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NO MAGIC NUMBER

Predreadnought Fleet Architecture in the U.S. Navy, 1902–1905

John T. Kuehn

The debates rage on in the naval and larger defense communities about the size of the U.S. Navy. The topic of the proper size for the Navy has been debated for some time, since at least the end of the Cold War and after the decline of the so-called six-hundred-ship Navy concept.¹ The actions of Congress in 2016 directing the Department of Defense to conduct three independent fleet-architecture studies and the election of Donald J. Trump to the presidency seemingly brought matters to a head. The election result of November 2016 caused the Navy to revise its target number for the size of the fleet upward to 355 commissioned warships by 2030. At the same time, the Chief of Naval Operations directed the Navy to conduct its own analysis of the completed congressional studies.²

Whether the count of ships will reach 355 or more by 2030, in whatever architecture is deemed most likely to serve U.S. security interests best, remains uncertain, as the six years since 2016 have shown.³ However, it was not institutional will that was lacking so much as a unified and coherent vision justifying

any certain level and how to structure the resultant fleet, never mind justifying 355 in particular as a magic number of warships below which U.S. maritime security would be at great risk. The most appropriate focus for building the Navy is to answer the primary question: What does the nation want the Navy to do? A second question follows: How does one go about ensuring that the fleet has the capabilities and force structure it needs, whether to serve as a deterrent or to wage war against a

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major maritime power, along with carrying out the many other missions that occupy the spectrum in between?

To understand the problems of the present, historians often point to examples drawn from the past. Doing so can suggest a first step in the process of defining a problem and identifying its solution set.⁴ Over one hundred years ago, in 1901, Navy leaders worried that the public was ready to settle for a fleet that might not deliver as needed in combat, despite its count of over three hundred ships.⁵ Their difficulties in gaining an audience for their ideas with the larger American public, even while a navalist president, Theodore Roosevelt, occupied the White House, offer insight for today's decision makers. The examination also helps us better to understand the past as it relates to the maritime security of the United States.

The scale and rate of technological change that those naval leaders faced are similar in many respects to those being experienced today. Communications and weapons technologies were evolving at exponential rates, with virtually no road map to show how they would change naval combat.⁶ Indeed, it is axiomatic to draw parallels between the rapid changes that occurred at the turn of the nineteenth to the twentieth century and those of today; doing so can help one better understand the impact of technological change on individual and collective thinking about these matters. The officers of the Navy at that time thought themselves every bit as progressive as do the young officers of today who tweet, populate blogs, and run websites.⁷ Those officers circa 1900 were not so different from us, and it behooves us never to forget that fact when trying to discern insight and acquire wisdom by studying the past.

Keeping these prefatory comments in mind, this article first examines the period of technological and doctrinal change within which those American naval officers of more than a century ago lived, planned, and built. It then samples American naval views in the pre-World War I period of 1902–1905, with particular attention to a series of memorandums and studies that the newly established General Board of the Navy initiated to support its function of advising the Secretary of the Navy about the proper size, structure, and role of the fleet as the United States faced the brave new—and dangerous—world of the twentieth century. It concludes with some insights about the debates going on today regarding fleet size and structure for a U.S. Navy that is facing an oddly similar—and threatening—world in the twenty-first century.

DOCTRINAL AND TECHNOLOGICAL CONTEXT

One way to begin this discussion is to frame it in terms of doctrine and technology. The two were very closely related; this was not so much because of steam and propulsion technology (although these were important) but more because of weapons, especially the torpedo. The first practical “fire and forget” torpedo had

been invented by Robert Whitehead in 1868.⁸ Whitehead's weapon threatened to revolutionize tactical and strategic doctrine.⁹ Suddenly, anything that could carry and launch a Whitehead torpedo conceivably could sink an opposing nation's largest and most expensive ships, whether warships or commercial vessels.

The French and Russians were among the first major naval powers to attempt to leverage the game-changing potential of the torpedo. Their efforts gave birth to a strategic-tactical doctrinal movement that has become known as the *Jeune École* (Young School). Under theorists such as Russian admiral Stepan O. Makarov and Captain H. L. Théophile Aube of the French navy, the movement investigated a new operational form of maritime warfare built around a marriage of the Whitehead torpedo with a new type of vessel, the small torpedo boat (TB).¹⁰

The newer technologies in high-speed steam engines, plus later-emerging forms of propulsion based on oil-derived fuels, raised the horrifying specter for Great Britain of the obsolescence of its fleet of large armored battleships and cruisers in the face of flotillas of inexpensive TBs armed with torpedoes. The rapid pace of change in propulsion technology and torpedo development prevented any near-term solution to this problem, and the challenge was most pressing for Britain because the French intended to use these ships primarily against British commerce in what is known as *guerre de course*, a commerce war against vulnerable maritime merchant traffic.¹¹ The threat that the *Jeune École*'s TBs represented was enhanced by the geography of France and Britain; the TBs' relatively short range was less consequential if they needed only to reach Britain's ports, especially those on the Channel that served the major industrial and population areas in Britain's east, such as London and Edinburgh.

However, geography also limited what proponents of the *Jeune École* might attempt to accomplish. The Fashoda Incident (1898) between France and Great Britain highlighted the shortcomings of a TB-centered fleet if it was asked to project power—something traditional battleships and cruisers could do much more readily, especially in a region where TBs were not based already.¹² Another problem with the torpedo was that its delivery from boats proved to be problematic, giving rise to the parallel development of various tube launching systems, as well as the effort to develop a torpedo that could fire “off axis.” Until such a weapon existed, the ship itself had to aim the torpedo by adjusting its course, or by using topside systems such as launcher tubes that could be aimed. Thus, fulfilling the promise of the torpedo was itself contingent on other technologies.¹³

Rifled naval artillery kept pace with the torpedo with respect to range of fire, with the key problem of long-range fire control being addressed by new technological developments such as the Pollen fire-control system.¹⁴ Naval artillery was what professionals today might call a reigning legacy weapons system; it had staying power, with an entire industrial and development base behind it that enabled

it to keep pace with the torpedo. In the realm of countermeasures, a new class of fleet- and commerce-protection warship, the *torpedo boat destroyer*, emerged. Armed with torpedoes and guns of its own, it served as a counter, intended to escort merchant convoys and screen fleets from TBs using rapid-firing naval artillery (also a relatively new development), usually of medium calibers.¹⁵ The moniker applied to this class of vessels later was shortened to *destroyer*, but the original impetus for the destroyer was the object of its destructive power, the TB.

However, no major naval power adopted the Jeune École approach entirely. In fact, only the French embraced it, and that only partially and for a relatively short time.¹⁶ All the major naval powers hedged their bets, still developing guns and battleship and cruiser designs to apply naval power in more-traditional and -familiar ways.

But Jeune École fleet designs did offer poorer maritime powers an option to build less-expensive fleets for defense, a variant of the “fleet in being” strategy. Their purpose would not be to conduct *guerre de course* but to counter invasion, bombardment, or blockade by the battleships and cruisers of the larger naval powers.¹⁷

As if this were not enough, an Irish American named John P. Holland constructed a submersible electric-motor torpedo boat that eventually was christened USS *Holland*. *Holland* became known to history as the first true submarine, but it started out as a defensive coastal- and harbor-defense weapon for the weak (which the United States perceived itself to be at the time). Holland’s company was known officially as the John P. Holland Torpedo Boat Company.¹⁸

This remained the situation regarding doctrine at the turn of the century; it was in a state of uncertainty because of new technology. Debate on the questions raged in professional naval circles and in publications such as the U.S. Naval Institute *Proceedings*. Would the torpedo eclipse the gun and become the new standard naval weapon, or would guns outpace torpedoes? Could one field enough TBs in the right geographic circumstances to threaten another nation’s battle fleet, or its economic livelihood via maritime trade? How many destroyers did one need to feel safe against the TB threat?¹⁹

These questions, for the most part, remained unanswered in 1900, in part because there were few actual data from naval warfare to support any firm conclusions, leaving only speculation.²⁰ The torpedo remained a technology that had yet to make a difference in a major engagement at sea. What did exist in terms of experience came from two recent wars with maritime components, but not between major powers. These were the Sino-Japanese War of 1894–95 and the Spanish-American War of 1898. In both wars the role of the torpedo had been rather muted, with naval artillery deciding major naval battles at the Yalu (1894), Manila Bay (1898), and Santiago (1898). In addition, the protagonists had been Japan and China in one case and the United States and Spain in the other—all second-rate naval powers or lower. Who could base any firm conclusions about the Jeune École

approach—relying on torpedoes and the new, smaller naval combatants—on this limited and highly episodic sort of evidence? How might the approach fare when attempted against a larger naval power?²¹ The conduct of the later Russo-Japanese War (1904–1905) at sea did little to cause sailors to abandon their big guns in favor of torpedoes.²²

However, inside the British naval establishment the concern only grew.²³ The expense of policing a global empire while at the same time addressing the threat that the Jeune École approach posed in European waters was likely to bring Great Britain to an unsustainable increase in naval expenditures. And the trend of these expenditures outside Britain boded ill, given the emergence of modern, capable navies in nations such as the Empire of Japan and the United States, to say nothing of the Germans, Russians, and French.²⁴

Yet despite all the confusion that the Jeune École–torpedo–TB combination engendered, the Royal Navy of Great Britain remained the institution of comparison for what “right” looked like in fleet design. Historian John A. Lynn introduced the concept of the “paradigm army” in 1996. According to Lynn, a *paradigm army* is one that sets the norm as a military institution for other institutions to mimic or model in organization, tactics, doctrine, and technology.²⁵ The same concept can be applied to navies, and without a doubt the Royal Navy of the late nineteenth century was a *paradigm fleet*: the norm against which the officer corps of other navies modeled their own fleets, as modified by circumstance, geography, and political system.

However, the Royal Navy itself was experiencing something of an identity crisis. The rise of the new naval powers, in addition to the challenge represented by the service’s traditional actual and budgetary foes in France and Russia, along with the increasing costs of modern warships, caused Great Britain’s leaders to search for a different approach that would be new but also save money. Historian Jon T. Sumida captured the dynamics of this dilemma, writing that “a conscious policy of achieving substantial savings through the acceleration of technical innovation could be pursued as a response to rising military expenditure brought on by rapid technological change in a manner akin to fighting fire with fire.”²⁶ The result was Admiral Sir John “Jacky” Fisher’s adoption of the propulsion, gunnery, and fire-control technologies that debuted aboard HMS *Dreadnought*. Building on Sumida’s work, historian Nicholas A. Lambert advanced the thesis that Fisher’s “revolution” revolved around two operational concepts: the lightly armored battle cruiser to defend the imperial sea-lanes (the importance of which Sumida also emphasized), and the “flotilla” concept of using torpedo-equipped craft such as submarines and TBs to defend Great Britain’s home waters. This flotilla approach promised to be cheaper and more effective, putting into effect what professionals today characterize as an antiaccess strategy.²⁷

However, the actualization of Fisher's vision of the fleet lay in the future, even though it was being conceptualized, as it were, nearly contemporaneously with the American ideas examined here. Therefore, the British paradigm fleet that the Americans might have aped in this period (1901–1904) was instead the older fleet that still relied on what might be called the “hail of fire” approach to naval combat.²⁸ Since the 1880s, many officers had believed that ships armed with numerous medium-caliber guns could overwhelm a classically designed, slow-firing battleship in a hail of fire. This view seemed to be supported by the evidence from the Sino-Japanese War in particular, in which the Imperial Japanese Navy (IJN) combined fleet consisting of modern cruisers, under Admiral Yuko Ito, had defeated a Chinese squadron centered on two German-built battleships. American officers were quite familiar with this result because one of their own, the irrepressible Commander Philo N. McGiffin, at the time a serving officer in the Chinese navy, had written about the battle in detail and from a first-person perspective, having been second in command on one of the Chinese battleships.²⁹

Keeping this context in mind, we now can turn to American efforts to design a fleet rationally during this period.

AMERICAN FLEET DESIGN FOR A NEW CENTURY

Again, the first major question one must ask in fleet design is: What is the fleet for? Navies serve many purposes, but—as Alfred Thayer Mahan propounded later, yet certainly was already accepted dogma at the time—“in every class of naval vessel there should first of all, and first and last, throughout her design, be the recognition of her purpose in war.”³⁰ The fleet is thus not so much for peace but for war or its deterrence, and its design should reflect that. But for what sort of war, and under what conditions? Notably, the basis adopted for future naval conflict, as the American naval officer corps envisioned it circa 1900, was not the last war, the Spanish-American War having been something of an anomaly. Instead the guiding principle was the tenets of American foreign policy, specifically the Monroe Doctrine. The Americans were concerned primarily with the possibility of European, especially German, intervention in and expansion into the Western Hemisphere.³¹ The Royal Navy may have been the navy to which Americans looked for individual warship design and doctrine, but it was the German navy they perceived to be the most likely threat. Events of the period confirmed this view for the Navy's leaders, as well as for President Roosevelt.

Secretary of the Navy John D. Long had established the General Board of the Navy in 1900 as an “experimental” advisory body, by the mechanism of a general order. Its creation had been a response to the naval reform movement's agitation for a general staff. The body was headed by Admiral of the Navy George Dewey as president; Dewey's principal adviser was Captain Henry C. Taylor, a former

President of the Naval War College and the individual most responsible, after Long, for the creation of the General Board.³²

In March 1902, the General Board had cause to review a report by the Bureau of Construction and Repair that painted a rosy picture of the Navy's large combat fleet. The General Board labeled this report "misleading." Accordingly, its members initiated advice to the Secretary of the Navy from "below." It used the occasion to examine the much larger problem of the perceived combat power of the U.S. fleet, as a means to highlight the General Board's views on the fleet's shortcomings in matériel and personnel.³³ The letter was written neither by Taylor nor Dewey, who were not present, but by the brand-new rear admiral Robley D. Evans, who was transferred from the board back to the fleet shortly thereafter.³⁴ We may regard this letter as Evans's "parting shot."

But what a shot it was. It claimed the following: "In this official list referred to, we are recorded as possessing a navy of 307 vessels, and with a grand total of such an imposing number, our legislators and the country at large may well question any necessity for further increase. But an analysis of this list betrays a significant discrepancy between the value of this force for fighting purposes and its imposing appearance upon paper." Evans went on to subtract from the accounting all the ships under construction, "old monitors, antiquated cruisers, . . . tugs, sailing vessels, gunboats, and other craft of doubtful value." This revealed that the fleet available to wage frontline combat against another major naval power was much reduced, consisting of fewer than a hundred suitable ships. He closed by asking the secretary to bring the "gravity" of the situation to the attention "of both the President and Congress."³⁵

To understand the concerns of men such as Evans, it must be recalled that most of the leadership of the Navy remembered the doldrums into which the service had fallen after the Civil War, when the American public was ambivalent at best about the Navy and any function it might serve on its behalf. Incidents such as that of the new steel cruiser *Baltimore* in Valparaiso, Chile, in 1891, convinced many Americans of the dangers of having a small, dispersed fleet, even for the limited missions of hemispheric defense and security necessitated by the Monroe Doctrine. Those memories were still strong, especially in naval officers such as Evans, Dewey, Taylor, and Stephen B. Luce.³⁶ At the same time, these officers were very concerned about the de facto stranglehold that Navy bureaus such as the Bureau of Construction and Repair seemed to have on ship design, which was the fundamental building block for any fleet architecture.³⁷

Evans's frantic missive probably received more attention than it might have owing to an ongoing crisis involving Venezuela and its international debt. This issue had led the major European powers, Germany prominent among them, to deploy naval forces to the Caribbean to coerce payment. The situation was so serious that not long after the crisis began Dewey, Taylor, and other members of the General Board

deployed aboard President Roosevelt's yacht to take personal command of the summer squadron maneuvers in the Caribbean. Dewey and Taylor used the occasion to exercise "naval diplomacy" with the combined squadrons of the Navy—a force of over sixty ships—while at the same time demonstrating the value of exercising these warships not as separate squadrons but as a unified, combined fleet. The European powers backed down, but not before the General Board had amassed plentiful evidence, and a much more receptive audience, for its views on fleet size and composition.³⁸

As the summer ended, the General Board resumed its examination of the issue of fleet size. On 3 September, the board—with its members now mostly returned to duty, and with a new Secretary of the Navy in William H. Moody—took action. Acting for the board, Dewey requested that the Naval War College examine the issue to provide a basis on which the board would "formulate a building policy." The President of the College at the time was Captain French E. Chadwick, another naval reformer and part of the group that has been labeled "progressive" in recent scholarship.³⁹

Chadwick responded quickly, because Dewey had advised him that the board wanted "an early" decision, since the body was scheduled to meet later that same month (September) to consider the issue.⁴⁰ Chadwick's response, presumably delivered the same month, was in the form of a "Memorandum on Construction of the Fleet."⁴¹ His initial text addresses how to organize squadrons for battle: into a "battle" division and what he labels an "information" division, what later was characterized as a "scouting" division. He spends most of this initial discussion on the "information" division, noting that it might include a "small number of suitable ships from the merchant marine." He adds that these would need more powerful "mates," and recommends that these ships be destroyers of 1,500 tons with a twenty-two-knot speed, placing them within the "torpedo gunboat class." Finally, this division would be accompanied by an "armored cruiser"—itself a relatively new class of warship—of commensurate speed.⁴²

Chadwick emphasizes that this division's role would be to develop information for the battle division; it should "avoid action" if possible. He also writes that the 1,500-ton destroyers could function as "peace cruisers," acknowledging that large navies play a role in peace as well as war; the suggestion was perhaps a tactic to appeal to the more pacific elements in the public and Congress. "Size in peace, except for appearances, doesn't count," he writes, presumably meaning that designing these ships for dual war and peace missions represented considerable economy, in that in peacetime they could conduct what modern naval professionals call "presence" missions.⁴³ Chadwick then recommends a structure built around 1,500-ton torpedo ships (it is not clear whether he means the destroyers he had mentioned earlier) and something he calls the "battleship cruiser," which would displace 12,000 tons. He references British nomenclature in his characterization of this class. The "torpedo gunboat" would "replace the small fry of torpedo destroyers

and torpedo boats.” From this it is clear that his scheme intended that the General Board should rationalize and simplify fleet structure in relation to these vessels.⁴⁴

Chadwick then turns to what he terms a replacement ship for the “heavy battleship.” (Presumably he largely had moved from discussing the information division to discussing the battle division.) Returning to the idea of a battleship cruiser, his battleship replacement would displace 12,000 tons. This proposed vessel was not a precursor to Fisher’s creation, being more similar to the most modern armored cruisers then being conceived and built. He deliberately references a Japanese cruiser, IJN *Izumo* (or *Idzumo*). The ship had been Admiral Ito’s flagship at the Yalu. At that point the vessel already was more than ten years old, which showed the impact on his thinking of having a combat-proven design.⁴⁵

Chadwick’s design is worth looking at more closely, to understand how the different aspects of armament, armor, speed, and endurance were reflected in American thinking about naval tactics of the day. He recommends a displacement of 12,000 tons to get the “equal coal endurance” and range of a battleship. This class would be about one knot faster than *Izumo*. It would deploy a large battery of single-mount, ten-inch guns, along with a seven-inch, rapid-firing secondary battery. Armor would be focused on a seven-inch belt along the waterline, with heavy protection on the ten- and seven-inch mounts, saving weight by having no armored protection for any gun on the ship smaller than seven inches. He references these smaller guns as being three-inch, rapid-firing weapons. Antitorpedo protection would come at long ranges from the seven-inch guns and at close range from the three-inchers. The seven-inch guns also could be used against combatants at range, and the ten-inch guns were for smashing armor at medium and close ranges.⁴⁶ Chadwick emphasizes inclusion of these battleship cruisers in both the battle and information divisions.

Chadwick then turns to recommendations of numbers of ships. He bases these on the challenge of protecting the Caribbean from a “foreign” squadron approaching from the Atlantic; he almost certainly means Germany.⁴⁷ Thus, the fleet should match the war plan. To achieve the proper coverage, the information (or scouting) component would consist of forty ships, including a hybrid mix of merchant vessels and the 1,500-ton torpedo ships (which he calls “torpedo scouts” in his summary) mentioned earlier. Unclear in his summary is whether any of these ships would come from the battleship cruisers, although one supposes that to save numbers the battle division might “loan” some of these ships to the information division until the enemy was found, whereupon they would rejoin the battle line. The implication is that, if detached, the battleship cruisers would lead scouting sections much closer to the line-of-battle main body.⁴⁸

The composition of the battle line reflects Chadwick’s understanding that legacy “heavy battleships” still would be a part of the fleet. He specifies the following types and numbers of ships:⁴⁹

heavy battleships (speed 18–19 knots)	8
battleship cruisers (speed 21.5 knots)	6
1,500-ton torpedo scouts (speed 22 knots)	12

Such a squadron also would include six large colliers to supply coal, a hospital ship, a supply ship to provide ammunition and food, and one transport ship embarking Marines to establish and defend advanced bases. This last component reflected the influence of the Marine Corps representation on the General Board and may be regarded as the genesis for what became the Fleet Marine Force.⁵⁰ In an appendix to his memorandum entitled “Nomenclature,” Chadwick takes pains to define *the fleet* versus *a fleet*; the former represented “the whole naval forces of the country,” while the latter encompassed a “large aggregation of naval vessels combining two or more squadrons.”⁵¹

The General Board’s action on Chadwick’s proposals yielded no significant change from a program that was focused on existing designs for battleships and armored cruisers. In part, this was because the board was still early in its evolution, and its authority was limited by the various bureaus that still controlled the bulk of warship design, especially the Bureaus of Construction and Repair and of Ordnance. It was not until after the battleship conference at the Naval War College in 1908 that the board’s primacy in ship design was established.⁵² Too, the board became concerned that building battleship cruisers of the type recommended by the College might result in a cut in battleship construction and procurement. The *Pennsylvania* class of armored cruisers already commissioned bore only a marginal resemblance to Chadwick’s battleship cruiser, with *Pennsylvania* displacing over a thousand tons more; historian Norman Friedman calls them “light battleships.”⁵³

The torpedo problem also continued to spur thought. Commander Bradley A. Fiske, USN, serving as Inspector of Ordnance, brought the issue to light in April 1904 and proposed the creation of an armored cruiser with torpedoes as its main battery, to protect the flanks of the battle fleet against torpedo attack. He dismissed the protected cruiser class (what later was designated a light cruiser) as not even worth building anymore. At the end of his proposal, which the Bureau of Ordnance forwarded to the General Board, Fiske gave his own proposed structure for a future fleet. He used the term *fleet* in the way that Chadwick had used the term *squadron*. His idea for a fleet consisted of eight “full gun” battleships that also had secondary torpedo batteries, to be escorted by a section (probably two) of “armored cruisers hav[ing] full torpedo power and auxiliary gun power” on each flank. He further proposed a larger fleet composed of three units of this size. His final fleet thus would have consisted of at least twenty-four battleships and twelve armored cruisers.⁵⁴

An examination of the General Board's records on the size of the fleet by 1905—a year before Fisher unveiled his “battlefleet revolution”—reveals that the Navy's, and the General Board's, priorities remained conventional battleships and armored cruisers, despite the innovative thinking of writers such as Chadwick and Fiske. The fleet in 1905 consisted of twelve “first class” battleships, with fifteen more under construction. The fleet also included one older “second class” battleship (USS *Texas*), ten “first class” armored cruisers (six of which were under construction), and five “second class” armored cruisers (with three under construction). A plethora of the “protected cruiser” type that Fiske believed useless also existed, while under construction were three “scouting” cruisers that better reflected the ideas of Chadwick and Fiske, having a battery of torpedo tubes as part of their armament. A complete listing of ships reveals that the U.S. Navy had over 230 vessels in the fleet that were suitable for combat; the rest were obsolete cruisers, yachts, and gunboats. However, the twenty-seven battleships and ten first-class armored cruisers, plus about two dozen of the new destroyers and scout cruisers, formed the core of the fighting fleet. It did include twelve submarines (including four under construction), but the worth of these vessels—given their still very limited endurance—beyond harbor and coastal defense had not been appreciated yet, neither in the United States nor overseas.⁵⁵

THOUGHTS FOR FLEET DESIGN TODAY

Considering the narrative above, it seems clear that the officers of the U.S. Navy circa 1900 realized that they should build their fleet rationally, basing it on the likely threat (Germany) and the geographic conditions that would frame the operations against that threat (in the Atlantic and the Caribbean). They also understood that all the new technology, while providing promise, had not changed significantly how fleets fought each other: with guns at medium ranges. This did not prevent the officers from taking the threat of the torpedo and the torpedo boat seriously; they took it very seriously indeed, as the evidence above demonstrates. However, all fleets come with some “deadwood”—literally deadwood, in those days when wooden yachts were still components of fleets—and the pace of technological development did not prevent outdated class B armored cruisers and even protected cruisers from being built, because they already had been contracted for. Soon, both of these classes of ships would be considered obsolete for a fleet engagement.

Naval officers thought about fleet design in terms of capabilities rather than according to some simpler metric of sheer numbers.⁵⁶ Even the metric of a direct ratio of numbers of first-class battleships to those of other nations seemed to take something of a back seat in the deliberations of the General Board, at the Naval War College, and by officers such as Fiske in the process outlined above.

In assessing the practical value of naval history for professionals today, one must avoid the errors that looking back can cause. In examining a particular period, we look back “through” subsequent events, which in this case included Fisher’s battlefleet-dreadnought revolution and the introduction and evolution of submarines and aircraft carriers, and so “drag” those ideas into our analysis. There is a danger when looking back at the past of imagining that Chadwick’s study presaged Fisher’s battlecruiser-flotilla fleet solution to Britain’s strategic and fiscal concerns, when on closer inspection one realizes that it did not represent anything of the sort.⁵⁷

The practical value of the study of naval or military history can include looking at the questions our predecessors asked in the past and the context within which they asked those questions. This sort of analysis looks forward, not back, and is likely to lead to better questions, as well as to an understanding of why those predecessors came to the answers they did, rather than thinking them to have been insufficiently innovative or progressive, from our contemporary viewpoint. They asked: What will be the most likely theater of operations? What capabilities will be needed to win in battle in that theater? What are the threats to the main “hitting power” of the fleet, and how can we design ships and fleets to respond to them? It seems clear—despite the seemingly slow pace of evolution in warship design in an era of rapid technological change—that these were the right questions. They provide a model for today’s naval officers and ship designers that remains well suited to address the maritime challenges of the twenty-first century. It is this process, not some arbitrary magic number that impresses simply by its magnitude, that should shape the road ahead of warship construction for the U.S. Navy.

NOTES

1. See Norman Friedman, *The U.S. Maritime Strategy* (Annapolis, MD: Naval Institute Press, 1988), p. 6. The fleet never actually reached a total of six hundred ships, falling short at 587 in the late 1980s as the Cold War was ending.
2. National Defense Authorization Act for Fiscal Year 2016, Pub. L. No. 114-92, sec. 1067, 129 Stat., pp. 991–92 (2015); Chief of Naval Operations, “Chief of Naval Operations Fleet Design Advisory Panel Charter,” ser. N00/16U10074, 23 September 2016 (the author was a designated member of this panel); *2016 Navy Force Structure Assessment (FSA)*, 14 December 2016 (Washington, DC: U.S. Navy Dept., 2016).
3. David B. Larter and Aaron Mehta, “The Pentagon Is Eyeing a 500-Ship Navy, Documents Reveal,” *Defense News*, 24 September 2020, www.defensenews.com/. As of this writing, the USN website lists the number of “deployable” warships as 296. See *America’s Navy*, www.navy.mil/.
4. For a recent article that argues this, see Joseph Stieb, “Opening Up New Avenues to Understanding the Path to War in Iraq,” review of *To Start a War: How the Bush Administration Took America into Iraq*, by Robert Draper, *War on the Rocks*, 1 September 2020, warontherocks.com/. See also N. A. M. Rodger, “The Hattendorf Prize Lecture: The Perils of History,” *Naval War College Review* 66, no. 1

- (Winter 2013), pp. 7–15, reprinted as chap. 1 in *The Hattendorf Prize Lectures, Volume 1: 2011–2019*, ed. Evan Wilson, Historical Monograph 26 (Newport, RI: Naval War College Press, 2020).
5. R. D. Evans [Rear Adm., USN], acting senior member, 27 March 1902, General Board Studies [hereafter GBS], 420 series, Record Group [hereafter RG] 80, National Archives and Records Administration, College Park, MD [hereafter NARA]. Evans cites the number of USN ships as 307. All citations to GBSs will be from the 420 series in RG 80.
 6. Katherine C. Epstein, *Torpedo: Inventing the Military-Industrial Complex in the United States and Great Britain* (Cambridge, MA: Harvard Univ. Press, 2014), p. 5.
 7. Two websites will suffice as examples: the Center for International Maritime Security, started by a former naval officer, at cimsec.org/; and CDR Salamander at cdrsalamander.blogspot.com/. As for the self-image of USN officers in the past, the best current work on the subject is Scott Mobley, *Progressives in Navy Blue: Maritime Strategy, American Empire, and the Transformation of U.S. Naval Identity, 1873–1898* (Annapolis, MD: Naval Institute Press, 2018).
 8. Epstein, *Torpedo*, p. 3. A prototype was produced in 1866, but Whitehead solved the problem of maintaining consistent depth over the run in the 1868 version of the weapon.
 9. The author uses the term *strategic* here in a military sense—that is, as military strategy, or what some might call *operational art* or *operational strategy*. See the discussion in John T. Kuehn, *Napoleonic Warfare: The Operational Art of the Great Campaigns* (Santa Barbara, CA: Praeger, 2015), pp. 1–10.
 10. Jonathan F. Solomon, “Remember War,” U.S. Naval Institute *Proceedings* 132/12/1,246 (December 2006), pp. 36–40; Hugues Canuel, “From a Prestige Fleet to the Jeune École: French Naval Policy and Strategy under the Second Empire and the Early Third Republic (1852–1914),” *Naval War College Review* 71, no. 1 (Winter 2018), p. 104.
 11. *Oxford Reference*, s.v. “guerre de course,” available at www.oxfordreference.com/.
 12. Canuel, “From a Prestige Fleet to the Jeune École,” pp. 104–10.
 13. Epstein, *Torpedo*, p. 36.
 14. Jon T. Sumida, *In Defence of Naval Supremacy: Finance, Technology, and British Naval Policy, 1889–1914* (New York: Routledge, 1993), pp. 77–80.
 15. Epstein, *Torpedo*, pp. 37, 63, 126–27. Epstein catalogs the back-and-forth between range and accuracy improvements and the attempts to defend against them, with quick-firing guns among other things.
 16. Canuel, “From a Prestige Fleet to the Jeune École,” pp. 110–11.
 17. For a discussion of a “fleet in being” strategy, see Julian S. Corbett, *Some Principles of Maritime Strategy* (London: Longmans, Green, 1911), p. 210.
 18. Brayton Harris, *The Navy Times Book of Submarines: A Political, Social, and Military History*, ed. Walter J. Boyne (New York: Berkeley Books, 1997), pp. 116–31.
 19. See, for example, W. J. Sears [Lt., USN], “A General Description of the Whitehead Torpedo,” U.S. Naval Institute *Proceedings* 22/4/80 (October 1896), p. 804, or A. P. Niblack [Lt., USN], “The Tactics of Ships in the Line of Battle,” U.S. Naval Institute *Proceedings* 22/1/77 (January 1896), p. 3.
 20. Niblack, “The Tactics of Ships in the Line of Battle,” pp. 1–3, discusses the lack of actual data and compares making decisions about tactics to “a series of guesses.”
 21. For the battle of the Yalu, see John T. Kuehn, *A Military History of Japan: From the Age of the Samurai to the 21st Century* (Santa Barbara, CA: Praeger, 2014), pp. 147–52. Also see Fletcher Pratt, *The Compact History of the United States Navy* (New York: Hawthorn Books, 1957), pp. 184–89.
 22. George W. Baer, *One Hundred Years of Sea Power: The U.S. Navy, 1890–1990* (Stanford, CA: Stanford Univ. Press, 1994), pp. 30–31; David C. Evans and Mark R. Peattie, *Kaigun: Strategy, Tactics, and Technology in the Imperial Japanese Navy, 1887–1941* (Annapolis, MD: Naval Institute Press, 1997), pp. 55, 130–31.
 23. Epstein, *Torpedo*, pp. 127–29.
 24. Sumida, *In Defence of Naval Supremacy*, pp. 19–21.

25. John A. Lynn, "The Evolution of Army Style in the Modern West, 800–2000," *International History Review* 18, no. 3 (1996), p. 511.
26. Sumida, *In Defence of Naval Supremacy*, p. xvii.
27. *Ibid.*, pp. 316–17; Nicholas A. Lambert, "Admiral Sir John Fisher and the Concept of Flotilla Defence, 1904–1909," *Journal of Military History* 59, no. 4 (October 1995), pp. 639–60. For antiaccess, see Sam J. Tangredi, *Anti-access Warfare: Countering A2/AD Strategies* (Annapolis, MD: Naval Institute Press, 2013).
28. Holger H. Herwig, "The Battlefleet Revolution, 1885–1914," in *The Dynamics of Military Revolution, 1300–2050*, ed. MacGregor Knox and Williamson Murray (Cambridge, U.K.: Cambridge Univ. Press, 2001), p. 118.
29. Philo N. McGiffin, "The Battle of the Yalu: Personal Recollections by the Commander of the Chinese Ironclad *Chen Yuen*," *Century Illustrated Monthly Magazine* 50, no. 4 (August 1895), pp. 585–604.
30. A. T. Mahan [Capt., USN], "Reflections, Historic and Other, Suggested by the Battle of the Japan Sea," U.S. Naval Institute *Proceedings* 32/2/118 (June 1906), pp. 447–71. This article also represents an eloquent defense of the "hail of fire" school, as represented by Mahan, using the Battle of Tsushima as his evidence. Mahan's views were challenged by William S. Sims, who represented the "big gun" faction in the U.S. Navy and is generally regarded as having bested Mahan in this professional debate, which occurred in the pages of *Proceedings*. See Mark William Wever [Lt. Cdr., USN], "The Influence of Captain Alfred Thayer Mahan upon the United States Navy through the United States Naval Institute's *Proceedings*" (master's thesis, U.S. Army Command and General Staff College, 2013), pp. 19–20.
31. John T. Kuehn, *America's First General Staff: A Short History of the Rise and Fall of the General Board of the Navy, 1900–1950* (Annapolis, MD: Naval Institute Press, 2017), p. 41.
32. *Ibid.*, pp. 2–4, 9, 28.
33. 27 March 1902, GBS, RG 80, NARA.
34. Member list, 1902, in "Proceedings and Hearings of the General Board of the Navy," microfilm, roll 1, RG 80, NARA. Interestingly, Evans is still listed as a captain, not a rear admiral, on the member list for that year in the General Board's records.
35. 27 March 1902, pp. 1–4, GBS, RG 80, NARA.
36. See John T. Kuehn, "The Martial Spirit—Naval Style: The Naval Reform Movement and the Establishment of the General Board of the Navy, 1873–1900," *Northern Mariner / Le marin du nord* 22, no. 2 (April 2012), pp. 121–40. For the Valparaiso incident, see Joyce S. Goldberg, "Consent to Ascent: The Baltimore Affair and the U.S. Rise to World Power Status," *The Americas* 41, no. 1 (July 1984), pp. 21–35.
37. Henry P. Beers, "The Development of the Office of the Chief of Naval Operations, Part I," *Military Affairs* 10, no. 1 (Spring 1946), pp. 40–42.
38. Henry J. Hendrix, *Theodore Roosevelt's Naval Diplomacy: The U.S. Navy and the Birth of the American Century* (Annapolis, MD: Naval Institute Press, 2009), pp. 23, 25–29. See also Holger H. Herwig, *Germany's Vision of Empire in Venezuela, 1871–1914* (Princeton, NJ: Princeton Univ. Press, 1986), p. 104.
39. Adm. George Dewey to President of U.S. Naval War College, 3 September 1902, GBS, RG 80, NARA; Mobley, *Progressives in Navy Blue*, pp. 66, 122.
40. 3 September 1902, GBS, RG 80, NARA.
41. "Memorandum on Construction of the Fleet," 3 September 1902 GBS, RG 80, NARA [hereafter 1902 Chadwick Memo]. The Chadwick memorandum was undated but attached to the original letter from Dewey in the 420 series file.
42. *Ibid.*, p. 1.
43. *Ibid.* For a discussion of USN "presence" mission, see foreword to U.S. Navy Dept., *A Co-operative Strategy for 21st Century Seapower: Forward, Engaged, Ready* (Washington, DC: March 2015), p. iii.
44. 1902 Chadwick Memo, pp. 1–2.
45. Evans and Peattie, *Kaigun*, pp. 61–62.
46. 1902 Chadwick Memo, pp. 1–2.
47. Holger H. Herwig, "Luxury" Fleet: The Imperial German Navy, 1888–1918 (London: George Allen & Unwin, 1980), pp. 29, 106.

48. 1902 Chadwick Memo, pp. 1–5.
49. *Ibid.*, pp. 3, 5.
50. *Ibid.*; Kuehn, *America's First General Staff*, p. 30.
51. "Memorandum on Nomenclature," attachment to 1902 Chadwick Memo.
52. Norman Friedman, "The *South Carolina* Sisters: America's First Dreadnoughts," *Naval History* 24, no. 1 (February 2010), pp. 16–23.
53. Kuehn, *America's First General Staff*, pp. 74–75; Norman Friedman, *U.S. Cruisers: An Illustrated Design History* (Annapolis, MD: Naval Institute Press, 1987), p. 45.
54. Cdr. Bradley Fiske to Secretary of the Navy, 25 April 1904, pp. 1–2, GBS, RG 80, NARA.
55. General Board to the Secretary of the Navy, 10 July 1905, pp. 1–6, GBS, RG 80, NARA.
56. The term *capabilities-based* has been much abused in the defense literature of today. See, for example, Kathleen Hicks, "Bad Idea: Arguing over Capabilities- vs. Threat-Based Planning," *Defense360*, 4 December 2017, defense360.csis.org/. Here it simply means designing ships on the basis of the capability and purpose one wants them to achieve in the most likely arena of combat at sea.
57. Herwig, "The Battlefleet Revolution," pp. 120–22.