and their staffs have common conceptions of . . . practical methods which are requisite for thorough cooperation and coordination" to make "unity of command" a reality in battle.[59] The board felt that officers needed greater familiarity with "the advanced elements of the profession, including training in the application of the doctrine and principles of naval warfare" before they would be ready to command at sea.[60]

Two different commands explored how best to accomplish this goal. The first was that of Rear Admiral Charles Plunkett, USN. He was a graduate of the Naval War College and familiar with its methods. He assumed command of the Atlantic Fleet's destroyers in 1919 and, like Sims before him, emphasized tactical

experimentation. Plunkett helped foster the creation of a learning system with the help of his chief of staff, Captain Laning. Laning understood well the importance of doctrine from his time in the Torpedo Flotilla. Together they promoted a new, more formal approach to doctrinal development that harnessed the lessons of war and enhanced cooperation.

Plunkett and Laning created a "school of doctrine" at Charleston, South Carolina, to investigate how best to coordinate their ships in battle. Captain Yarnell led many of the efforts of this school and continued to promote the concept of doctrine actively. For instance, he often gave lectures and led committees responsible for the development of standing orders and attack procedures.[61] In addition, Yarnell maintained an ongoing correspondence with Sims, allowing him to incorporate the latest thinking from the Naval War College into his work.

The second command that explored how best to develop doctrine was in the Pacific Fleet. Captain Pratt, another veteran of Sims's Torpedo Flotilla, assumed command of the Pacific Fleet's Destroyer Force in November 1920 and introduced an approach that paralleled the one in the Atlantic Fleet. Pratt and his subordinates—including other former members of the Torpedo Flotilla such as William Halsey—continued to promote an aggressive doctrine well suited to destroyers. Pratt established a "destroyer staff college" at San Diego to allow for regular experimentation and indoctrination.[62]

The Atlantic Fleet's school and Pratt's college regularly exchanged lessons and collaborated.[63] The name "staff college" more aptly described their work, so the school at Charleston changed its name and became the Atlantic Fleet's Destroyer Staff College. Commander William Victor Tomb, USN, commented on its work in 1921. "My first impression . . . upon observing the work done at the Staff College was one of amazement that such excellent tactical maneuvers could be carried on by the Officers of the Destroyer Force of whom only the Force Commander and the Director of the maneuvers were War College graduates."[64] The three colleges—at Charleston, San Diego, and Newport—deliberately worked on improving and refining the Navy's destroyer doctrine.

The destroyer staff colleges also familiarized a broader pool of officers with the latest techniques and improved their skills. It was part of a conscious effort to ease the transition back to a peacetime footing. Laning and others were worried that the lessons of war would be lost if tactical thinking stagnated: "The more we can fight off this effect [stagnation] by work and study along the lines of our profession, and by an endeavor to embody in our 'War Instructions' the best ideas as developed in past wars, in study, and research, that much easier will be our task when the next war comes. The work at this Staff College is one effort towards that end."[65]

Soon, enough experience had been gained to issue a new tactical manual. It would blend lessons learned during the war with experimentation in tabletop problems, fleet exercises, and the latest thinking in both colleges. Captain C. R. Train, USN, was responsible for the committee that produced the manual, and by September it had completed its work, as noted in the "History of the Destroyer Staff College":

> The final result of the year's work as planned by Captain Laning was to be a manual of Destroyer Doctrine covering all phases of destroyer activities in war. Although considerable work was done this mission was not finally accomplished until September of this year [1921] when a committee of officers headed by Captain C. R. Train completed the compilation of "Destroyer War Instructions" embodying the work of the Staff College at Charleston, the Destroyer Staff College at San Diego, and other available destroyer practice as developed in the World War. . . . This manual . . . will be . . . tested out on the game board and by actual squadron maneuvers at sea.[66]

Under Plunkett and Pratt—with encouragement by Sims—the Navy's destroyer forces were a hotbed of doctrinal experimentation and development. The resulting manual, the Atlantic Fleet's 1921 "Destroyer Instructions," represented a new paradigm. It was the first fleet manual developed through a deliberately created system of learning. The system seamlessly blended problem solving and experimentation ashore—in the destroyer staff colleges and the Naval War College—with exercises at sea. The introduction to the manual reinforced this point, noting that the "Instructions" was "based upon the best obtainable experience of our Service preceding and during the recent war, supplemented by considerable subsequent game board and practical experience and trial."[67] It was a comprehensive manual designed to provide guidance to the fleet's destroyers while still preserving scope for independent action by individual ship and squadron commanders. Future doctrinal publications would follow a similar paradigm, as the work of the fleet became more closely integrated with that of the Naval War College.

Plunkett and Pratt developed a more sophisticated approach than other commands, but their basic concept became the Navy's standard model for doctrinal development in the early interwar period. The *War Instructions* of 1923 codified this model; with its publication, doctrine became a core aspect of the Navy's tactical development. The *War Instructions* stressed that indoctrination was essential but also emphasized that doctrinal development would be driven by individual commands and not handed down from the fleet level. Doctrine would emerge from the bottom up; it would not be imposed top down. Individual commands were responsible for developing their own doctrines to reflect the specific strengths and limitations of their forces. This flexible approach allowed

the Navy to remain open to new ideas and encouraged the creativity of low-level commanders.

However, the flexible approach also meant that a coherent doctrine for the entire fleet was lacking. Some officers urged the development of a more common and centralized approach. Captain Knox was particularly critical in a lecture he gave at the Naval War College in 1924. Knox called doctrine a "basis for harmonious decisions" and stressed that it was the only effective way to coordinate the actions of distributed forces in battle. "No plan, however well it may be expressed, can possibly be co-ordinately executed by a large force of vessels of several types operating against a strong and efficient enemy, unless the squadron, division, and ship commanders have the same conceptions of war as their commander-in-chief and are well indoctrinated."[68]

The *War Instructions* sought to achieve this end but deliberately avoided a comprehensive approach. In part, this was a reaction to the Navy's experience in World War I and the negative impression created by the Grand Fleet's extensive and detailed orders. The comprehensive instructions were believed to have inhibited the initiative of subordinate commanders. As James J. Tritten explains: "These fighting instructions [the Grand Fleet Battle Orders] attempted to provide guidance for all eventualities and offered the unit commander very little opportunity for his own initiative. They were issued several times during the war by [Admiral John R.] Jellicoe and by his successor, Admiral Sir David Beatty."[69] John Brooks also has commented on the influence of these orders and the "limited scope" they provided subordinates.[70]

To encourage individual initiative and foster contextually driven decision-making, the Navy deliberately refrained from publishing a fleet-wide tactical doctrine. Instead, specific manuals, such as the Atlantic Fleet's "Destroyer Instructions," provided detailed guidance while preserving the initiative of individual commanders. This did not mean that doctrine was unimportant. On the contrary, the *War Instructions* stressed its value, emphasizing that victory in battle would be aided by "[i]ndoctrination of the forces, so that there may be mutual understanding of the intentions and plans of the commander in chief and so that there may be coordination in the means and methods employed in carrying out the tasks assigned and of the necessary procedure when without orders."[71]

This is what Knox wanted to see. However, the *War Instructions* left the details of that doctrine unspecified. This omission allowed it to be flexible and change depending on circumstances. By leaving doctrinal development in the hands of individual commanders, the Navy could experiment more effectively (and more rapidly) with different techniques. The approach also ensured that those doctrines that were developed remained contextually sensitive.

There were two important ramifications of the Navy's approach. First, it meant that in an era of rapid technological change, the Navy avoided prematurely converging on any specific doctrine. It left its options open, so that as new concepts and approaches emerged, doctrines could be modified rapidly to account for them.[72] The interwar fleet problems and other tactical exercises provided a framework for these changes; they were part of a feedback cycle that refined the Navy's doctrinal concepts in light of experience. Second, the Navy encouraged flexibility and individual initiative within its officer corps. Because doctrinal development was in their hands, lower-level commanders were encouraged to take responsibility and not wait for higher authorities to make the decisions. This fostered the commanders' creativity and problem-solving skills, encouraging them to derive solutions for their own specific circumstances. It proved to be an extremely effective approach.

In the decade between 1913 and 1923, the Navy addressed the challenge of coordinating a modern, distributed battle fleet by introducing a new, more flexible paradigm for commanding forces in battle. That approach combined flexible battle plans that framed the mission with tactical doctrines that enabled coordinated action without the need for detailed instructions. In this way, the Navy solved the problem of ensuring alignment while also fostering creativity and individual initiative.

That outcome was the result of an effective process of organizational learning. It started with new paradigms introduced at the Naval War College: wargames, the conference method, and the estimate of the situation. Sims and his colleagues harnessed these effectively in the Atlantic Fleet. They leveraged tabletop wargames to explore different approaches to combat, they used the conference method to make sense of the results and identify lessons, and they employed the disciplined methodology of the estimate of the situation to understand their mission and formulate plans. Together, the officers of the Torpedo Flotilla discovered that repeated practice created familiarity—with their equipment, their ships, and each other—and that certain practices were more effective than others.

The officers developed specific routines that leveraged their strengths. These strengths included an emphasis on aggressive action, the use of a general plan (to describe desired outcomes and frame opportunities), and a reliance on individual initiative. These concepts appeared to be validated in World War I and therefore became core elements of the Navy's doctrine, providing a foundation at the start of the interwar period that was refined and enhanced in the decades before World War II. By the time of that conflict, these core elements of the Navy's doctrine had channeled and focused the Navy's approach to combat, leading to an emphasis on

the use of surface gunfire and aerial attack so as to, in the words of modern naval tactician Wayne Hughes, "attack effectively first."[73]

More important than those fundamental elements, however, was the habitual routine of exploring, developing, and refining tactical practices to create doctrine. The approach was developed initially by Sims, then expanded by Plunkett, Pratt, and Laning after World War I; it emphasized developing doctrine from the bottom up. This was a deliberate choice, and it was codified in the *War Instructions* of 1923. It allowed the Navy to explore new doctrinal approaches and concepts routinely. As this process was refined during the interwar period, lower-level commanders continued to experiment with new doctrines for their forces. Rapid experimentation proved critical in the early years of World War II, when Japanese capabilities proved to be greater than anticipated. Lessons from the fighting in 1942 aided victory in the battles of 1943 and 1944, when American officers explored new approaches in an effort to secure a potential advantage. That process had its roots in the work the Navy did to develop its initial doctrine in the decade between 1913 and 1923.[74]

NOTES

1. More details can be found in Trent Hone, *Learning War: The Evolution of Fighting Doctrine in the U.S. Navy, 1898–1945* (Annapolis, MD: Naval Institute Press, 2018).
2. "Tentative War Instructions and Battle Doctrine, Light Cruisers," 1938, p. 1, Entry 337—USN and Related Operational, Tactical and Instructional Publications [hereafter E337], box 109, Record Group [RG] 38, National Archives, Washington, DC [hereafter NA].
3. The associated challenges presented by the Navy's organizational structure and the effective work that was done in spite of it is described in James C. Rentfrow, *Home Squadron: The U.S. Navy on the North Atlantic Station* (Annapolis, MD: Naval Institute Press, 2014).
4. Norman Friedman, *U.S. Battleships: An Illustrated Design History* (Annapolis, MD: Naval Institute Press, 1985), app. C, pp. 418–19.
5. "Rules for the Conduct of the War Games," 1903, Naval Historical Collection, Naval War College, Newport, RI; "Rules for the Conduct of the War Games," 1905, Naval Historical Collection, Naval War College, Newport, RI.
6. Ronald Spector, *Professors of War: The Naval War College and the Development of the Naval Profession,* Historical Monograph 3 (Newport, RI: Naval War College Press, 1977), p. 73.
7. See, for example, "Conference on Naval Tactics, 12 August 1901," box 106, RG 8, Intelligence and Technical Archives, Naval War College, Newport, RI [hereafter Intelligence].
8. "A Basis for Discussion for a Conference on Battle Instructions (December 1916)," box 107, Intelligence.
9. This point is made extremely well by Jon Tetsuro Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Washington, DC: Woodrow Wilson Center, 1997).
10. Bradley A. Fiske [Rear Adm., USN], *The Navy as a Fighting Machine* (repr. Annapolis, MD: Naval Institute Press, 1988), p. 200.
11. "Estimate of the Situation, Lecture Delivered by Commander Frank H. Schofield," June 1912, Naval History and Heritage Command Library, Washington, DC.
12. Ibid.

13. Ibid.
14. Ibid.
15. See, for example, Fiske, *The Navy as a Fighting Machine,* pp. 136–37, 180–81.
16. "Addendum to 'Rules for Battle Maneuvers, 1913,' Fleet Order 29-14," September 12, 1914, box 93, Intelligence.
17. "Admiral Fletcher's Tactics of the Battle Line, 1916," box 93, Intelligence.
18. "Rules for Battle Maneuvers, 1913, United States Atlantic Fleet," May 12, 1913, box 93, Intelligence.
19. "Result of Battle Maneuvers, July 1913, U.S. Atlantic Fleet," box 93, Intelligence; "Results of Battle Maneuvers, June 1913, U.S. Atlantic Fleet," box 93, Intelligence.
20. "Result of Battle Maneuvers, July 1913."
21. Dudley W. Knox [Lt. Cdr., USN], "Trained Initiative and Unity of Action: The True Bases of Military Efficiency," U.S. Naval Institute *Proceedings* 39/1/145 (March 1913). This essay won second honorable mention in the U.S. Naval Institute's General Prize Essay Contest in 1913.
22. Quoted in Elting E. Morison, *Admiral Sims and the Modern American Navy* (Boston: Houghton Mifflin, 1942), p. 292.
23. Gerald E. Wheeler, *Admiral William Veazie Pratt, U.S. Navy: A Sailor's Life* (Washington, DC: Naval History Division, 1974), p. 74.
24. Morison, *Admiral Sims,* p. 295.
25. "Tentative Doctrine for Night Search and Attack, November 1913," box 103, Intelligence.
26. "Results of Battle Maneuvers, June 1913."
27. "Letters from Flotilla Commander, Torpedo Flotilla, Atlantic Fleet on Attacks by Flotilla against the Battleship Fleet Protected by Double Screen, March 1915," p. 1, box 42, Intelligence.
28. "Result of Battle Maneuvers, July 1913."
29. Thomas Hughes, "Learning to Fight: Bill Halsey and the Early American Destroyer Force," *Journal of Military History* 77, no. 1 (January 2013), pp. 71–90.
30. William S. Sims [Capt., USN], "Naval War College Principles and Methods Applied Afloat," U.S. Naval Institute *Proceedings* 41/2/156 (March 1915).
31. Morison, *Admiral Sims,* p. 295 note 4.
32. "Battle Instructions, United States Atlantic Fleet," May 27, 1916, box 48, General Board Records [hereafter GB], RG 80, NA.
33. Regarding the emphasis on concentration, see, for example, "Battle Plan No. 1 as Amended and Modified for Trial in the Fleet, June 1906," box 108, Intelligence; "Battle Plan No. 1, 1907, Report of Davis Board," March 6, 1907, box 46, GB, NA; "Battle Plan No. 2," December 8, 1911, box 46, GB, NA.
34. For details on how this concept evolved, see Trent Hone, "The Evolution of Fleet Tactical Doctrine in the U.S. Navy, 1922–1941," *Journal of Military History* 67, no. 4 (October 2003), pp. 1107–48.
35. "Discussion on Tactical Principles, U.S. Naval War College, 12–17 June 1916," p. 4, box 107, Intelligence.
36. Wheeler, *Admiral William Veazie Pratt,* p. 83.
37. "Naval Tactics," May 30, 1915, box 107, Intelligence.
38. Ibid.
39. Dudley W. Knox [Lt. Cmdr., USN], "The Role of Doctrine in Naval Warfare," U.S. Naval Institute *Proceedings* 41/2/156 (March 1915).
40. "A Study in Fleet Tactics: A Proposed Battle Doctrine, 25 June 1917," box 107, Intelligence.
41. "Naval Tactics."
42. Ibid.
43. Jerry W. Jones, *U.S. Battleship Operations in World War I* (Annapolis, MD: Naval Institute Press, 1998), p. 25.
44. Ibid., p. 29.
45. Hone, "The Evolution of Fleet Tactical Doctrine."
46. David Kohnen, "The U.S. Navy Won the Battle of Jutland," *Naval War College Review* 69, no. 4 (Autumn 2016), pp. 123–45.
47. Holloway H. Frost [Cdr., USN], *The Battle of Jutland* (Annapolis, MD: Naval Institute Press, 1936), p. 114.
48. Harris Laning [Capt., USN], "Major Tactics at Jutland," March 1923, p. 17, box 17, RG 4, Naval Historical Collection, Naval War College, Newport, RI.

49. These basic criticisms have been echoed in more-recent analyses. See Andrew Gordon, *The Rules of the Game: Jutland and British Naval Command* (Annapolis, MD: Naval Institute Press, 1997).
50. Laning, "Major Tactics at Jutland," p. 25.
51. David G. Morgan-Owen, *The Fear of Invasion: Strategy, Politics, and British War Planning, 1880–1914* (Oxford, U.K.: Oxford Univ. Press, 2017).
52. "Doctrine and General Instructions, Force Instructions No. 25, U.S. Naval Forces Operating in European Waters, London, England," August 16, 1918, p. 2, E337, box 107, RG 38, NA.
53. Ibid., pp. 3–4.
54. Ibid.
55. Morison, *Admiral Sims,* pp. 474–75.
56. U.S. Navy Dept., "Annual Report of the Secretary of the Navy," in *Annual Reports of the Navy Department for the Fiscal Year 1921* (Washington, DC: U.S. Government Printing Office [hereafter GPO], 1921), p. 23.
57. Morison, *Admiral Sims,* p. 475.
58. John M. Lillard, *Playing War: Wargaming and U.S. Navy Preparations for World War II* (Omaha, NE: Potomac Books, 2016), p. 41.
59. "Report and Recommendations of a Board Appointed by the Bureau of Navigation Regarding the Instruction and Training of Line Officers," Reference: Bunav. Let. #8039-198, October 16, 1919, Summary, p. 4. Copy provided by Dr. David Kohnen, Director of the John B. Hattendorf Center for Maritime Historical Research.
60. Ibid., Supplement, pp. 9–10.
61. "School of Doctrine—Committees, 12 November 1920, Destroyer Squadrons One and Nine, U.S. Atlantic Fleet," box 55, Intelligence.
62. Wheeler, *Admiral William Veazie Pratt,* pp. 158–62.
63. "School of Doctrine, Destroyer Force, Atlantic Fleet, 5 January 1920, Problem No. 9," box 55, Intelligence.
64. "Suggestions for Improving the Staff College Course, Commander W. V. Tomb," April 29, 1921, box 55, Intelligence.
65. "The Destroyer Staff College," October 20, 1921, box 55, Intelligence.
66. Ibid.
67. "Destroyer Instructions, U.S. Atlantic Fleet," November 23, 1921, E337, box 107, RG 38, NA.
68. "The Role of Doctrine in Naval Warfare, Naval War College, Newport, RI," May 19, 1924, p. 13, box 32, RG 38, Strategic Plans Division Records, NA.
69. James J. Tritten, *Doctrine and Fleet Tactics in the Royal Navy* (Norfolk, VA: Naval Doctrine Command, 1994), pp. 20–21.
70. John Brooks, *The Battle of Jutland* (Cambridge, U.K.: Cambridge Univ. Press, 2016), pp. 97–130.
71. U.S. Navy Dept., *War Instructions, 1923,* WPL-7 (Washington, DC: GPO, 1923), p. 90.
72. The Navy maintained a larger "possibility space" by keeping options open; this is often described as a "cloud of possibilities." See Peter M. Allen, "Modelling Evolution and Creativity in Complex Systems," *World Futures: The Journal of New Paradigm Research* 34, nos. 1–2 (June 1992), pp. 105–23, and Robert Artigiani, "Leadership and Uncertainty: Complexity and the Lessons of History," *Futures* 37, no. 7 (September 2005), pp. 585–603.
73. Wayne P. Hughes Jr. [Capt., USN (Ret.)], *Fleet Tactics and Coastal Combat* (Annapolis, MD: Naval Institute Press, 2000).
74. Trent Hone, "Guadalcanal Proved Experimentation Worked," *Naval History* 31, no. 6 (December 2017), pp. 30–37; Hone, *Learning War*.