

THE RISE AND FALL OF THE DREADNOUGHT:  
A WEAPON SYSTEM IN ITS SOCIAL CONTEXT

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ABSTRACT

A nation's decision to deploy a major weapons system may not spring solely from military necessity and the state of available technology; it may also stem from such causes as an ambition to forge an empire, a desire for national prestige, or even ego gratification for a ruler. Such complex causes underlay the competition to build dreadnoughts that preoccupied Britain and Germany before the First World War, and this race was a significant factor that impelled these two nations toward that war. This race, and other, similar races, represented major national decisions to allot national resources to the construction of extremely expensive weapons instead of allotting those resources to desirable social programs.

This thesis examines the advent, performance, and eventual disappearance of a particular weapon system, the type of warship known as the dreadnought, as a case study of a major weapons system in the broad context of twentieth century history. It also explores the symbolic significance of these warships, and is intended to illuminate the complex interaction

between military technology and the society in which that technology operates.

The thesis concludes that the performance of the dreadnought in combat did not justify the substantial costs of building such warships and that rapidly evolving technology soon made the dreadnought vulnerable and obsolete. It also concludes that the career of the dreadnought shows parallels with issues of defense acquisition of major weapon systems that are now present and provides examples of possible outcomes of current defense acquisition policies.

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## INTRODUCTION

A costly, complex, and technologically sophisticated weapon system deployed by an industrialized nation is much more than a utilitarian device designed to carry out a particular military purpose, and the decision to procure and maintain such a system is not solely the result of a rational calculation of probable martial utility. A major weapon system is also a sociocultural phenomenon, reflecting the society that created it, and it may serve a number of other purposes. It may, for instance, function as a symbol of national pride, a representation of a country's prestige and rank in the international order. It may also, for example, be intended to act as a diplomatic lever, a tool to influence the behavior of other nations. It may even serve as ego gratification for a ruler.

The acquisition of an expensive weapon system represents a conscious decision to use a country's resources for that end rather than use them for a more socially beneficial purpose, such as for old age pensions or to pay for medical care, and such decisions may be widely popular even if they may be controversial as well. The issue of what trade-offs a particular nation, or its leaders, will be willing to accept in order to procure a particular weapon is a fundamental and highly significant one, and the quest to develop powerful armaments can help to illustrate a nation's values and aspirations: Which is more important, weapons or welfare, and what can happen when a country opts to obtain the former instead of pursuing more pacific ends?

This case study examines the career of the dreadnought battleship, a costly and in its day technologically advanced weapon that many in industrialized nations originally saw as a strategic necessity and a final arbiter

of naval warfare. It also analyzes the motivations that sometimes underlay the acquisition of such ships and these vessels' significance as symbols of national and sometimes personal self-esteem. In addition, it recounts the performance in combat of such ships, evaluating their actual utility in battle and the reasons why they did not fulfill their proponents' expectations. Finally, it tells how these warships were superseded by other weapons and why they eventually disappeared from use.

Examining the history of the dreadnought may illuminate the complex interaction between military technology and the society in which that technology operates, and an account of the dreadnought's career will provide an opportunity to envision some of the possible courses and eventual outcomes of efforts now under way to acquire similarly expensive and technologically sophisticated weapon systems. The study will show what happened when a variety of nations chose to obtain certain armaments, even when it was sometimes actually contrary to their interests to do, and it may afford some insight into the current quest to build ever more complex, powerful, and costly weapons.

## CHAPTER 1: A REVOLUTION IN NAVAL WARFARE

Before a weapon system can be constructed and deployed—even before it can be designed—there must exist a perceived need for that weapon and there must be an expectation about how that weapon will be used. For example, a nation that believes that it will face guerrilla warfare is not likely to invest in heavy artillery and mechanized forces, not if it can reasonably expect to prevail in such a conflict. It will instead concentrate on infantry and special operations forces, units that are able to operate at the grassroots level that guerrilla warfare entails. Conversely, an industrialized and technologically sophisticated nation that expects to fight a similarly industrialized foe will concentrate on weapons that will be effective against such an enemy, such as heavy artillery protected by armor. In other words, the means employed to pursue military ends must be suitable for the task envisioned, and there must be some assumptions about the form that a conflict is projected to take. This complex web of expectations and assumptions constitutes military doctrine, which spells out how and with what means a nation plans to wage war and what sort of enemies a nation can expect to face.

The doctrine that produced the dreadnought was founded on a belief that naval warfare could and would prove decisive, that sea power held the key to victory, and that fleets of battleships would clash with other fleets of battleships in confrontations similar to the sea battles of the Napoleonic wars, more than a hundred years earlier.

Of course there must also be a technological base to support a weapon system and a suitable economic infrastructure as well. A pre-industrial nation

would not be able to build sophisticated warships and other weapons that are technology intensive and that require a strong industrial economy. An industrial power, on the other hand, will seek to use its technological prowess to fight its wars, building machines that will perform the tasks that some other nation might try to accomplish using raw manpower or guerrilla warfare. In this way, weapons, and the doctrine behind them, reflect the cultures that they come from, and the dreadnought directly reflected the culture of industrial, imperial Britain. The dreadnought reflected a society in which machines made of steel were accomplishing things that had been beyond the reach of humans before, a society that had been transformed by the Industrial Revolution. It also reflected the fact that Britain possessed a widely dispersed transoceanic empire. Sea power held that empire together.

In the case of the dreadnought, the doctrine underlying its construction and deployment rested on assumptions and observations about naval warfare that were articulated most clearly and convincingly by one man, Alfred Thayer Mahan, an American naval officer who instructed other American naval officers in the theory and practice of naval warfare. “No other single person has so directly and profoundly influenced the theory of sea power and naval strategy as Alfred Thayer Mahan.”<sup>1</sup> He “effected a revolution in the study of naval history ‘similar in kind to that effected by Copernicus in the

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<sup>1</sup>Margaret Strout, quoted in “Alfred Thayer Mahan: The Naval Historian,” by Philip Crowl, in *Makers of Modern Strategy: From Machiavelli to the Modern Age*, ed. Peter Paret (Princeton, N.J.: Princeton University Press, 1986), 469.

domain of astronomy.”<sup>2</sup> Mahan was the theoretical father of the dreadnought, and his views on naval warfare would become the prevailing orthodoxy in navies around the world.

Mahan was born in 1840, the son of a professor of military engineering at the United States Military Academy at West Point. Instead of becoming an Army officer, though, Mahan attended the Naval Academy at Annapolis and was commissioned as a U.S. Navy officer just in time for the Civil War. He spent most of the war patrolling off the coastline of the Confederacy and saw some action against blockade runners. In 1885 he became a lecturer in history and strategy at the recently founded Naval War College at Newport, Rhode Island.

After long and careful thought, Mahan distilled his lectures at the war college into a book titled *The Influence of Sea Power upon History, 1660-1783*, which was published in 1890 and soon became required reading for anyone interested in naval affairs. In this book, and in a further analysis titled *The Influence of Sea Power upon the French Revolution, 1793-1812*, Mahan examined the naval and maritime experience of Great Britain during the previous two centuries, concluding that Britain’s control of the sea was responsible for that nation’s establishment and existence as an empire and for Britain’s ability to foil the plans of its enemies. As one historian put it, Mahan saw in sea power “the key to the rise and fall of empires: control of the sea or lack of it.”<sup>3</sup>

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<sup>2</sup>Arthur Marder, *From the Dreadnought to Scapa Flow* (London: Oxford University Press, 1961-1970), volume 1, 4.

<sup>3</sup>Crowl, *Makers of Modern Strategy*, 450.

Mahan's beliefs can be summed up by his assertion that "if navies, as all agree, exist for the protection of commerce, it inevitably follows that in war they must aim at depriving their enemy of that great resource, nor is it easy to conceive what broad military use they can subserve that at all compares with the protection and destruction of trade."<sup>4</sup> In other words, blockade and commerce raiding had proved decisive in war and would continue to do so: "Wars are won by the economic strangulation of the enemy from the sea."<sup>5</sup>

Mahan was not arguing for a navy composed mostly of cruisers and smaller vessels to prey on an enemy's shipping and blockade its coasts, though. Instead he believed, as one analyst put it, "that, to be decisive in war, a navy must be composed primarily of capital ships, which in Mahan's lexicon meant armored battleships. . . . The primary mission of a battle fleet is to engage the enemy's fleet."<sup>6</sup> Mahan, then, thought that the battleship would win wars at sea and that entire fleets, rather than single ships, would clash in melees that would spell the difference between victory and defeat. To prove his point, he had only to cite the Battle of Trafalgar, at which a British fleet composed of ships of the line routed a similar combined French and Spanish fleet, frustrating Napoleon's plans. At Trafalgar, warships armed with multiple tiers of cannons and deployed in fleets had proved to be the decisive naval weapon, and there had been little naval action since then to disprove Mahan's thesis.

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<sup>4</sup>Ibid., 455.

<sup>5</sup>Ibid.

<sup>6</sup>Ibid., 458.

Belief in the primacy of the battleship, and a related belief about the likelihood and desirability of a decisive clash between opposing fleets, was widespread among naval theorists. It was generally assumed that in a war, the battleship would rule the seas. The doctrine of the late nineteenth and early twentieth centuries, then, called for battleships to fight other battleships, and this doctrine would culminate in the cult of the dreadnought and a faith in the dreadnought's efficacy. As we will see, however, that belief would prove to be misplaced.

The few naval battles that had been fought only reinforced this belief in the dominance of the battleship. For example, at the Battle of Lissa, in 1866, an Austrian fleet decisively defeated a similar Italian fleet. Battleships fought battleships at close range, just as at Trafalgar. Much more recently, in 1898, during the Spanish-American War, American fleets routed Spanish ones at Manila Bay and Santiago de Cuba. Again, fleets of battleships battered each other with artillery at ranges that made precise aiming unnecessary.

Confirming the primacy of the battleship, in the Russo-Japanese War, in 1904, a Japanese fleet handily defeated a hapless Russian one in the Tsushima Strait. The Battle of Tsushima was the biggest naval confrontation since Trafalgar<sup>7</sup> and was widely taken to be the model for the next war at sea. Besides showing that "speed was crucial," it demonstrated the primacy of the big gun over smaller weapons and the torpedo.<sup>8</sup> Above all, it showed clearly

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<sup>7</sup>David Howarth, *The Dreadnoughts* (Alexandria, Va.: Time-Life Books, 1979), 28.

<sup>8</sup>*Ibid.*, 28.

that the big guns of the battleship, firing at unprecedented ranges,<sup>9</sup> were the primary naval weapon of the day, and naval analysts had no reason to believe this would not be the case in the foreseeable future.

If the battleship was the trump card of naval warfare, “the Edwardian ultimate deterrent,”<sup>10</sup> its dominance was predicated on the firepower provided by its big guns, and there had been a continual evolution—in fact what amounted to a revolution—in gunnery during the second half of the nineteenth century.<sup>11</sup> Starting from a muzzle-loading smoothbore cannon firing solid shot at point-blank ranges, in effect a crude seagoing bludgeon (as late as 1880, Britain’s Royal Navy relied on muzzle-loading guns for seaborne firepower)<sup>12</sup>, the naval gun had been transformed into a technologically sophisticated and highly accurate breech-loading rifle capable of hurling an armor-piercing explosive shell weighing a half ton or more to a distance of several miles.

While a well-trained gun crew would have been capable of firing a big gun once every four or five minutes in 1895, six or seven years later a similar crew would be capable of firing two rounds every minute.<sup>13</sup> The ranges at which battleships were expected to engage the enemy increased as much as

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<sup>9</sup>Richard Hough, *Dreadnought: A History of the Modern Battleship* (New York: MacMillan, 1964), 17.

<sup>10</sup>*Ibid.*, 2.

<sup>11</sup>See, for example, Peter Padfield, *The Battleship Era* (New York: Macmillan, 1975), 162.

<sup>12</sup>Siegfried Breyer, *Battleships and Battle Cruisers: 1905–1970* (Garden City, N.Y.: Doubleday, 1973), 38.

<sup>13</sup>Norman Friedman, *Battleship Design and Development: 1905–1945* (Greenwich, U.K.: Conway Maritime Press, 1978), 98.

the rate of fire did: in 1900, a range of 1,000 yards was considered normal; by 1905 that figure had increased to 6,000 yards, and the effective range of big guns would double that latter figure before the start of World War I.<sup>14</sup>

Ranges had to increase in order to deal with the growing menace of the torpedo,<sup>15</sup> which threatened to sink even the best-protected ships with one underwater hit.<sup>16</sup> Torpedoes had started out as relatively slow short-range weapons, but their speed, range, and explosive power were increasing just as gun power was. Battleships would have to keep their distance from the speedy little boats that could infiltrate a fleet and launch torpedoes. Torpedo boats were not the only craft armed with the weapon: destroyers (originally designed to counter torpedo boats), cruisers, and even battleships began being fitted with tubes from which to launch torpedoes.

The armor-piercing capability of a gun is a function of the velocity and the mass of the shell it fires.<sup>17</sup> The bigger and heavier a shell is, and the faster it travels, the better it can penetrate armor. This meant that gun designers sought incessantly to make weapons that fired successively more massive

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<sup>14</sup>Ibid., 98. Others give different figures for expected battle ranges. For example, see Charles H. Fairbanks, Jr. "The Origins of the Dreadnought Revolution: A Historiographical Essay." *International History Review*, 1991, vol. XII, 247. He says ranges were 2,000 yards in 1900 and 15,000 to 20,000 yards in 1914.

<sup>15</sup>Norman Friedman, *Naval Firepower* (Annapolis, Md.: Naval Institute Press, 2008), 22.

<sup>16</sup>Some discount the importance of the torpedo in increasing battle ranges. For example, see Fairbanks, p.249.

<sup>17</sup>Friedman, *Naval Firepower*, 288.

shells at higher velocities. They had to do so in order to keep up with improvements in armor.

Between 1860 and 1902, armor evolved from wrought iron plates on a backing of wood to chromium nickel steel with a hardened surface.<sup>18</sup> The thickness and stopping power of armor increased rapidly, and this meant that gun makers and armor makers were locked in a spiral of steady improvement. Every time someone developed stronger armor, someone else would come up with a more powerful gun to punch through that armor.

Tremendous and far-reaching advancements in metallurgy and engineering made this progress possible, and never had such progress been more rapid and thoroughgoing than in the Britain—and Germany—of the late Victorian and Edwardian eras. Naval guns were the leading edge of the technology of the day, reflecting the most fundamental industrial developments in the society that produced them. Progress in gunnery and protection—and in other aspects of naval warfare as well—was so rapid that it was not unknown for a warship to be obsolete even before it was launched.

The most senior officers had seen this transition at first hand, having begun their careers in wooden ships armed with smoothbore cannon and powered primarily by the wind. They had seen stubby smoothbores give way to weapons with long rifled barrels, exponentially increasing both accuracy and range; muzzle loading give way to breech loading, greatly improving rates of fire; and enormous lumps of cast iron as ammunition replaced by steel shells that would pierce an enemy's armor and explode inside his ship.

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<sup>18</sup>Breyer, *Battleships and Battle Cruisers 1905–1970*, 36.

If guns and armor were improving radically and rapidly, the fire control needed for accurate gunfire improved similarly. Without precise fire control—the means by which a gun is made to hit a target—a warship would be like a cross-eyed marksman armed with the finest hunting rifle: despite the quality of his equipment, he would not be an effective sharpshooter because his defective vision would negate any advantage that might be conferred by the excellence of his weapon. Naval gunfire was similarly dismal: the guns could fire accurately; they just could not be aimed as precisely as they could fire. For example, at the Battle of Manila Bay, in 1898, American warships made only 142 hits out of 5,982 rounds fired at a mostly stationary foe, a rate of accuracy of a mere 2 percent.<sup>19</sup> This would seem like pinpoint precision when compared with the American performance during the blockade of Santiago during the same war: at a range of 3,500 yards, the fleet made 121 hits out of 8,000 shots, a rate of accuracy only little better than half of that at Manila Bay.

In the Royal Navy and other navies of that era, gunnery control was equally inadequate, and almost no attention was paid to accuracy of fire at long range. It was supposed that combat would take place at such short ranges that precise aim would be unnecessary. For target practice, warships fired at stationary nearby targets while proceeding at a slow, stately pace. Unless gunfire could be made more accurate, the most powerful battleship would be of little use.

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<sup>19</sup>Peter Padfield, *Aim Straight: A Biography of Admiral Sir Percy Scott* (London: Hodder & Stoughton, 1966), 85.

Hitting a target that may be miles away and moving at high speed on an uncertain and frequently changing course—such as an enemy warship—is fiendishly difficult. Shooting from a moving platform that may be rolling from side to side and pitching up and down as well as traveling on a changing course makes the problem even harder. “The task of firing a gun at sea has been likened to that of a man with a pistol rocking in a rocking chair and trying to shoot a thimble off a mantelpiece at the opposite side of the room.”<sup>20</sup> Making matters worse, smoke and sea spray may obscure the gunner’s vision, diminishing his ability even to see the target. Under the best of circumstances, naval gunfire calls for the most precise instruments and techniques for accurate shooting. The need for fire control became ever more acute with the long ranges made possible by advances in gun making. The marksman’s vision had to be improved.

It is important to take note of the starting point for progress in naval fire control, which improved by leaps and bounds in the late Victorian and early Edwardian eras. At first, individual gun captains, each responsible for one gun, aimed over open sights at nearby targets. Guns of all calibers, controlled in this fashion, shot without coordination or central direction, and spotting the fall of shot was very difficult, if not impossible. Unsurprisingly, most shots were misses. Clearly, the system used to control the aim of guns was simply inadequate to the task at hand.

Making matters even worse, for most of the nineteenth century there was relatively little interest in finding ways to hit the target. In the Royal

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<sup>20</sup>Howarth, *The Dreadnoughts*, 114.

Navy, ships' captains sometimes simply dumped their ammunition overboard instead of firing it at targets during quarterly target practice for fear that the smoke and the blast of the guns would damage the pristine paintwork of their ships. In all aspects of gunnery – and in every other way – the navy of the late nineteenth century differed radically from the one that had checkmated the French at Trafalgar. “Though numerically a very imposing force, it was in certain respects a drowsy, inefficient, moth-eaten organism.”<sup>21</sup> Spit and polish was the primary concern of naval officers, and ship handling became an end in itself rather than a means toward the end of victory in combat.

Fleet drills took the form of quadrille-like movements carried out at equal speed in accordance with geometrical diagrams in the signal book. These corybantic exercises, which entirely ignored all questions of gun and torpedo fire, laid tremendous stress on accuracy and precision of movement.<sup>22</sup>

Upon this scene came a reformer who dedicated his career to the gargantuan task of improving the gunnery of the Royal Navy. “Acutely aware of the need for greater accuracy, Captain Percy Scott, RN, began the revolution in naval gunnery when, in 1898, he invented the technique of continuous aiming and introduced salvo firing and spotting with optical rangefinding equipment.”<sup>23</sup>

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<sup>21</sup>Marder, *From the Dreadnought to Scapa Flow*, 6.

<sup>22</sup>Vice Admiral K.G.B. Dewar, quoted in Marder, *From the Dreadnought to Scapa Flow*, 7.

<sup>23</sup>Robert Gardiner, ed., *The Eclipse of the Big Gun* (Edison, N.J.: Chartwell Books, 1992), 15.

In continuous aiming, the gun is constantly in motion, trained on the target at all times rather than on the target during only one instant in the ship's motion. The gunner continuously tracks the target with his sights—and thus his gun—instead of waiting for the target to line up in his crosshairs. So that sailors could practice continuous aiming, Scott invented a mechanical device known as the Dotter that allowed gunners to practice keeping their guns on the target when they fired. A dot made with a pencil on this apparatus took the place of the splash of water made by an actual shot. Scott also emphasized competition as a motivator for gun crews and ships, and his efforts helped gunnery emerge from its years of neglect.<sup>24</sup>

Continuous aiming and use of the Dotter are best suited for small guns, but salvo firing works very well with big guns. In salvo firing, two or more guns fire simultaneously at the same target, shooting in a coordinated manner, and the fall of shot is observed in order to correct the aim. Before salvo firing became the universal practice, every gunner had to continually estimate the range and bearing of the target for himself each time he fired, and he could not tell where his shots were hitting by distinguishing the splash of his rounds amid the splashes from the rounds of other guns. Effective salvo firing became even more difficult when guns of several calibers were involved.<sup>25</sup>

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<sup>24</sup>Padfield, *Aim Straight*, 75.

<sup>25</sup>“Caliber” can mean two things when it refers to a weapon: it can refer to the inside diameter of the barrel, say 12 inches or 16 inches, and it can mean the length of the gun expressed in multiples of that diameter. For example, a 12-inch, 45-caliber gun would have a bore of 12 inches and would be 45 times 12 inches, or 45 feet, long. Here “caliber” refers to bore.

Scott's greatest innovation, the one that did the most to make naval gunfire more accurate, was the practice of director firing. In director firing, some or all of the guns that are trained on the target are fired at once, electrically, by a gunnery officer using telescopic sights from one of the highest points in the ship, usually the foremast. From his superior vantage point, unaffected by smoke or spray, this officer not only fired the guns electrically; he transmitted target data directly to the guns electrically. All the gun captains in the turrets had to do was to align their guns with electrically controlled pointers. Scott realized that director firing was the only way a ship could fire effectively and accurately at long range.<sup>26</sup>

Scott's improvements in fire control were accepted only grudgingly by a conservative navy, and the naval establishment, in the form of the Admiralty Board, long opposed director firing.<sup>27</sup> He had to demonstrate convincingly that his methods were obviously superior to those of his naval peers. This he did many times. For example, his ship, HMS *Scylla*, scored a hit rate of 80 percent in one firing exercise during a time when 30 percent was considered the norm.<sup>28</sup>

Accurate shooting at long range depends heavily on precise range finding, and by the end of the nineteenth century, the first reliable optical

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<sup>26</sup>Padfield, *Aim Straight*, 206.

<sup>27</sup>*Ibid.*, 208.

<sup>28</sup>*Ibid.*, 82–83.

range finders had begun supplanting estimation by eye.<sup>29</sup> Since the range between gun and target could change as rapidly as 200 yards or more in one minute, there was a need for something that would help predict where the target would be in the time it takes for a shot to reach the enemy. Ingenious mechanical devices that were intended to do just that were invented and adopted; they computed estimated range and bearing, making allowance for such things as the speed of the ship that was firing and the force and direction of the wind.

With the advent of accurate long-range weapons, range finders, and mechanical plotting devices, gunnery began assuming an importance that it had lacked in the Victorian navy. The result of all of these technological changes was a transformation in the tightly knit society that constituted the Royal Navy.

[The navy was] no longer a cozy club with a known and well-ordered way of life and a respect only for rank, for seamanship or for sporting ability. Science and the cold blast of a new kind of merciless rivalry were turning things upside down. New gadgets—‘electrical toys most of them, which will break up in action’ said the old guard—were flowering, and clever young officers were applying all their ingenuity to getting their guns firing that fraction faster and their layers that fraction more accurately—the fractions which would place them at the head of the fleet list and ensure early promotion.<sup>30</sup>

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<sup>29</sup>Friedman, *Naval Firepower*, 23.

<sup>30</sup>Padfield, *Aim Straight*, 151.

No one did more to bring about this radical social and technological transformation than the man who would be widely acknowledged as the father of the dreadnought and the most important British naval officer since Horatio Nelson—John “Jacky” Arbuthnot Fisher.

Fisher was volatile, egocentric, overbearing, belligerent, and bellicose. He was also passionately patriotic, brilliantly intelligent, and possessed of prophetic powers that were almost uncanny in their accuracy. Even his contemporary enemies, of whom there were many, had to acknowledge that he had been responsible for almost every important innovation incorporated in the battle fleet of 1914.<sup>31</sup>

Born in 1841 to British parents in Ceylon, Fisher grew up living with relatives in England, and became a cadet in the Royal Navy at the age of 13, in 1854. He served as a gunnery lieutenant aboard the first British ironclad, HMS *Warrior*, but the only combat that he ever saw was on land in the Second China War, in 1859.

Unlike many of his fellow officers, he took a keen interest in the technology that was transforming the navy and was, for example, one of the first few officers to see the potential of the torpedo, proclaiming with the fervor of a prophet that this still young weapon would one day play an important role in naval warfare.<sup>32</sup> Fisher would bring this same passionate

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<sup>31</sup>Hough, *Dreadnought*, 15.

<sup>32</sup>Richard Hough, *Admiral of the Fleet: The Life of John Fisher* (New York: Macmillan, 1970), 52-53.

enthusiasm to everything he touched, and his enthusiasm would spread to a coterie of like-minded junior officers who would become known collectively as the Fishpond.

Fisher moved steadily up the ranks, becoming a captain in 1876 and an admiral in 1890, at each stage applying his whirlwind energy to making the navy an up-to-date, combat-ready force. In all of his commands, he concentrated on such matters as gunnery and tactics at a time when many officers were focused mainly on spit and polish and battleship ballet. Whenever he could, he tried to energize and reform the somnolent Victorian navy.

Fisher became the First Sea Lord, the uniformed head of the navy, in 1904, and relished the opportunity for bringing about change that his position afforded him. He now had the power to influence the entire navy, not just the officers in the Fishpond, and he made the most of it, turning his attention from one reform to another. Among other changes, he closed unnecessary overseas bases; merged several small, far-distant fleets into one fleet concentrated in home waters; and sold off or scrapped a miscellany of obsolescent warships that he dismissed as “a miser’s hoard of useless junk” that was “too weak to fight and too slow to run away.”<sup>33</sup>

Fisher had been thinking about battleship design for some time when he became First Sea Lord, discussing his ideas with one of the foremost naval

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<sup>33</sup>Biography Base, at [http://www.biographybase.com/biography/Fisher\\_Jackie.html](http://www.biographybase.com/biography/Fisher_Jackie.html).

architects of the day.<sup>34</sup> He knew what he wanted, a battleship armed uniformly with guns of the largest caliber possible, one that was fast as well, and in 1904 he hand-picked a capital warship design committee, consisting largely of his protégés, that would be like-minded.

Fisher was not the first man to consider the advantages of an all-big-gun battleship that would embody the leading-edge technology of the day, though. That distinction is usually accorded to Vittorio Cuniberti, Italy's top naval architect. In the 1903 issue of the annual publication *Jane's Fighting Ships*, Cuniberti described what he thought would be an ideal ship for Britain's navy.<sup>35</sup> Because it would dispense with guns of intermediate sizes, it could be armed with 12 12-inch guns and fire a broadside three times more powerful than that of a typical battleship of the day, which would be armed with only four 12-inch guns. The U.S. Navy was also contemplating an all-big-gun battleship, but it would not get around to actually building one for several years. Japan had in fact begun work on such a ship, but as with the United States, it would be years before its battleship would be ready, and the ship as completed would be a predreadnought with a mixed armament.<sup>36</sup>

Fisher deserves the credit that is given to him because he was the first to turn the idea of an all-big-gun battleship into reality. He named that reality HMS *Dreadnought*, and all subsequent battleships would also be called dreadnoughts, after his creation. His ship would be armed with 10 12-inch

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<sup>34</sup>Hough, *Admiral of the Fleet*, 236.

<sup>35</sup>Hough, *Dreadnought*, 5.

<sup>36</sup>Siegfried Breyer, *Battleships and Battle Cruisers, 1905-1970*, 332.

guns and propelled by a new kind of engine—the steam turbine. Previous large warships had used reciprocating piston engines, which produced less power than turbines did and were subject to frequent breakdowns. A turbine-engined ship would be able to run rings around one with a reciprocating piston engine. Fisher’s creation would have the speed that he considered vital, and virtually all battleships built after the *Dreadnought* would use turbines for motive power.

With his characteristic relentless drive, he hurried the *Dreadnought* to completion in record time: her keel plate was laid down on October 2, 1905, and she was launched on February 10, 1906; she went to sea a year and a day after work on her had started.<sup>37</sup> Fisher accelerated construction by every expedient he could think of. He commandeered guns that had been intended for other ships and he used uniform-size plates for the hull, an innovation that cut construction time by as much as a year by simplifying assembly.<sup>38</sup> As a result, the *Dreadnought*’s construction took only a third of the time normally needed to build a battleship.<sup>39</sup>

With her 10 big guns instead of the usual four, the new ship was considered to be equivalent to three predreadnoughts “in firing ahead and to two in broadside firing.”<sup>40</sup> In firepower and in speed, the turbine-driven

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<sup>37</sup>Hough, *Admiral of the Fleet*, 239.

<sup>38</sup>Howarth, *The Dreadnoughts*, 40-41.

<sup>39</sup>Richard Hough, *The Big Battleship*. (London: Michael Joseph, 1966), 46.

<sup>40</sup>Marder, *From the Dreadnought to Scapa Flow*, 68.

*Dreadnought* outclassed all of the most powerful battleships afloat, constituting a quantum leap in warship capability. In the judgment of one naval historian, the *Dreadnought* “rendered all existing capital ships obsolete at a stroke and gave Great Britain a three-year lead while other navies hastily reorganized themselves.”<sup>41</sup>

Reaction in Britain to the *Dreadnought* was mixed, though. Some hailed the new warship as the harbinger of a new day in naval warfare, but others disagreed. For example, Sir William White, Britain’s leading naval architect, opined that with the *Dreadnought*, England was putting all its “naval eggs in one or two vast, costly, majestic, but vulnerable baskets.”<sup>42</sup> Another objection was that the *Dreadnought* was a departure from the traditional British practice of letting other navies prove new weapons and then using Britain’s great shipbuilding capacity to outbuild all its potential rivals.<sup>43</sup> The Royal Navy—like most navies in other countries—was a conservative institution, and innovation was suspect. Still another objection, especially among civilians, was the enormous expense the *Dreadnought* and similar ships entailed, and the rising politician David Lloyd George castigated the innovative warship as “a piece of wanton and profligate ostentation.”<sup>44</sup>

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<sup>41</sup>Tony Gibbons, *The Complete Encyclopedia of Battleships* (New York: Crescent Books, 1983), 169.

<sup>42</sup>Marder, *From the Dreadnought to Scapa Flow*, 62–63.

<sup>43</sup>Hough, *Admiral of the Fleet*, 241.

<sup>44</sup>Robert Massie, *Dreadnought* (New York: Random House, 2003), 487.

By far the most cogent objection to the new warship was that with the *Dreadnought*, Britain had indeed rendered all other battleships obsolete, and in doing so had negated Britain's commanding lead in naval power:<sup>45</sup> now all navies would have to start from scratch—and from a position of relative equality.<sup>46</sup> Other naval powers would have an easier time catching up with the British than they would have had if the *Dreadnought* had not been launched. In other words, this school of thought believed that with the *Dreadnought*, Britain had shot itself in the foot rather than made a giant leap forward.

Fisher had been the guiding spirit behind the *Dreadnought*, the first man to convert an idea current among naval planners into reality, but it turned out that he was not through revolutionizing naval warfare. He had plans for another type of ship—still a dreadnought but a different breed altogether: an enormous cruiser that would unite the speed of an armored cruiser with the powerful armament of a battleship. Such a hybrid ship would be known as a battle cruiser and would constitute a form of cavalry at sea, scouting, turning the enemy's flank, fixing the enemy's fleet until the battleships could arrive, hunting down weaker warships, and generally carrying out missions that called for panache instead of overwhelming power.

Cruisers acted as scouts for the battle fleet, just as frigates had performed similar duties during the age of sail, finding the enemy and notifying the battle fleet of the enemy's location. They also preyed upon enemy commerce raiders, hunting down the hunters who would attempt to

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<sup>45</sup>Marder, *From the Dreadnought to Scapa Flow*, 56.

<sup>46</sup>Howarth, *The Dreadnoughts*, 44.

strangle a maritime nation. In addition, they could harass enemy shipping. Cruisers relied on speed to enable them to hunt down weaker ships and to keep themselves safe from the danger posed by more powerful battleships. Fisher hoped that such ships would come in time to replace battleships as the primary naval weapon of Britain.<sup>47</sup> He placed a premium on speed, maintaining that “speed is armor”<sup>48</sup> and that with a fast ship, “you can fight HOW you like, WHEN you like, and WHERE you like.”<sup>49</sup> Fisher described battle cruisers as “battleships in disguise,”<sup>50</sup> but as we will see later, he would prove to be wrong. The doctrine that underlay the construction and deployment of battle cruisers would prove to be faulty.

The battle cruiser’s speed came at a price. The tough hide of armor that protected battleships was sacrificed in order to achieve increased speed combined with a battleship’s firepower. The first battle cruiser, HMS *Invincible*, which was commissioned in 1908, carried a scanty six inches of armor, about half as thick as a battleship’s protection. Such a thin carapace would not keep out large-caliber shells and would prove to be the battle cruiser’s undoing when the ships were tested in combat at the Battle of Jutland. Unfortunately, battle cruisers looked so much like battleships—and were armed just like battleships as well—that commanders would be tempted

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<sup>47</sup>See, for example, John Tetsuro Sumida, “Sir John Fisher and the Dreadnought: The Sources of Naval Mythology,” *The Journal of Military History*, Vol. 59, No. 4, 629.

<sup>48</sup>Massie, *Dreadnought*, 475.

<sup>49</sup>Hough, *Admiral of the Fleet*, 243.

<sup>50</sup>*Ibid.*, 244.

to regard them as Fisher's battleships in disguise. The lightly armored swift ships proved to be unable to stand up to the guns of battleships, and not speedy enough to dance nimbly out of range of the fastest battlewagons.

The state of technology and the prevailing doctrine of the day made the dreadnought possible, if not inevitable, and the mighty warships would come to epitomize the Industrial Age in arms. With the *Dreadnought*—and the *Invincible*—Fisher led the way for both big and small naval powers as nations scrambled to produce dreadnoughts, regardless of need or expense. He, more than anyone else, touched off a naval arms race that would spiral upward for decades to come, consuming enormous chunks of defense budgets in many countries and helping to spark the biggest war that mankind had yet seen. He set the fashion for dreadnoughts and the world would follow that fashion. In the following chapter, we will discuss the causes, course, and consequences of the arms race—a race that was sometimes driven as much by personal, social, and cultural factors as by military necessity.

## CHAPTER 2: NECESSITY AND LUXURY

The Anglo-German naval arms race of 1898–1914 was not one of the primary causes of the First World War; the roots of that catastrophic conflict were too complex and interrelated to be reduced to such a simplistic explanation. War would probably have broken out even if Britain and Germany had never laid the keel of even one dreadnought. Nevertheless, that arms race played a highly significant part in driving two of the most powerful nations in the world toward war with each other. It “was part of what can only be described as the struggle for hegemony in Europe.”<sup>1</sup> It increased the hostility, fear, and overt rivalry on both sides, adding fuel to a smoldering fire and helping to make armed conflict almost inevitable.

The arms race also diverted finite economic resources in both countries from highly desirable social projects, such as pensions for the old and medical care. Quite simply, dreadnoughts were horrendously expensive to build and maintain. For example, in 1911, the two battleships of the American *Arkansas* class cost more than \$10 million apiece to construct.<sup>2</sup> Maintenance expenses would have made the total even higher. Dreadnoughts were the most expensive weapons in the arsenals of the countries that possessed them and they dominated the defense budgets of several nations, even of some that were unlikely to engage in large-scale naval warfare. Nations scrambled, often after bitter debate, to find the money to pay for these costly leviathans.

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<sup>1</sup>Jonathan Steinberg, *Yesterday's Deterrent* (London: Macdonald, 1965), 18.

<sup>2</sup>William E. McMahon, *Dreadnought Battleships and Battle Cruisers* (Washington, D.C.: University Press of America, 1978), 99.

To examine the Anglo-German arms race, it is necessary to look briefly at the situations of the two competitors. The British Empire, on which the sun famously never set, was well established, having been formed over the course of nearly three centuries. The epicenter of that empire, England, was a bustling industrial and commercial power that was dependent on imports, even for the food that sustained it. It exported much of its output, and maritime commerce was its lifeblood. In the decades preceding the First World War, the British Empire was at its zenith, comprising one quarter of the surface of the globe, but it was no longer growing as it had in the past.

In comparison, the German Empire was a relative parvenu. After all, Germany had remained a patchwork of minor kingdoms and principalities until 1871, when the Hohenzollern dynasty of Prussia emerged as the head of the newly unified German nation. Germany possessed a handful of colonies, but nothing like the sprawling, populous expanse that Britain controlled. Also, Germany was a continental power rather than an island nation, and was rapidly coming to dominate Europe. It needed markets for its many industries, which had already outstripped those of Britain and were still growing. To give a telling example, Germany produced twice as much steel, the primary ingredient of all dreadnoughts, as Britain did.<sup>3</sup> That volume of steel meant that a striving, expanding nation could realistically hope to challenge the greatest naval power in the world.

The two countries resembled each other in governance, at least on the surface. Both possessed legislatures elected by universal male suffrage,

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<sup>3</sup>Peter Padfield, *The Great Naval Race*, 27.

although Britain's Parliament was much more powerful than its German equivalent, the Reichstag. The German Kaiser, however, retained more actual authority than the British sovereign did—especially in regard to the navy—and was more influential in affecting policy. (This fact would prove to be crucial in the Anglo-German arms race and in the First World War as well.) In each country, a rapidly growing urban middle class was rising to power and industry had supplanted agriculture as the mainstay of the economy.

Militarily, the two countries differed considerably, at least at first. Britain's Royal Navy had ruled the waves since Trafalgar and was the most powerful navy in the world; in contrast, its army was a small volunteer force that had fought in the myriad small wars that made the British Empire. Unlike Britain, Germany embarked on the naval arms race with a small navy and the mightiest army in Europe, if not in the world.

At that time, opinion makers and leaders in many countries viewed conflict, particularly national conflict, as a basic fact of existence: nations were bound to struggle with one another for the upper hand, and the winner would thus prove that it was superior to lesser powers, reaping material benefits and spreading its culture. This would be accomplished by waging war. According to a Prussian general and military historian, war "was the essential mechanism through which human progress worked itself out,"<sup>4</sup> and a nation had a moral duty to win wars. Such views were current in both Germany and Britain, but in the former, this attitude took an especially virulent and aggressive form that is best summed up in a prediction made in 1899 by

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<sup>4</sup>Padfield, *The Great Naval Race*, 287.

Bernhard von Bülow, foreign secretary and soon-to-be chancellor of the Reich: “In the coming century, Germany will either be the hammer or the anvil.”<sup>5</sup> As we will see, it would turn out to be both.

Above all, Germany wanted to secure, in a phrase that was current in the Reich at that time, “our place in the sun.”<sup>6</sup> This comprised the respect, if not deference, of other nations; the addition of territory, which would have to come at the expense of someone else; and better access to markets for the rapidly growing commercial interests of Germany. A navy was needed to accomplish this, and many Germans believed that “Germany would need a force at sea at least equal to that of the greatest sea power to ensure a fairer distribution of the good places.”<sup>7</sup>

If the Germans wanted to possess a powerful navy to obtain their rightful place in the sun, the British saw their Royal Navy as vital to retaining their own place in the sun. They did not believe that the Germans really needed either to construct a battle fleet for defensive purposes or to protect trade routes and Germany’s few colonies. As Winston Churchill would declare in the House of Commons once he became convinced that Britain’s naval supremacy was in jeopardy, “The British Navy is to us a necessity and, from some points of view the German Navy is to them more in the nature of a

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<sup>5</sup>Holger Herwig, *“Luxury” Fleet: The Imperial Germany Navy 1888–1918*, 19.

<sup>6</sup>Padfield, *The Great Naval Race*, 103.

<sup>7</sup>*Ibid.*, 43.

luxury. Our naval power involves British existence; it is existence to us, it is expansion to them.”<sup>8</sup> His words would provoke public outrage in Germany.

Since we already have some notion of Britain’s navy, let us look at Germany’s. The Imperial German Navy was the same age as the nation that deployed it, dating back only to 1871.<sup>9</sup> It was at first a small coastal defense force that until 1888 was commanded by Prussian generals.<sup>10</sup> The navy remained a negligible entity until 1898, when the first naval law was enacted by the Reichstag; this law mandated the gradual construction over several years of 19 battleships, among other things, and started Germany on a collision course with Britain:

The first German Navy Law of 1898 was the point of no return in this process, although nobody in Britain and scarcely a handful of men in Germany realized it. . . . It alone challenged British hegemony directly and it did so by calling for a powerful fleet of battleships to be stationed in the North Sea.<sup>11</sup>

The Imperial German Navy was manned by short-service conscripts led by career petty officers and commissioned officers drawn chiefly from the middle class, and it proved to be popular with the general public.<sup>12</sup> In these

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<sup>8</sup>Padfield, *The Great Naval Race*, 281.

<sup>9</sup>Steinberg, *Yesterday’s Deterrent*, 32.

<sup>10</sup>Herwig, “*Luxury Fleet*,” 13.

<sup>11</sup>Steinberg, *Yesterday’s Deterrent*, 18.

<sup>12</sup>*Ibid.*, 28.

ways, it differed from the German army, in which aristocrats formed the backbone of a service notorious for its arrogance. Also, the navy was “the one truly national institution in the unstable and unfinished German Empire.”<sup>13</sup> The army, in contrast, was composed of units nominally under the control of the various states, such as Bavaria and Saxony.

In one respect, the German navy was quite unlike the German army — and Britain’s Royal Navy as well: according to Article 53 of the German constitution, “the Navy was explicitly stated to be an institution of the ‘Reich . . . under the supreme command of the Kaiser.’ This made it unique in a country where even the postal, customs and railroad services were not national.”<sup>14</sup> This constitutional provision made it all too easy for the sovereign to regard the navy as his personal property and an extension of his ego.

The man most responsible for transforming a coastal defense force into a navy that could challenge almost any other power was a fork-bearded admiral who served as state secretary of the Imperial Naval Office: Alfred von Tirpitz. He was the German equivalent of Britain’s Jacky Fisher, but he differed in character from the British firebrand. Where Fisher was direct and mercurial, Tirpitz was devious and outwardly calm.

[Tirpitz was] ruthless, clever, domineering, patriotic, indefatigable, aggressive yet conciliatory, pressing yet patient, and stronger in character and drive than the three chancellors and seven heads of the Foreign Office who were destined to be

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<sup>13</sup>Ibid.

<sup>14</sup>Steinberg, *Yesterday’s Deterrent*, 32.

his co-actors on the political stage. To be sure, he was all of these things, but above all he was a manipulator of men and ideas, the forerunner of the twentieth-century propaganda specialist. His naval policy has been evaluated by various scholars as a “gruesome error” and a “monstrous mistake.”<sup>15</sup>

Tirpitz intended from the beginning to challenge the British for mastery of the seas and to use the battle fleet that he was determined to build as a diplomatic bargaining chip,<sup>16</sup> but at first he had to dissemble to get his way. He “faced the problem of how to convince the *Reichstag* of the necessity for adding to the fleet without at the same time alerting England to its real purpose.”<sup>17</sup> Tirpitz disguised his proposal by claiming that he just wanted to create a flying squadron of battleships to accompany cruisers on overseas service and did not aim to augment Germany’s battle fleet.<sup>18</sup> He would ingenuously declare in the written legislative justification for the warships, and later in his memoirs, that in 1898 he was not planning to build a battle fleet for use against Britain.<sup>19</sup>

In reality, Tirpitz was covertly embarking on a course founded on the basis of what would become known as the risk theory. This posited the following assumption:

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<sup>15</sup>Herwig, “*Luxury Fleet*,” 34.

<sup>16</sup>Steinberg, *Yesterday’s Deterrent*, 20.

<sup>17</sup>Padfield, *The Great Naval Race*, 72.

<sup>18</sup>*Ibid.*, 72.

<sup>19</sup>Steinberg, *Yesterday’s Deterrent*, 146.

the ultimate strength of the [German] fleet would deter any eventual opponent from risking an all-out naval encounter with Germany because even if he emerged victorious from battle, such an enemy might then find himself at the mercy of a third strong naval power, or even coalition.<sup>20</sup>

It did not take long for the true purpose of the proposed increases in the German fleet to become abundantly clear, at least in Germany, and Tirpitz soon openly admitted his intentions regarding the risk theory in the preamble to the naval law of 1900:

Germany must have a battle fleet so strong that even for the adversary with the greatest sea power a war against it would involve such dangers as to imperil his position in the world.

For this purpose, it is not absolutely necessary that the German battle fleet should be as strong as that of the greatest naval power, for a great Power will not, as a rule, be in a position to concentrate all its striking forces against us. But even if it should succeed in meeting us with considerable superiority in strength, the defeat of the strong German fleet would so substantially weaken the enemy, that in spite of victory he might have obtained, his own position in the world would no longer be secured by an adequate fleet.<sup>21</sup>

Risk theory—and the implicit challenge to Britain contained in the preamble to the naval law of 1900—was now a matter of public record, but for the most part the British were slow to take the hint. They did not yet see

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<sup>20</sup>Herwig, *Luxury Fleet*, 36.

<sup>21</sup>Padfield, *The Great Naval Race*, 93.

Germany as the chief menace and they continued to maintain the two-power standard to defend against such possible combinations as France and Russia. In effect, one contestant in the race did not yet realize that a race was under way. It would take some time for the British to become aware that the growing German navy might constitute a danger.

Germany's ultimate aim was of course to challenge Britain, but the Germans hoped for an intermediate benefit from strengthening their fleet: Germany's desirability as a potential ally would be enhanced by its possession of a powerful navy.<sup>22</sup> The other countries—specifically, Britain, France, and Russia—would want to have such a strong nation as Germany on their side. This hope would turn out to have the opposite effect: the other nations would feel threatened by a German buildup and would eventually band together against Germany.

Tirpitz realized that there was a problem with the risk theory: while the fleet was being built up but was still too weak to confront the British fleet, there would be a period of vulnerability during which the growing German navy would pose a threat to British hegemony. To counter this menace, the British could decide to destroy the German fleet with a preemptive strike—Fisher would at one point suggest doing just that. This period would become known to the Germans as the “Danger Zone,”<sup>23</sup> and they feared that Britain might “Copenhagen” the German battle fleet (this was a reference to Horatio

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<sup>22</sup>Steinberg, *Yesterday's Deterrent*, 21.

<sup>23</sup>Padfield, *The Great Naval Race*, 42.

Nelson's destruction of the Danish fleet in the harbor of Copenhagen during the Napoleonic wars).<sup>24</sup> In other words, the Germans were aware that they themselves ran a risk in implementing the risk theory.

Overall, risk theory would prove in the end to be disastrous for Germany. It presented "the greatest possible offence with the least possible chance of success—not to mention the fact that that Germany was sanctioning a fleet primarily for political reasons."<sup>25</sup> The Germans, however, would not realize that they were making a mistake until it was far too late to change course.

Predictably, the Reichstag balked at the expense required to build a battle fleet, but over the course of the arms race, the legislature would fall into line and approve the funding that Tirpitz proposed: "It [the Reichstag] voted on major pieces of Tirpitz's programme no less than five times between 1898 and 1914, and each time gave him virtually everything he wanted."<sup>26</sup>

Tirpitz was not the only one who wanted almost desperately to build a mighty German navy; he had the enthusiastic support of the foremost man in the Reich—Kaiser Wilhelm II. In fact, the Kaiser would prove so important in developing the German navy that one of his courtiers would later say, "Wilhelm was truly the creator of the fleet by associating it with his person

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<sup>24</sup>Ibid., 120-121.

<sup>25</sup>H. P. Willmott, *Battleship* (London: Cassell, 2002), 21

<sup>26</sup>Steinberg, *Yesterday's Deterrent*, 20.

and prestige.”<sup>27</sup> Working all his wiles, Tirpitz played on the Kaiser’s unstable personality like a virtuoso, hammering home to the monarch in a blizzard of briefings and memoranda that “the creation of a battle fleet is for Germany an absolute necessity without which Germany will meet ruin.”<sup>28</sup> By battle fleet, of course, he meant dreadnoughts, telling the Kaiser that “the military situation against England demands battleships in as great a number as possible.”<sup>29</sup> (It is ironic that Tirpitz has been described as having an “obsession with battleships”<sup>30</sup> because his background was in torpedoes, which would turn out to be mortal enemies of the dreadnought.) The Kaiser proved to be a receptive audience. He would make the growth of his navy his top priority, telling his ambassador to Britain, “I do *not* wish a good understanding at the expense of the extension of the German fleet.”<sup>31</sup>

Born in 1859, Wilhelm II, scion of the Prussian House of Hohenzollern, ascended to the throne of the Reich in 1888, when he was 29 years old. At the time, his empire was itself only 17 years old. Related by blood to most of the royal families in Europe, he was the eldest grandson of Britain’s Queen Victoria. Because of this relationship, he had spent much time in England while growing up, and this may help explain why he developed a particular

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<sup>27</sup>Herwig, “*Luxury Fleet*,” 21.

<sup>28</sup>Padfield, *The Great Naval Race*, 82.

<sup>29</sup>Steinberg, *Yesterday’s Deterrent*, 127

<sup>30</sup> Herwig, “*Luxury Fleet*,” 38.

<sup>31</sup>Robert K. Massie, *Dreadnought: Britain, Germany, and the Coming of the Great War* (New York: Random House, 2003), 698.

fascination—shot with envy—with the Royal Navy. So intense was this fascination that his own mother declared that he had only one aim: to possess a fleet as mighty as Britain's.<sup>32</sup>

Historians—particularly British historians—have not been kind to Wilhelm II, one of them going so far as to describe him as a man characterized by “towering arrogance and [a] grotesque sense of his own importance,” concluding that the Kaiser was “a melodramatic braggart without depth of mind or interest living in a fantasy of Teutonic Knighthood and cheap nationalist sentiment.”<sup>33</sup> German historians tend not to judge him quite so harshly, with one of them sizing him up as “dynamic, impetuous, aggressive, yet at the same time insecure, nervous, hesitant.”<sup>34</sup> Probably, both historians would have agreed that he was volatile and bombastic.

Wilhelm was an ardent Anglophile with only the most pacific intentions vis-à-vis the British:

The Kaiser did not wish to fight the Royal Navy and he never dreamed of invading the British Isles. He was building a fleet to proclaim Germany's Imperial grandeur, to make the world listen respectfully to the German Emperor, and, above all, to earn England's approval and reduce German independence [*sic*] on England's favor on the oceans of the world.

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<sup>32</sup>Padfield, *The Great Naval Race*, 42.

<sup>33</sup>*Ibid.*, 32.

<sup>34</sup>Herwig, “*Luxury Fleet*,” 3.

Loudly and publicly, Wilhelm disavowed any hostility toward Britain. For example, committing a serious breach of diplomatic etiquette, he wrote to the First Lord of the Admiralty, the civilian head of the Royal Navy, as follows:

it is absolutely *nonsensical* and *untrue* that the German Naval Bill is to provide a Navy meant as a “Challenge to British naval supremacy.” The German Fleet is being built against nobody at all. It is solely built *for* Germany’s needs in relation to that country’s rapidly growing trade.<sup>35</sup>

Tirpitz echoed the Kaiser, but by the time they spoke, the British had become thoroughly alarmed about the growing menace across the North Sea, and German assurances were not believed. One reason for this disbelief was that the British knew German dreadnoughts were not designed for long ocean cruises, as British dreadnoughts were. They did not carry enough fuel for extended operations in the ocean, a fact that restricted their cruising radius to little more than the North Sea. Also, the crew quarters were too cramped for ocean cruising; the German battleships could not stay at sea as long as the British ships could.<sup>36</sup>

As early as 1902, there had been warnings of German intentions toward Britain, such as an Admiralty memorandum declaring rhetorically that

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<sup>35</sup>Padfield, *The Great Naval Race*, 181.

<sup>36</sup>Arthur J. Marder, *From the Dreadnought to Scapa Flow: The Royal Navy in the Fisher Era, 1904–1919* (London: Oxford University Press: 1961–1967), 107.

“against England alone is such a weapon as the modern German Navy necessary; against England, unless all available evidence and all probability combine to mislead, that weapon is being prepared.”<sup>37</sup> Over time more voices—both military and civilian—came to swell the chorus. It was only a matter of time before the general public would join in.

Matters came to a head in the Naval Scare of 1909, when Germany’s plans could no longer be concealed and mutual antagonism was at its highest pitch. The Germans passed a naval law in 1908 mandating the construction of three battleships and one battle cruiser annually.<sup>38</sup> At that rate, within a few years, Britain would have only five dreadnoughts for every German four, and the British wanted a greater margin of superiority than that. In addition, the British came to realize that the German firm of Krupp had double the gun-making capacity of the combined British gun-making factories and could produce guns in two-thirds of the time that it took British companies.<sup>39</sup> (Of all dreadnought components, guns, gun mountings, and armor required the longest lead times for production.)<sup>40</sup> Above all, the British concluded from intelligence they received that they would soon be overtaken in the race to build dreadnoughts:

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<sup>37</sup>Ibid., 105.

<sup>38</sup>Herwig, “*Luxury Fleet*,” 69.

<sup>39</sup>Marder, *From the Dreadnought to Scapa Flow*, 157.

<sup>40</sup>Massie, *Dreadnought*, 611.

The Germans were accelerating [the pace of dreadnought construction] secretly: gathering essential shipbuilding materials, acquiring guns, turrets, and armor well in advance of actually building the hulls. Reports reached London that dreadnought keels were being laid down months before the dates scheduled by the German Navy Law—in advance even of the appropriating votes in the Reichstag.<sup>41</sup>

Alarmed, the Sea Lords of the Royal Navy, the most senior officers in the Senior Service, recommended in January 1909 that eight dreadnoughts, both battleships and battle cruisers, be procured under the proposed naval budget (the Estimates) for fiscal year 1909–10 to respond to the German threat. The First Lord of the Admiralty, Reginald McKenna, reduced the number to six and submitted the request to the Cabinet. The Liberal Party was then in power, and two Cabinet members, David Lloyd George and Winston Churchill, objected vehemently to the navy's costly proposal. They wanted the money needed to procure the eight dreadnoughts to go to social programs, such as pensions and health insurance. (They would of course later change their minds.) After studying the matter, Churchill concluded that four dreadnoughts would be sufficient and pressed for that number. The opposition in Parliament was outraged, proclaiming that the government was skimping on dreadnoughts and thus undermining the nation's security. A public controversy ensued.

Rallying to the slogan "We want eight and we won't wait!" Conservative members of Parliament, myriad public speakers, and the press

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<sup>41</sup>Ibid.

clamored for the government to construct that number of dreadnoughts. Britons of every stripe, across the nation and across class lines, affirmed the Admiralty's official view of the need for naval supremacy:

The British Empire floats on the British Navy. It is our all in all. Victory at sea, desirable to foreign States is a sine qua non to our continued existence. We must win at sea or perish as a nation . . . *Ententes* may vanish—battleships remain the surest pledges this country can give for the continued peace of the world.<sup>42</sup>

In the end, the government acceded to the growing pressure to build more battleships after learning that the Austro-Hungarian Empire was planning to construct three or four dreadnoughts and Italy was planning to follow suit.<sup>43</sup> Britain decided to continue building to ensure that it had more dreadnoughts than any other nation, no matter how much money it took to do so, no matter what social programs had to be shorted or sacrificed. Britain would, however, no longer be building to a two-power standard: "The 1909 Naval Scare marked the beginning of a one power standard for the British navy; Britain was building only against Germany."<sup>44</sup> That standard was "calculated as being a force equal to that of Germany plus a margin of 60 percent."<sup>45</sup> Nothing was to stand in the way of British hegemony at sea, and

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<sup>42</sup>Padfield, *The Great Naval Race*, 184.

<sup>43</sup>Ibid., 221.

<sup>44</sup>Massie, *Dreadnought*, 625.

<sup>45</sup>John Tetsuro Sumida, *In Defence of Naval Supremacy: Finance, Technology and British Naval Policy, 1889–1914* (Boston: Unwin Hyman, 1989), 191.

the upward spiral of the naval arms race would continue almost unabated until war broke out in 1914.

From time to time, the two nations tried to pause to gain their breath, seeking to stop altogether or at least slow down the race toward Armageddon. (The topic of arms control will be treated at greater length in chapter 4.) For instance, in 1912, the British sent Viscount Haldane, the Secretary of War and an excellent German speaker, to Berlin for informal talks about the possibility of slowing down the dreadnought competition. “Absolutely nothing was to come from his mission—primarily because Tirpitz had decided that nothing should, or must, come from it.”<sup>46</sup> The following year, Winston Churchill, then First Lord of the Admiralty, proposed a naval holiday—a moratorium on building warships for an agreed-upon period. The proposal met the same fate as the Haldane mission: Germany refused to stop constructing dreadnoughts, and Britain was unwilling to allow any power to build a fleet that came anywhere near rivaling its own.

The escalating arms race steadily became more expensive for its participants. Dreadnoughts were not only increasing in numbers, they were increasing in price as well. Ships were getting bigger, guns were becoming more powerful, and armor was becoming thicker; across the board, armaments, already very expensive, kept requiring larger and larger amounts of money. For example, the *Dreadnought* displaced 18,110 tons and was armed with 12-inch guns protected by 11 inches of armor. She cost approximately £1.7 million—an enormous sum in 1906. Seven years later, the most advanced

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<sup>46</sup>Herwig, “*Luxury Fleet*,” 76.

dreadnoughts, battleships of the *Queen Elizabeth* class, displaced 29,150 tons, were armed with 15-inch guns protected by 13 inches of armor, and cost approximately £2.7 million apiece.<sup>47</sup> As the British Foreign Secretary, Sir Edward Grey, lamented, “half the national revenues of the great countries of Europe are being spent on armament.”<sup>48</sup> Dreadnoughts of course were the most expensive armament of all.

Grey did not intend his statement to be taken literally, but Britain and Germany—and other nations as well—were spending uncomfortably large proportions of their economic resources on dreadnoughts and the retinues of attending ships that dreadnoughts required.

Money that might have gone for social welfare programs, such as health insurance and pensions for the general public, went instead into building warships. For instance, in Britain, between 1908 and 1914, annual spending on social welfare went from approximately £1 million to roughly £20 million; during the same period, spending on the navy increased from slightly more than £30 million a year to approximately £50 million (expenditure on the army remained relatively constant at about £20 million per year over this same period).<sup>49</sup> Between 1910 and 1912, Britain spent about 3.3 percent of its gross

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<sup>47</sup>William E. McMahon, *Dreadnought Battleships and Battle Cruisers*, 11, 35.

<sup>48</sup>Padfield, *The Great Naval Race*, 219.

<sup>49</sup>Sumida, *In Defence of Naval Supremacy*, figure 4, 194.

domestic product on defense,<sup>50</sup> with the navy, in most years, accounting for approximately 60 percent of total defense spending.<sup>51</sup>

In Germany, the pattern of expenditures on the navy was somewhat different, for a variety of reasons—for example, naval conscripts were cheaper than long-service volunteers, and Germany did not have to maintain the far-flung fleets necessary to police the British Empire. “The proportion of her [Germany’s] defence budget—itsself some 89 per cent of the total Reich budget—which went to the Navy hovered between 19 per cent and 26 per cent; the rest went to the Army.”<sup>52</sup> (I suspect that Germany was able to devote such a large proportion of its national budget to defense because it was a federal nation, with most of the expenses of government in the hands of Germany’s constituent states. The army received the biggest share of the defense budget because it was the largest in Europe.) Even if Germany spent a smaller percentage of its income on its navy than Britain did, the money expended on warships could not go toward other purposes, such as programs for the direct benefit of all Germans. No matter what the cost, the construction of dreadnoughts was among the highest of national priorities.

Britain and Germany were not the only countries caught up in the naval arms race and expending huge amounts of money on dreadnoughts; the passion to possess these costly weapon systems was an international affair:

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<sup>50</sup>Calculated from statistics in B. R. Mitchell, ed., *British Historical Statistics*. (New York: Cambridge University Press, 1988).

<sup>51</sup>Padfield, *The Great Naval Race*, 210.

<sup>52</sup> *Ibid.*

Year by year more money was squandered on these symbols of power, each adding a degree or two to the Dreadnought fever that continued to sweep across the world like a plague. In 1912 there were no less than sixty-three [dreadnoughts] under construction, for such unlikely and un-maritime powers as Spain and Turkey and Chile, as well as the four greatest—Britain, Germany, Japan and the U.S.A.—who alone were responsible for twenty-one of them.<sup>53</sup>

Seemingly every nation with a scrap of coastline and a vestige of a navy had to have at least one dreadnought—preferably more—to proclaim its stature in the international order.

The story of one particular battleship—in its day the biggest and most powerful warship afloat—illustrates the extent to which dreadnoughts captured the world’s imagination, fueling naval arms races in such regions as Latin America and the Mediterranean in the decade before the start of the First World War. Major shipbuilding powers—primarily Britain, Germany, and the United States—competed with one another to construct dreadnoughts for other countries. After all, building warships for export was a highly lucrative business: “Success in securing the order of a single battleship could mean a contract for some two-and-a-half million pounds . . . and employment for several thousand men for two or three years.”<sup>54</sup> With support from their

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<sup>53</sup>Richard Hough, *The Big Battleship or The Curious Career of H.M.S. Agincourt*, 46.

<sup>54</sup>Hough, *The Big Battleship*, 13.

respective governments, such industrial giants as Krupp in Germany and Vickers in Britain dispatched salesmen around the world to obtain orders.

Brazil was a particularly desirable customer. It already possessed two battleships, ordered from British shipyards in 1908, and intended to procure a third in order to maintain its edge on its neighbor, Argentina, which also had two battleships. Both countries enjoyed amicable relations with each other and harbored no intentions of going to war with any Latin American power—or anyone else for that matter. Neither nation had overseas colonies or maritime trade routes to protect. Their need for dreadnoughts was at best questionable, but they, and Chile, were engaged in a naval arms race that had started when Brazil ordered its two battleships.<sup>55</sup> This race was, in the judgment of one historian, “a competition of maritime power which had no apparent purpose or meaning.”<sup>56</sup> It was also expensive: “The cost of the Argentine’s two battleships represented almost a fifth of her total annual revenue.”<sup>57</sup> Altogether, the Latin American dreadnought race cost its participants nearly 25 percent of their national income.<sup>58</sup>

Britain’s Armstrong-Whitworth won the contract to build the third Brazilian battleship with a design that called for 14 12-inch guns in seven

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<sup>55</sup>Siegfried Breyer, *Battleships and Battle Cruisers 1905–1970* (Garden City, N.Y.: Doubleday, 1973), 320. Hough maintains that Chile started the rivalry in 1901, when the Chileans ordered two predreadnoughts. Hough, *The Big Battleship*, 17.

<sup>56</sup>*Ibid.*, 17.

<sup>57</sup>*Ibid.*, 19.

<sup>58</sup>*Ibid.*, 49.

turrets; the vessel would deploy more firepower than any other dreadnought before her. She was to be christened *Rio de Janeiro*.

Although Armstrong-Whitworth launched the *Rio de Janeiro* in January 1913, several major components, among them the ship's 14 guns and their seven turrets, remained to be finished and installed before the ship could be turned over to its owners. Brazil, however, decided shortly after the launching that it could not afford its expensive new dreadnought. The market for Brazilian rubber, one of the foremost exports of that nation, had virtually collapsed because of competition from Malaya and the East Indies,<sup>59</sup> and Brazil was feeling the resulting financial pinch. Accordingly, Brazil decided to put the *Rio de Janeiro* up for auction.

After the Brazilians decided to sell their incomplete battleship, they also put out feelers about the possibility of selling their two other battleships, the *Minas Geraes* and the *Sao Paulo*. Although Brazil ended up keeping the two ships, "it was the greatest abdication of power ever recorded in naval history. At once among the South American republics, the battleship fever died."<sup>60</sup> The rivalry had lasted for only five years, but the cost had been exorbitant.

Greece and Turkey, bitter rivals that has just finished fighting a war with each other, were both interested in buying the big dreadnought. The two countries were locked in a battleship-buying race that would cost them

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<sup>59</sup>Ibid., 62–63.

<sup>60</sup>Ibid., 63.

“nearly half their total combined annual revenue.”<sup>61</sup> The Turks were able to borrow more money than the Greeks, and just before the end of 1913 they paid £2,725,000 for the Brazilian dreadnought, which they renamed *Sultan Osman I*. The ship, however, was still incomplete, and the Turkish navy was a negligible force. (The British First Lord of the Admiralty and the British naval adviser to Turkey both used the same word to describe the Turkish navy: “non-existent.”<sup>62</sup>)

To pay off the loans that bought the *Sultan Osman I*, Turkey instituted a tax on bread, garnisheed one month’s salary from its civil servants and military officers, and took up a public collection. Even the poorest Turks donated to the cause. Soon, “the campaign to pay for the big battleship began to assume a spiritual character that served to unite the country more closely than the late wars had ever done.”<sup>63</sup> The Turks eagerly awaited the day when the *Sultan Osman I* would be turned over to them by Armstrong-Whitworth. They would end up being disappointed.

When war broke out, in 1914, the British decided that they did not have enough dreadnoughts. They commandeered the *Sultan Osman I*, snatching her out from under the noses of the waiting Turks. Their act would prove to be a major factor in Turkey’s decision to enter the war on the side of the Central Powers. For the second time, the battleship passed from the hands of one country to those of another. The British renamed the *Rio de Janeiro/Sultan*

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<sup>61</sup>Ibid., 99.

<sup>62</sup>Ibid., 64–65.

<sup>63</sup>Ibid.

*Osman I the Agincourt*, and under that name the ship served the Royal Navy throughout the war. After the war, Britain tried unsuccessfully to sell the battleship back to its original owners, the Turks, and in the 1920s she was sold for scrap.<sup>64</sup>

The sacrifices that Britain, Germany, and other nations as well made to procure dreadnoughts raises the question of the ships' utility and decisive role in naval warfare. Were dreadnoughts worth their tremendous cost? Did they justify the turmoil they had caused? The next chapter will examine the actual performance of the dreadnoughts in the one battle where they were used as they were intended to be used—the Battle of Jutland. We will see that in combat, dreadnoughts would demonstrate some unanticipated shortcomings.

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<sup>64</sup>Breyer, *Battleships and Battle Cruisers 1905–1970*, 136.

### CHAPTER 3 DER TAG

The climax of the Anglo-German naval arms race occurred off the coast of Denmark on May 31, 1916. In what would become known in the English-speaking world as the Battle of Jutland, British and German battleships and battle cruisers clashed in the one major encounter of the British and German navies during the First World War. This would be the only time in history when battle fleets composed primarily of dreadnoughts would confront each other in combat. (There would of course be clashes involving smaller groups of dreadnoughts, mostly battle cruisers versus other battle cruisers.) Jutland would reveal the strengths and weaknesses—the unforeseen limitations—of the dreadnoughts that had cost Britain and Germany so much and preoccupied both nations for a decade. It would also illuminate the role played in warfare by the complex interaction of man and machine and foreshadow the advent of new technologies that would eventually supplant the dreadnought. The battle would affect the course of the war, but only indirectly and not in the decisive, war-ending way that doctrine had predicted it would.

Things had not turned out as anyone had expected. For instance, the British Committee of Imperial Defence, a council of the highest civilian and military leaders that was charged with defense planning, had anticipated a short war that “would be fought primarily by the Royal Navy.”<sup>1</sup> Both the British and the Germans began the conflict with the confident expectation that

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<sup>1</sup>Byron Farwell, *Eminent Victorian Soldiers: Seekers of Glory* (New York: Norton, 1985), 344.

their respective battle fleets would clash—as soon as possible—in a decisive confrontation.<sup>2</sup> Instead, after two years of bitter fighting on land, the Allies—France, Russia, Britain, Italy, and Belgium—were locked in a stalemate in the lines of trenches that scarred the face of Europe, trapped in a war of attrition with the Central Powers—the German, Austro-Hungarian, and Ottoman empires and Bulgaria. At sea, the Royal Navy was maintaining a distant blockade of the Central Powers, keeping far enough away from German waters to obviate the threat of mines and torpedoes while keeping close enough to stifle German maritime traffic, shutting off the flow of goods to Germany. This policy came as a surprise to the Germans, who had expected the British to maintain a close blockade, sealing off their enemy’s coastline, as they had in previous wars.<sup>3</sup>

Since both countries expected that there would be a climactic naval battle, a Trafalgar played out with dreadnoughts instead of wooden ships of the line, both sides carefully prepared their battle fleets for what the Germans referred to as *Der Tag* (the day). The Germans hoped that on that day they would finally wrest hegemony at sea from the British and lift the blockade on their homeland. At the same time, they appreciated the fact that they were inferior to the British in numbers and in armament. While Britain could deploy 37 dreadnoughts (28 battleships and nine battle cruisers), Germany

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<sup>2</sup>Ronald H. Spector, *At War at Sea: Sailors and Naval Combat in the Twentieth Century* (New York, Viking: 2001), 65.

<sup>3</sup>Keith Yates, *Flawed Victory: Jutland, 1916* (Annapolis, Md.: Naval Institute Press: 2000), 41.

could muster only 21 dreadnoughts (16 battleships and five battle cruisers).<sup>4</sup> Where the British ships were armed with 12-, 13.5-, and 15-inch guns, the German ships were armed only with 11- and 12-inch guns.<sup>5</sup> (This disparity is not as slight as might be imagined: the British 15-inch shell weighed more than twice as much as the German 12-inch shell, and the British guns outranged the German ones as well.)<sup>6</sup>

To whittle down the odds against the Reich, “the main German strategy was for its battle fleet to stay in port most of the time and to make occasional sallies with the 1st Scouting Group of battle cruisers to bombard towns on the east coast of Britain. The idea was to lure part of the enemy fleet out of its harbors in response.”<sup>7</sup> The Germans would then pounce on the smaller British force with their waiting main battle fleet, the High Seas Fleet, and by a process of attrition wear down the British forces until something close to parity had been achieved. At that point, the Germans would be able to hope realistically that they might defeat the main battle fleet of the Royal Navy, the Grand Fleet, on *Der Tag*. Germany’s cautious strategy was dictated by another consideration as well: the Kaiser was extremely reluctant to risk his precious fleet against the British dreadnoughts.<sup>8</sup>

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<sup>4</sup>Massie, *Castles of Steel*, 577.

<sup>5</sup>Padfield, *Aim Straight*, 248.

<sup>6</sup>N.J.M. Campbell, *Jutland: An Analysis of the Fighting* (London: Conway Maritime Press), 344.

<sup>7</sup>Yates, *Flawed Victory*, 43.

<sup>8</sup>Massie, *Castles of Steel*, 121.

In contrast, the British did not intend to wage a war of attrition. Instead they wanted somehow to entice the German battle fleet out of harbor and into a decisive clash in the North Sea.<sup>9</sup> Exactly how they expected to do this is not clear, since there would be little incentive for the Germans to accept battle against so superior a force as the Grand Fleet. Like the Germans, the British intended to use their battle cruisers as bait as well as for scouting, hoping that the High Seas fleet might by some means be inveigled into chasing the British battle cruisers under the waiting guns of the Grand Fleet. British and Germans alike feared that the enemy might set a trap for them involving minefields and submarines;<sup>10</sup> they realized that their dreadnoughts were quite vulnerable to the underwater explosions that would be detonated by mines and by torpedoes launched by surface craft or submarines. Fear of the torpedo would turn out to be a preoccupation of senior naval commanders for the duration of the war.

The British had one significant advantage in implementing their strategy: they were able to intercept and decode German radio messages. A German naval codebook had fallen into their hands, and they were reading the Germans' plans almost as soon as the Germans themselves did. As we will see, though, this ability to discover the enemy's intentions did not give the British the overwhelming edge that it should have given them. In the event, an avoidable human failure would almost completely negate the value of this intelligence triumph.

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<sup>9</sup>Yates, *Flawed Victory*, 42.

<sup>10</sup>Tarrant, *Jutland: The German Perspective*, 22.

While most Britons were supremely confident that the Grand Fleet would handily defeat the High Seas Fleet, the commander of the Grand Fleet, Admiral Sir John Jellicoe, was not so certain of victory. A protégé of Jacky Fisher's who had been groomed to command the Grand Fleet, Jellicoe knew from intelligence reports that German ships had better armor and more thorough underwater compartmentation—both assets in coping with damage in combat—than his own ships did.<sup>11</sup> He also knew from a previous assignment as the Director of Naval Ordnance that British shells fired at long range and striking at oblique angles often failed to penetrate heavy armor, detonating prematurely and relatively ineffectively.<sup>12</sup> Overall, Jellicoe feared that German dreadnoughts were superior in several respects to British ones.<sup>13</sup> His advantage in numbers and armament was not enough to allay his misgivings.

Although Jellicoe may not have realized it, the Royal Navy held a significant psychological edge over the Imperial German Navy: a heritage of victory that went back to Trafalgar and thoroughly intimidated the Germans. As Jellicoe's German counterpart, Vice Admiral Reinhard Scheer, put it, "The English fleet had the advantage of looking back on a hundred years of proud tradition which must have given every man a sense of superiority based on

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<sup>11</sup>Nigel Steel and Peter Hart, *Jutland 1916: Death in the Grey Wastes* (London: Cassell, 2003), 28–29.

<sup>12</sup>Massie, *Castles of Steel*, 61.

<sup>13</sup>*Ibid.*, 303.

the great deeds of the past.”<sup>14</sup> The Germans feared *Der Tag* even while they looked forward to it.

The burden of command weighed heavily on Jellicoe. He realized that he was, in Winston Churchill’s memorable phrase, “the only man on either side who could lose the war in an afternoon.”<sup>15</sup> Jellicoe himself summed up the situation—and his responsibility—in equally portentous terms: “Our fleet was the one and only factor that was vital to the existence of the empire.”<sup>16</sup> If the fleet was defeated, Churchill believed, “starvation and invasion would have descended upon the British people. Ruin utter and final would have overwhelmed the Allied cause.”<sup>17</sup>

Ranging out ahead of that fleet was a separate force of battle cruisers, the Battle Cruiser Fleet, commanded by Vice Admiral Sir David Beatty. He had risen through the ranks with exceptional swiftness, and with his rakishly tilted cap and his nonregulation uniform, he personified the word *dashing*. Beatty differed from most Royal Navy admirals in fostering a sense of initiative among his subordinate officers: he expected that in the fog of battle they would understand his overall intentions and would act on their own to take advantage of any opportunities that arose.

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<sup>14</sup>John Keegan, *The Price of Admiralty: The Evolution of Naval Warfare* (New York: Viking, 1988), 112.

<sup>15</sup>Winston Churchill, *The World Crisis*, Vol. III (New York: Charles Scribner’s Sons, 1955), 106.

<sup>16</sup>Steel and Hart, *Jutland 1916*, 31.

<sup>17</sup>Churchill, *The World Crisis*, 103.

In contrast, Jellicoe was what would today be called a micromanager. A typical product of the Victorian navy, he sought above all to impose order on the chaos of battle, and some historians have tended to disparage him for this:

Jellicoe's greatest shortcoming was his inflexibility. He had drawn up the Grand Fleet Battle orders—seventy closely spaced pages of orders and many more pages of detailed instructions—a document written from a decidedly defensive angle, especially when it came to the use of underwater weapons. The GFBOs lacked emphasis on offensive tactics, except for the big-gun, line-of-battle approach. Apparently, Jellicoe did not ask himself why Scheer should fall in with his ideas of how to fight a fleet action. There was very little in the GFBOs about what to do if the enemy refused to conform to his tactics, or how to force battle on an unwilling foe.<sup>18</sup>

In fairness to Jellicoe, his principal weapon, the dreadnought, had been designed solely for the big-gun, line-of-battle approach, and tactical flexibility was not even a secondary consideration. Battleships were supposed to line up and shoot at other similarly arrayed battleships. That was how naval warfare had been waged since the age of sail, and few expected to see any major changes in the way wars were fought. The mighty dreadnoughts were bred primarily to deal out a maximum of firepower against similar vessels and to withstand the effects of comparable firepower in set-piece battles. They were designed for a certain almost ritualized form of combat and were not well

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<sup>18</sup>Yates, *Flawed Victory*, 228.

suiting to other ways of fighting. Before the end of the war, though, new weapons would begin to challenge the battleships' primacy.

The German admirals who would face Jellicoe and Beatty at Jutland did not present the sharp contrast that the two British officers did. Reinhard Scheer, the commander of the High Seas Fleet, was "known for strict discipline and popularly called 'the man with the iron mask.'"<sup>19</sup> Behind that mask was an aggressive spirit: Scheer "persistently pressed for the High Seas Fleet to take the offensive: he believed that German ships were superior to those of the Royal Navy and that German officers and men were the equals of the British."<sup>20</sup> To his frustration, he was held in check by the Kaiser's unwillingness to hazard his precious dreadnoughts in battle.

A similarly aggressive spirit animated Vice Admiral Franz Hipper, the commander of the High Seas Fleet's battle cruiser squadron, who led several raids to bombard English coastal cities in order to draw British forces out in pursuit of his squadron. As befits a battle cruiser commander, "he was a man of action, vigorous and impulsive, with the spirit of a privateer."<sup>21</sup> In the judgment of one historian, he "was the only one of the four leaders to come out of Jutland with his reputation unblemished. Hipper is surely the greatest war admiral the German navy has ever produced."<sup>22</sup>

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<sup>19</sup>Herwig, *"Luxury" Fleet*, 139.

<sup>20</sup>Tarrant, *Jutland, the German Perspective*, 44.

<sup>21</sup>Yates, *Flawed Cutlass*, 242.

<sup>22</sup>*Ibid.*, 243.

While Hipper's and Beatty's battle cruisers probed and patrolled, Scheer's and Jellicoe's battle fleets impatiently awaited a chance to confront the enemy. That chance came near the end of May 1916.

At midnight on May 30, Hipper's battle cruisers emerged from harbor to raid enemy shipping and thus entice Beatty's battle cruisers out in response. Hipper was to make sure that observers in neutral Scandinavian countries spotted his squadron so that they could report its presence to the British.<sup>23</sup> Close behind came Scheer's High Seas Fleet. Acutely aware that he was outnumbered, Scheer "hoped nevertheless to come off the better by entangling the Grand Fleet with a U-boat line he had deployed off the British bases and by inflicting losses on ships and squadrons temporarily separated from the main body."<sup>24</sup> (In the event, though, the U-boats and minefields would play no part in the forthcoming battle.)

The British concluded from monitoring German radio traffic that the High Seas Fleet was probably about to venture forth into the North Sea. They did not, however, ascertain the exact details of Scheer's sortie, and because of an Admiralty staff officer's failure to ask his code breakers the right questions, did not actually learn that the High Seas Fleet was out until Beatty spotted it on the horizon. The result was that Jellicoe came to discount the intelligence that the Admiralty had gleaned from German radio traffic.

Preceded by battle cruisers—and by hosts of smaller supporting ships—the two main battle fleets steamed unknowingly toward each other,

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<sup>23</sup>Ibid., 118.

<sup>24</sup>Keegan, *The Price of Admiralty*, 122.

the Germans hoping to overwhelm Beatty's battle cruisers and the British hoping that Beatty's battle cruisers would lead the High Seas Fleet into the arms of the Grand Fleet.

Early in the afternoon of May 31, advanced elements of the two battle cruiser forces made contact with each other. The British steered toward the German battle cruisers, which promptly reversed course and led the British toward the approaching High Seas Fleet. Beatty maneuvered to cut off the German battle cruisers, but one crucial element of his fleet, the 5th Battle Squadron, did not receive a flag signal ordering it to change course.<sup>25</sup> (Beatty's force of battle cruisers was augmented by the four fast battleships of the 5th Battle Squadron, and Jellicoe's Grand Fleet included three battle cruisers.) Instead of following Beatty, the commander of the battleship squadron, Rear Admiral Hugh Evan-Thomas, relying on the assumption that he was not supposed to alter his course until directly ordered to do so by Beatty, kept going in his original direction. It would be several minutes, and several miles, before Evan-Thomas realized that he was supposed to follow Beatty even though he had received no order to do so.

This was only the first of the signaling mishaps that dogged the British forces at Jutland, and it highlighted one of the previously underappreciated drawbacks of the dreadnought weapon system: fleets of these ships, the last word in technology, had to be controlled and maneuvered by the age-old means of signal flags or by Morse code messages transmitted by flashing lights. Modern warships had to rely on forms of communication that would

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<sup>25</sup>Yates, *Flawed Victory*, 128.

have been familiar to Horatio Nelson. Such signals could be obscured by smoke from engines and gunfire, had to be repeated by ships in lines several miles long, and, in the case of flag signals, could even be foiled by adverse winds and darkness. Radio was not a viable alternative because radio messages had to be coded, transmitted, and decoded at the receiving end; the unavoidable time lag between transmission and reception meant that radio could not be used to maneuver fleets. It was as if the brains that directed these behemoths could not keep up with their powerful bodies. In the case of the dreadnought, what military experts refer to as command, control, and communications proved to be inadequate when it was tested in combat. This was a problem that neither side had anticipated before the war.<sup>26</sup>

Though guided by a deficient command, control, and communications system, Evan-Thomas's four fast battleships—on temporary assignment to Beatty's battle cruiser force—represented the cutting edge of dreadnought design. First, these superdreadnoughts of the *Queen Elizabeth* class were armed with 15-inch guns, at that time the most powerful naval weapons in the world. Next, and more important, they were the first major warships to be powered by oil instead of coal. Oil power gave them a top speed that rivaled the speed of the battle cruisers and improved endurance by 40 percent.<sup>27</sup> Oil, however, is not abundant in the British Isles, as coal is, and the Royal Navy had to look overseas for a source of oil. To obtain it, the British government bought a

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<sup>26</sup>Ibid., 43.

<sup>27</sup>Keegan, *The Price of Admiralty*, 119-120.

controlling interest in the Anglo-Persian Oil Company, “a stroke which has been compared to Disraeli’s purchase of Suez Canal shares in the previous century.”<sup>28</sup> With the introduction of the *Queen Elizabeth* class, oil, already in widespread use in civilian life, such as with automobiles, became a vital defense commodity. Nations that deployed dreadnoughts had to look to other, faraway nations to supply a product needed to make war. The repercussions of this development can still be felt today.

The Germans were the first to open fire—at a range of slightly more than nine miles.<sup>29</sup> Almost immediately, one of Beatty’s ships, the battle cruiser *Indefatigable*, was hit by a German salvo that penetrated its one-inch deck armor and detonated in one of its magazines. The ship exploded in a gigantic burst of smoke and flame, sinking immediately. Of a crew of 1,019, only two men survived.<sup>30</sup>

This was the first indication that the very concept of the battle cruiser might be inherently flawed—that these beautiful ships were just not protected well enough to survive in combat—but it would not be the last: about an hour after the *Indefatigable* sank, the battle cruiser *Queen Mary* took several hits and blew up in similar fashion. Of her crew of 1,275, only 19 men survived.<sup>31</sup>

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<sup>28</sup>Padfield, *The Great Naval Race*, 271.

<sup>29</sup>Yates, *Flawed Victory*, 133.

<sup>30</sup>*Ibid.*, 136.

<sup>31</sup>*Ibid.*, 138.

The realization that two of his ships had just been sunk in spectacular explosions drew from Beatty an observation that is justly famous as an example of British phlegm: turning to his flag captain, Beatty said, "There seems to be something wrong with our bloody ships to-day."<sup>32</sup> There was indeed.

With both sides firing as fast as they could, Beatty continued to pursue Hipper's apparently retreating battle cruisers until his lookouts suddenly glimpsed the High Seas Fleet emerging from the mist, headed at high speed in his direction. He immediately reversed course and headed for the approaching Grand Fleet, which was well out of Hipper's and Scheer's sight; he also signaled Jellicoe by radio that the German battle fleet was out. Beatty was playing his intended role as bait for the High Seas Fleet, but at this point the Germans still believed that their trap was working and that they were pursuing an isolated force of British battle cruisers. They were wrong, however; they were rapidly heading toward the waiting jaws of the Grand Fleet.

For his part, Jellicoe was faced with a crucial decision regarding his fleet's formation. He had to deploy his ships from several parallel columns, the formation ordinarily used for cruising, into a line of battle, with one ship following another, a formation in which all of his ships could fire broadsides at the enemy at the same time. He lacked the precise information needed to correctly deploy into a line of battle, however, because Beatty had not kept him properly informed about the German battle fleet's course. If Jellicoe

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<sup>32</sup>Marder, *From the Dreadnought to Scapa Flow*, Vol. III, 60.

decided correctly how to maneuver into line, he would be able to cross the enemy's T, bringing all of his guns to bear on a line of enemy ships steaming in a direction perpendicular to his own that would be able to return fire with only a few guns. If Jellicoe did not decide correctly, however, the enemy might be able to cross his T. Jellicoe made the right decision, deploying on the port wing, in nautical parlance, and dispatching his three battle cruisers to go to Beatty's aid at once (the battle cruisers were of course faster than his battleships). A High Seas Fleet in line-of-battle formation soon found itself unexpectedly confronted with the might of the entire Grand Fleet.

While the two main battle fleets began shooting at each other, the two battle cruiser forces continued to exchange fire. Suddenly a German salvo hit the *Invincible*, one of the battle cruisers that Jellicoe had sent Beatty and the first ship of her type to enter service. Like the *Indefatigable* and the *Queen Mary* before her, the *Invincible* exploded in a pillar of flames and smoke and immediately sank. Of a crew of 1,032, only six survived.<sup>33</sup>

The German ships were taking a beating from the British guns as well, but their heavier armor and more thorough compartmentation were proving their worth in combat. Though many German battle cruisers were badly damaged, they continued to float and fight. Only one of them, the *Lützow*, Hipper's flagship, would eventually sink, but only after withstanding a massive amount of punishment at British hands.

Under heavy fire from Jellicoe's guns and under orders not to try to slug it out with the Grand Fleet, Scheer had no option but to retreat, and

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<sup>33</sup>Yates, *Flawed Victory*, 163.

immediately reversed course in a complicated maneuver that involved nearly simultaneous U turns by all of the dreadnoughts of his fleet. Scheer was aided in his disappearing act by the prevailing haze in the North Sea and a smoke screen, but for some reason that he was never able to explain adequately, he soon reversed course again, heading once more toward the enemy. The pounding that he received from the Grand Fleet rapidly convinced him that he had to retreat, and he promptly made another U turn, using his battle cruisers and his torpedo boats to cover his withdrawal.<sup>34</sup>

Fearing German torpedoes far more than he feared German guns, Jellicoe turned his fleet away from Scheer's in order to dodge the torpedoes launched at his ships. He has been castigated for taking this course instead of pursuing and overwhelming the High Seas Fleet, but Jellicoe was doing just what he had told the Admiralty he planned to do in battle. In a memorandum spelling out his intentions long before the confrontation, he said, "If the enemy turned away from us, I should assume the intention was to lead us over mines and submarines, and decline to be drawn."<sup>35</sup> Jellicoe appreciated the fact that his dreadnoughts, as powerful as they were, were highly vulnerable to mines and torpedoes; ships costing millions of pounds could readily be sunk by these inexpensive weapons. His superiors had approved this course of action, but it gave Scheer and Hipper an opportunity to get away and they disappeared into the haze of the North Sea. For both sides, simply seeing the enemy was proving to be one of the greatest difficulties: as one historian

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<sup>34</sup>Tarrant, *Jutland: The German Perspective*, 165.

<sup>35</sup>Yates, *Flawed Victory*, 65.

concluded, “For much of the battle lack of visibility had a more dominant influence than any of the Admirals.”<sup>36</sup>

The British fleet searched vainly for the German fleet as night slowly began to fall. Both sides were anxious to avoid the confusion and uncertainty of a night battle, and the British stopped searching and resumed cruising formation, hoping to pick up the Germans’ trail in the morning.

Night gave some respite to the crews of the dreadnoughts, but smaller ships soon found themselves in an inferno. As the two fleets brushed by each other in the darkness, cruisers and destroyers and other supporting warships suddenly came face to face with dreadnoughts as well as with their peers, enemies suddenly looming out of the darkness. All of the remaining dreadnoughts—on both sides—survived the night, but many other ships, sometimes with their entire crews, failed to make it through the fitful chaos of the night action.

The following day, the British resumed searching for the Germans, but to no avail. A badly damaged High Seas Fleet succeeded in reaching harbor without engaging the Grand Fleet again. Only one German dreadnought, the battle cruiser *Lützow*, had succumbed to enemy fire, but many of the High Seas Fleet’s dreadnoughts, particularly the battle cruisers, were so severely damaged that they required months in dry dock before they were fit for action again. Smaller vessels had been lost by the score, and a total of 2,551 Germans had been killed in the fighting.<sup>37</sup> Nevertheless, a jubilant Kaiser declared that

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<sup>36</sup>Campbell, *Jutland: An Analysis of the Fighting*, 337.

<sup>37</sup>*Ibid.*

his prized High Seas Fleet had won the battle, crowing that “the spell of Trafalgar has been broken” and announcing that “the English were beaten.”<sup>38</sup> He did not, however, mention the fact that his fleet had retreated at the first opportunity and was in no way ready to contend against the Grand Fleet again.

On the British side, 6,094 men had died<sup>39</sup> — more than half of that total resulting from the explosion of the three battle cruisers. Beatty’s and Jellicoe’s cruisers and destroyers had taken many fatal casualties as well. Nevertheless, the British declared that they had won the battle, pointing to the fact that they had chased the enemy from the field and that their fleet was ready to fight again. The British public, for the most part, did not see it that way: everyone had expected a victory on the order of Trafalgar and nothing less would do. In their eyes, the battle of Jutland was a disappointing anticlimax that had cost the Royal Navy dearly.

The net result of the battle was that Britannia continued to rule the waves. The blockade of Germany remained in effect. The Germans had accomplished none of the ambitions that had animated their construction of a dreadnought fleet, despite having inflicted more damage on the British than the British inflicted on them. They were still stymied by the British dreadnoughts. As an American correspondent put it, “The German fleet has

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<sup>38</sup>Tarrant, *Jutland: The German Perspective*, 247.

<sup>39</sup>Campbell, *Jutland: An Analysis of the Fighting*, 337.

assaulted its jailor, but it is still in jail.”<sup>40</sup> The High Seas Fleet would spend most of the rest of the war at anchor in harbor, venturing forth only briefly and tentatively three more times, heading for home at the first hint that the Grand Fleet might be at sea.<sup>41</sup>

The senior German commanders were under no illusions about their predicament. Scheer bluntly reported to the Kaiser that Germany could not realistically hope to win the war at sea:

There can be no doubt that even the successful outcome of a Fleet action in this war will not *force* England to make peace. The disadvantages of our military-geographical position in relation to that of the British Isles, and the enemy’s great material superiority, cannot be compensated by our Fleet to the extent where we shall be able to overcome the blockade or the British Isles themselves.<sup>42</sup>

Scheer went on to advise the Kaiser that only the resumption of unrestricted submarine warfare, in which German U-boats would sink without warning any shipping, British or neutral, that approached the British Isles, could turn the tide in Germany’s favor. Unable to prevail on the surface of the sea, the Imperial German Navy turned to unrestricted submarine warfare, a mode of fighting that many seamen and civilians considered barbaric. (A British admiral described submarines as “underhand, unfair, and damned

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<sup>40</sup>Yates, *Flawed Victory*, 212.

<sup>41</sup>Tarrant, *Jutland: The German Perspective*, 251.

<sup>42</sup>Marder, *From the Dreadnought to Scapa Flow*, 206.

unEnglish.”<sup>43</sup>) American outrage at Germany’s course of action soon spurred the United States into joining the war on the Allied side, and America’s entrance into the war was a major factor in propelling the Allies toward victory. The fleets of dreadnoughts had after all had an effect on the outcome of the war, even if it was not the effect that everyone had expected.

Now that there was the evidence of actual combat to be considered, all hands began assessing the performance of the dreadnoughts. The foremost issue was the fact that three British battle cruisers had exploded and immediately gone to the bottom. The most obvious cause for this result was the scanty armor protection of the British battle cruisers: their thin skin would not keep out large-caliber shells, and they were deemed to be no more than eggshells armed with hammers. In the eyes of many, flawed design and the doctrine that underlay that design were responsible for the explosions that killed more than 3,000 men. In contrast, the far sturdier and better protected German battle cruisers withstood much greater amounts of damage.

The inadequate armor of the battle cruisers was by no means the whole story, however. Historians have since come to conclude that faulty ammunition-handling practices bear the primary responsibility for the death of the British battle cruisers. The battle cruisers lacked a suitable range for practicing gunnery, and as a result resorted to firing quickly and copiously to compensate for their inaccuracy. In order to keep up a rapid rate of fire, the battle cruisers maintained a stock of ammunition 50 percent greater than the

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<sup>43</sup>Herwig, *“Luxury” Fleet*, 86.

amount they were designed to carry.<sup>44</sup> This meant that there was more to blow up than there should have been. Even more important, the gun crews kept open some of the flash-tight doors between the magazines, where the ammunition was stored, and the guns. Though this would speed up the rate of fire, it would also facilitate the passage of fire caused by an exploding enemy shell from a turret to a magazine. To make matters worse, the gun crews stored ready supplies of ammunition at intermediate points between magazine and gun, against regulations. On top of all this, the cordite propellant the British used in their guns tended to explode when exposed to flame instead of simply burning, as German charges did. As one scholar put it, "If the British ships had had German charges, it is very unlikely that they would have blown up."<sup>45</sup> He added that if the German battle cruisers had used British propellant, at least three of them would probably have exploded just as the British ships did.<sup>46</sup> It is also worthy of note that several British battle cruisers did not explode and sink even though they each took more than a dozen large-caliber hits.<sup>47</sup>

Besides having a more stable propellant than the British did, the Germans also took more thorough antifeash precautions because a turret fire

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<sup>44</sup>Nicholas A. Lambert, "'Our Bloody Ships' or 'Our Bloody System'? Jutland and the Loss of the Battle Cruisers, 1916," *Journal of Military History*, Vol. 62, No. 1 (Jan. 1998), 37.

<sup>45</sup> Campbell, *Jutland: An Analysis of the Fighting*, 368.

<sup>46</sup>*Ibid.*, 380.

<sup>47</sup>Spector, *At War at Sea*. 93–94.

in a previous encounter had alerted them to the danger of a flash from a turret reaching a magazine.<sup>48</sup>

Jutland also proved that Jellicoe's worries about the destructive power of British shells were well founded. The nose caps of the shells were too brittle and often broke up on impact instead of penetrating the target's armor, and the delayed action fuses, designed to detonate the shells after they had pierced the armor, were faulty, bursting prematurely on the armor's surface.<sup>49</sup> After the war, Hipper would say that "it was only the poor quality of their bursting charges that saved us from disaster."<sup>50</sup> Also after the war, a British ordnance expert would estimate that between 30 and 70 percent of British shells fired at Jutland were duds.<sup>51</sup>

If much of the ammunition used at Jutland proved to be defective, the means of delivering that ammunition to the enemy proved inadequate as well: it is difficult to calculate with precision how accurate the big guns were at Jutland, but estimates of the percentages of hits range between a little more than 2 and approximately 3 percent.<sup>52</sup> Hitting a moving ship several miles away from a ship that was also moving was turning out to be as intractable a problem as it ever had been. Despite the improvements that had been made,

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<sup>48</sup>Keegan, *The Price of Admiralty*, 118.

<sup>49</sup>Yates, *Flawed Victory*, 124.

<sup>50</sup>Massie, *Castles of Steel*, 671.

<sup>51</sup>Tarrant, *Jutland: The German Perspective*, 98.

<sup>52</sup>For a painstaking discussion of this issue, see Campbell, *Jutland: An Analysis of the Fighting*, 353–356.

fire control still lagged behind other aspects of dreadnought technology. As one historian put it, “Even if the enemy’s initial range, speed, and course were known exactly — which they usually weren’t — the problem of obtaining accurate firing solutions, to set the guns for the next salvo, was really beyond the technology of the day.”<sup>53</sup>

As we have seen, adequate command, control, and communications was also beyond the technology of the day. Signal flags and flashing lights could not be relied on to guide fleets of dreadnoughts in combat, just as fire control was unable to train the big guns well enough to hit their targets consistently under combat conditions. The warships could not, in effect, see or communicate or shoot as well as they needed to in order to carry out their mission. In the words of one historian, “The Dreadnoughts’ powerful armaments had exceeded their sensory apparatus; they had groped about the field like half-blind monsters, lashing out whenever they saw an opponent briefly through the mist, drawing blood and occasionally killing, but seldom knowing the true position — consequently unable to take advantage of it.”<sup>54</sup> While some of the technologies associated with the dreadnoughts had advanced enough to be effective, other, vital technologies had not, and in a complex system such as the dreadnought, inadequacy in one aspect could result in poor performance or even overall failure.

In the aftermath of Jutland, some began to question whether dreadnoughts were worth their cost to the powers that had sacrificed so much

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<sup>53</sup>Yates, *Flawed Cutlass*, 44.

<sup>54</sup>Padfield, *The Battleship Era*, 243–244.

to build and deploy them. Apparently of limited effectiveness in combat, frightfully expensive and complicated, sometimes obsolescent almost as soon as they were launched, the giant warships were themselves vulnerable to attack by smaller, cheaper, and less complex weapons, such as torpedoes. Referring to the Battle of Jutland shortly after it took place, a German admiral concluded that “the result incidentally strengthens my conviction that the days of super-dreadnoughts are numbered. It is senseless to build 30,000-ton ships which cannot defend themselves against a torpedo attack.”<sup>55</sup>

After the war ended, naval experts would take note of the fact that the battle fleets of both sides had spent most of their time at anchor in their respective home ports, awaiting a decisive confrontation that never came, and dreadnoughts would next find themselves under attack by a new enemy—a series of naval arms limitation conferences that would sink more dreadnoughts than gunfire and torpedoes ever had.

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<sup>55</sup>Kennedy, *The Rise and Fall of British Naval Mastery*, 247.

## CHAPTER 4: THE BACKBONE OF THE FLEET

Europe was exhausted. Millions had been killed or wounded in the World War, and billions of pounds, marks, francs, and dollars had been spent, leaving the former combatants—victors and vanquished alike—nursing their wounds and deep in debt. Above all, everyone was appalled by the thought of another general war. Nearly all governments did not want, and for the most part could not afford, a new dreadnought construction race, but such a race was nevertheless getting under way. This time, though, the race would not last long because the participants would act to curtail it. They would even go so far as to scrap battleships already in commission in a trailblazing program of arms reduction and limitation.

At the same time, two powers intent on expanding their spheres of influence and advancing their commercial interests, the United States and Japan, were entering the contest, and Germany, limited by the terms of the Treaty of Versailles to the possession of eight obsolete battleships,<sup>1</sup> was no longer a participant, its battle fleet resting at the bottom of Scapa Flow, the British Grand Fleet's wartime anchorage.

While nations prepared to spend millions on naval construction, doubts about the dreadnought's usefulness and survivability in combat began to spread. Some of these doubts can be attributed to the relatively minor role that the dreadnoughts had played in the war: they had seen little action, spending most of their time training and waiting for a decisive grand confrontation that never came. In the one major battle that they fought, they did no more than

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<sup>1</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 285.

affirm the status quo. In short they had not proved in combat that they were worth their immense cost. In the eyes of many, the dreadnought was turning out to be, in the words of one historian, a “tactical underachiever.”<sup>2</sup>

Nevertheless, the big ships would have their devout adherents right up to the end.

Twelve dreadnoughts had been sunk during the war: two had struck mines, one had succumbed to a torpedo strike, four had been lost in combat at Jutland, one had been scuttled, and four had simply blown up, victims of presumably accidental internal explosions.<sup>3</sup> Apparently, the big ships could be as dangerous to their own crews as they were to the enemy. The fate of the 12 dreadnoughts lost in the war certainly gave ammunition to the skeptical.

More modern, less expensive armaments began threatening to take the dreadnought’s place as the premier weapon of naval warfare. The first of these, the submarine, was already widely recognized as a menace: during the war, admirals on both sides had worried constantly about submarine attacks, and Germany’s U-boats had almost brought Britain to its knees. The second weapon system, the airplane, could drop bombs or launch torpedoes, striking dreadnoughts where they were their most vulnerable, from above or below. Also, aircraft were developing the ability to attack from hundreds of miles away, far outranging the big guns of the dreadnought. The flimsy wood-and-fabric contraptions of the prewar days were rapidly turning into powerful,

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<sup>2</sup>Robert O’Connell, *Sacred Vessels: The Cult of the Battleship and the Rise of the U.S. Navy* (Boulder, Colo.: Westview Press, 1991), 3.

<sup>3</sup>Willmott, *Battleship*, 258.

sturdy weapons, and oceangoing vessels designed specifically to carry aircraft began joining the fleets of the world's major navies. During the interwar period, proponents of aircraft and submarines would vie with the supporters of battleships for scarce resources. Advocates of all three weapons would have to contend with reduced budgets and the widespread desire for arms limitation, which threatened the construction and deployment of all naval weapons.

As noted earlier, Germany, one of the two principals in the prewar dreadnought race, was no longer a contender. In 1918, as a condition of the Armistice, the Allies had compelled Germany to intern its High Seas Fleet at Scapa Flow pending a decision about the disposition of the German fleet. As the foremost historian of the German navy noted, "Never before in the annals of naval history had such an armada capitulated so ignominiously."<sup>4</sup> The High Seas Fleet rusted at anchor for eight months, until the Armistice was just about to expire, and then, rather than surrender their ships, the German crews scuttled them. Fifteen dreadnoughts, the culmination of Tirpitz's labors and the Kaiser's aspirations, sank to the bottom.<sup>5</sup> At the Versailles peace conference, the Allies saw to it that Germany would not be allowed to replace the sunken ships; there would be no second High Seas Fleet to contend with Britain's Grand Fleet for mastery at sea.

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<sup>4</sup>Herwig, *"Luxury" Fleet*, 254.

<sup>5</sup>*Ibid.*, 256. Also, some of Germany's dreadnoughts were parceled out to the Allies as reparations.

Though the British possessed more dreadnoughts at than anyone else at the end of the war, many of their ships, including HMS *Dreadnought*, were no longer the last word in technology, having become increasingly obsolescent in comparison with the newer warships of other countries.<sup>6</sup> The price for constructing each ship was going up too, and the cost to build a battleship in the 1920s was more than three times what it had been when the *Dreadnought* was launched.<sup>7</sup> Above all, less money was available. The enormous expenditures of the First World War and a shrinking postwar economic base made for increasingly stringent budgets. Where Britain had allocated £356 million for its navy in 1918–1919, by 1923 the corresponding figure had shrunk to £52 million. Britain simply could not afford to compete in a naval construction race, and its margin of superiority in numbers began to diminish. It was not long before the British realized that the best they could hope for would be parity with the United States, and this benchmark became official policy in 1921.<sup>8</sup> A little more than a decade later, Britain would slip below even this standard.<sup>9</sup>

Money was far less of a problem for the United States, which had passed Britain in industrial output and was rapidly becoming a naval rival of the empire. In 1916, the United States had embarked on a policy of building a

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<sup>6</sup>Willmott, *Battleship*, 123.

<sup>7</sup>Hough, *Dreadnought*, 180.

<sup>8</sup>Stephen Roskill, *Naval Policy Between the Wars* (New York: Walker and Company, 1968), vol I, 21.

<sup>9</sup>Kennedy, *The Rise and Fall of British Naval Mastery*, 285.

navy that would be, as American navalists put it, “second to none.”<sup>10</sup> Congress authorized the construction of 10 battleships and six battle cruisers, but these were not built because America’s entrance into the war shifted priorities to the construction of other types of warships and cargo vessels.<sup>11</sup> (As we will see, this pattern would be repeated when war came again: once the conflict got under way, naval commanders realized that they did not need dreadnoughts as much as they needed other types of ships.)

In 1918, shortly before the end of the war, President Woodrow Wilson, responding to pressure from the U.S. Navy, endorsed a proposal to double the size of the 1916 authorization, seeking to construct 20 battleships and 12 battle cruisers.<sup>12</sup> Wilson was not planning to stage an epic sea battle, though: he intended to use the prospect of such an enormous armada as a diplomatic bargaining chip, leverage in dealing with other countries,<sup>13</sup> just as Tirpitz had done before the war. As we will see, however, Wilson’s fleet of dreadnoughts would never materialize.

Like the United States, Japan began flexing its naval muscles in the aftermath of the war. The island empire sought to become a great power, just like the United States and Britain, and a powerful navy was a requirement for

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<sup>10</sup>Willmott, *Battleship*, 104.

<sup>11</sup>Christopher Hall, *Britain, America, and Arms Control, 1921–37* (London: Macmillan Press, 1987), 11.

<sup>12</sup>O’Connell, *Sacred Vessels*, 234.

<sup>13</sup>*Ibid.*

achieving this goal.<sup>14</sup> At the end of the war, Japan had the third largest navy in the world<sup>15</sup> and the fourth largest force of dreadnoughts.<sup>16</sup> Moreover, at that time, the Japanese dreadnoughts were “probably the best in the world,” according to one historian.<sup>17</sup> Like Britain and Germany before the war, Japan was willing to commit a large share of its resources to military preparedness: “Indeed nearly half of the \$600 million budget approved by the imperial cabinet in 1919 was devoted to armaments.”<sup>18</sup> Dreadnoughts were of course the most expensive items.

The Japanese dreadnought-building program, started before the war but deferred until its end, was known as the 8:8:8 program. It called for eight battleships and eight battle cruisers, none more than eight years old.<sup>19</sup> The prospective enemy was the United States: “The Japanese assumed that war, if it came, would be against the U.S. Navy, and the war would be decided by a single great battle, like Tsushima.”<sup>20</sup>

While the Japanese prepared for a second Tsushima, the dreadnought’s detractors increased their efforts to do away with the big ships. It is not surprising that among naval officers, aviators and submariners clamored the

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<sup>14</sup>Emily Goldman, *Sunken Treaties: Naval Arms Control between the Wars* (University Park, Pa.: Pennsylvania State University Press, 1994), 251.

<sup>15</sup>O’Connell, *Sacred Vessels*, 244.

<sup>16</sup>Willmott, *Battleship*, 105.

<sup>17</sup>*Ibid.*, 106

<sup>18</sup>O’Connell, *Sacred Vessels*, 245.

<sup>19</sup>*Ibid.*

<sup>20</sup>Friedman, *Naval Firepower*, 253.

loudest that battleships were no longer the monarchs of battle. They maintained that dreadnoughts were little more than potential victims of their weapons, but these officers were not the only ones to proclaim that the dreadnought had had its day. “In Britain, first Percy Scott and then John Arbuthnot Fisher—the two men most responsible for the HMS Dreadnought—declared the battleship finished as a major naval combatant.”<sup>21</sup> They and like-minded progressives in the major navies of the world began contending against their more conservative brethren, who continued to assert, as one American admiral put it, that “the battleship is the backbone of the Fleet.”<sup>22</sup>

The issue of the dreadnought’s capabilities and vulnerabilities was debated in service journals and tested countless times in war games. The controversy even spilled over into broader public forums. For example, in one of a series of letters to the London *Times* in 1920, Percy Scott summarized the antidreadnought position: “Let us not forget that the submarine and aeroplane have revolutionized naval warfare; that battleships on the Ocean are in great danger; that when not on the Ocean they must be in a hermetically sealed harbour; that you cannot hide a fleet from the eye of an aeroplane; that enemy submarines will come to our coasts and destroy everything.”<sup>23</sup>

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<sup>21</sup>O’Connell, *Sacred Vessels*, 250

<sup>22</sup>*Ibid.*, 286.

<sup>23</sup>Padfield, *The Battleship Era*, 253.

The most public—and dramatic—demonstration of the dreadnought’s vulnerability came a year later, when an American aviator, Brigadier General William Mitchell, claimed in testimony before Congress that his aircraft could sink a battleship with aerial bombs. A test was arranged. The U.S. Navy anchored the German dreadnought *Ostfriesland*, ceded to the United States as part of Germany’s war reparations, off the Virginia coast, and Mitchell’s airmen dropped bombs of progressively increasing size on it. The sturdy ship survived 16 hits,<sup>24</sup> but succumbed when a series of one-ton bombs—each equivalent to 10 torpedoes exploding simultaneously in one place—detonated in the water next to it, creating what Mitchell called a “water hammer” and rupturing the *Ostfriesland*’s hull.<sup>25</sup> Chagrined that such an embodiment of naval power could be overcome by puny airplanes, admirals wept openly as the German dreadnought slowly sank from sight.<sup>26</sup>

The battleship’s proponents claimed, with some justification, that the test had been unrealistic—for example, they pointed out that the *Ostfriesland* was stationary and not firing back at its assailants—but the spell had been broken. Now there was objective evidence that the dreadnought was all too mortal.

Responding to the threat posed by airplanes and submarines, the battleship’s adherents sought countermeasures that would defend against these new weapons. Naval architects increased the thickness of deck armor, to

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<sup>24</sup>Ibid., 255.

<sup>25</sup>O’Connell, *Sacred Vessels*, 257.

<sup>26</sup>Ibid., 259.

protect against aerial bombs, and designed underwater bulkheads to mitigate the destructive effect of torpedoes on dreadnoughts' hulls. The probattleship forces believed that they had history on their side: "time and again the large gunned ship had been pronounced dead by enthusiasts for torpedoes and small, swift craft, and each time it had simply grown larger, mounted longer range and more rapid-firing guns and drawing a host of lesser craft to its protection had continued to wield supreme power at sea."<sup>27</sup> Such efforts only drew the scorn of the battleship's detractors. As one forward-looking admiral put it, trying to update the dreadnought was like "attempting to resuscitate a dying gladiator by vainly adding to the thickness of his shield or to the length of his lance."<sup>28</sup>

Despite such ominous events as the sinking of the *Ostfriesland*, most major navies continued to operate under the assumptions that dreadnoughts were indeed still the backbone of the fleet and that a nation which wanted to possess a powerful navy had to deploy as many battleships as possible to achieve this aim. The strength of this conviction could be seen in the fact that "by 1921 Britain, Japan and the United States were committed to programmes which would have involved costs of £252,000,000 for just the required number of capital ships."<sup>29</sup> (The term "capital ship," which had become current during the naval scare of 1909,<sup>30</sup> comprised both battleships and battle cruisers.)

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<sup>27</sup>Padfield, *The Battleship Era*, 255.

<sup>28</sup>O'Connell, *Sacred Vessels*, 289.

<sup>29</sup>Willmott, *Battleship*, 120.

<sup>30</sup>Herwig, "*Luxury*" *Fleet*, 57.

Britain was struggling to maintain its parity with the United States, the United States was striving to stay at that level or even surpass Britain, and Japan was determined to achieve parity with the United States. Continuation of the naval construction race threatened to bankrupt the nations involved, and political pressure to stop building battleship mounted in every country. The race could not continue.

The British realized as early as 1919, during the Versailles peace conference, that they had to find a way out of the dreadnought dilemma, and Prime Minister Lloyd George began campaigning for a comprehensive naval agreement.<sup>31</sup> In the summer of 1921, his government approached the governments of the United States and Japan about the possibility of holding a conference to discuss the limitation of dreadnoughts.<sup>32</sup> He even let the Americans know that Britain would be willing to accept parity with the United States.<sup>33</sup>

By that time, the movement in the United States to stop building battleships was already well under way, and in 1920 the House of Representatives cut naval appropriations for the next year in half, making Wilson's plan to greatly expand the fleet impossible.<sup>34</sup> Impelled by the desire for economy—and isolationist sentiment as well—the U.S. government

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<sup>31</sup> O'Connell, *Sacred Vessels*, 237.

<sup>32</sup> Hall, *Britain, America, and Arms Control, 1921–37*, 26.

<sup>33</sup> Padfield, *The Battleship Era*, 251.

<sup>34</sup> *Ibid.*

proved to be receptive to the British overtures, so receptive in fact that President Warren Harding, who had succeeded Wilson, formally proposed a naval arms limitation conference, to be held in Washington in November 1921. (The conference was also intended to deal with geopolitical issues in Asia and the Western and Central Pacific that were related to naval questions, but most of these are beyond the scope of this work.)

Economy and isolationism were not the only forces behind the American desire for a naval arms limitation conference, though. The threat posed by Japan's ambitious dreadnought-building program loomed large in the minds of the Americans: the growth of the Japanese navy had to be checked if the United States hoped to end the spiral of battleship construction.<sup>35</sup> Moreover, the Americans knew that if they took the lead in holding the conference, they would be able to influence the conference's outcome more than they would have if they had merely let someone else convoke the meeting. Altogether, seizing the initiative in convening the arms limitation talks was, in one historian's judgment, "one of the shrewdest acts of modern American diplomacy."<sup>36</sup>

Nine nations participated in the Washington conference, but we are concerned here only with the five major naval powers, all of whom had been allied against the Central Powers during the war: the United States, Britain, Japan, France, and Italy. (Belgium, China, the Netherlands, and Portugal also

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<sup>35</sup>Hough, *Dreadnought*, 176.

<sup>36</sup>*Ibid.*

attended the conference,<sup>37</sup> but these countries did not possess any dreadnoughts.<sup>38</sup>). At the end of the conference, the five major naval powers would sign an agreement on dreadnought limitation.

On the first day of the conference, Secretary of State Charles Evans Hughes, the head of the American delegation, wasted little time on preliminaries and succinctly presented four proposals that have been summarized in the following way:

first, that all capital ship building programmes, whether approved or projected, should be abandoned; secondly that capital ship strength should be further reduced by scrapping certain older ships; thirdly that the existing strength of the principal naval powers should in general be accepted as the standard of the relative strength they would retain; and, lastly, that capital ship tonnage should be regarded as the measure of naval strength, and a "proportionate allowance of auxiliary combatant craft prescribed."<sup>39</sup>

Hughes' first proposal, a moratorium on dreadnought construction, or a naval holiday, was intended to last for 10 years.<sup>40</sup> The ships that would be affected by this provision ranged all the way from ones that barely existed on paper to ones that were 80 percent complete.<sup>41</sup> In the opinion of many naval

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<sup>37</sup>Fanning, *Peace and Disarmament*, 7.

<sup>38</sup>This is according to Breyer, *Battleships and Battle Cruisers, 1905–1970*.

<sup>39</sup>Roskill, *Naval Policy Between the Wars*, 310–311.

<sup>40</sup>Hall, *Britain, America, and Arms Control, 1921–37*, 26.

<sup>41</sup>Roskill, *Naval Policy Between the Wars*, 311.

officers, it was bad enough that planned battleships would be canceled; the idea of actually destroying ships that were almost ready to enter service was anathema.

The moratorium on construction was not to be absolute, though. Nations would be allowed to replace ships more than 20 years old, but a stipulation was added to a subsequent treaty that the new dreadnoughts were not to displace more than 35,000 tons.<sup>42</sup> This latter provision was meant to halt the growth in the size of battleships that had contributed so greatly to the upward spiral in costs. There were also to be such things as limitations on gun caliber to stop the rapid escalation in gun power and other aspects that had characterized the previous development of the dreadnought.

The second proposal, that older battleships be scrapped, was less objectionable to naval officers. They realized that predreadnoughts and first-generation dreadnoughts would stand little chance if they came up against newer, more powerful ships, and they were willing to discard the old. When it came to warships, they could accept survival of the fittest, which usually meant survival of the newest.

Freezing naval strength at its current level may have sounded like a relatively straightforward—and generally acceptable—proposition, but translating this abstraction into material terms that all parties would agree to would prove to be complex and difficult. Simply counting the number of dreadnoughts on hand was clearly too crude a measure. Such factors as the age of ships, their speed, and the power of their armament had to be taken

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<sup>42</sup>Padfield, *The Battleship Era*, 263.

into account, since an old dreadnought armed with 12-inch guns was obviously not equivalent to a newer, faster ship armed with 16-inch guns.

There was little dispute about the last of Hughes' proposals, which rested on the assumption that dreadnoughts still ruled the sea and would continue to do so for the foreseeable future. Tonnage in such warships was thought to be the most reliable index of naval strength "because, as the American delegates noted, it provided the simplest way; gun caliber, age, speed, and armor were usually all related to tonnage. Moreover, battleship tonnage gave an indication of capacity in other ship categories."<sup>43</sup> In other words, a nation's naval power hinged upon its strength in dreadnoughts, and bigger was of course better. The delegates did briefly discuss naval aircraft and other classes of ships—for the most part without reaching any agreement—but they concentrated their attention on battleships and battle cruisers. They would deal with other types of warships in subsequent arms limitation conferences.

Altogether, Hughes called for scrapping or abandoning the construction of approximately two million tons of dreadnoughts.<sup>44</sup> He was proposing a giant step forward in arms control. "His speech marked a watershed in the history of the human species. For the first time a major political entity had offered a clear and specific proposal to limit what was

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<sup>43</sup>Richard W. Fanning, *Peace and Disarmament: Naval Rivalry and Arms Control 1922–1923* (Lexington, Ky.: University of Kentucky Press, 1995), 6.

<sup>44</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 71.

perceived to be a key weapon system. Many in the audience must have thought that a new day had arrived.”<sup>45</sup>

Before that new day could arrive, though, the delegates had much discussing and negotiating to do. Besides having to deal with a myriad of technical issues, the representatives of the various nations all sought to advance their respective countries’ claims that having a powerful navy was a particular necessity for them. For instance, the Americans pointed out that they had two oceans to defend, while the Japanese had only one. The British of course then noted that they had three oceans to deal with and that they, like the Japanese, depended more on imports than the relatively self-sufficient United States did. Everyone had compelling reasons for maintaining a powerful fleet of dreadnoughts.

At the same time, everyone had compelling reasons—primarily economic—for ending the dreadnought race: the British could no longer afford to compete with the Americans, and the Japanese realized that their country lacked the resources to win a building contest with either the British or the Americans.<sup>46</sup> Moreover, the delegates could not ignore the groundswell of antiwar opinion in their countries—everyone wanted peace and anything associated with militarism was considered odious.

In February of 1922, the five former allies signed an agreement that for the most part incorporated Hughes’ proposals. “No one was much pleased by

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<sup>45</sup>O’Connell, *Sacred Vessels*, 265.

<sup>46</sup>Hall, *Britain, America, and Arms Control, 1921–37*, 33.

the result except America. The Japanese thought they were being frustrated, the British demoted, the Italians and French insulted. But they signed.”<sup>47</sup> The treaty “established ratios in capital ships of 5-5-3-1.67-1.67 for the United States, Britain, Japan, France, and Italy.”<sup>48</sup> For every five tons of dreadnought that the United States possessed, Britain could have five and Japan could have three; France and Italy, concerned chiefly with the Mediterranean, would make do with their relatively small shares. To achieve these ratios, nations would scrap existing dreadnoughts and abstain from building new ones, simply replacing older battleships with more up-to-date ones limited in size and gun power.

The geopolitical issues under discussion, which were dealt with in a separate treaty, proved to be intertwined with the purely naval questions, as can be seen from the fact that the Japanese consented to accept the capital ship ratio proposed by the United States and Britain only in return for an agreement that the two Western powers would refrain from developing fortifications in some of their possessions in the Pacific, such as Hong Kong and Guam.<sup>49</sup> The Japanese would not, however, give up on their objective of achieving naval parity with the United States and Britain, and pursuit of this goal would ultimately spell the end of the attempt to limit naval armaments.

The five nations had indeed taken a giant step forward. As one historian put it, “the Washington naval conference was the first such gathering

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<sup>47</sup>Hough, *Dreadnought*, 176.

<sup>48</sup>Fanning, *Peace and Disarmament: Naval Rivalry and Arms Control 1922–1923*, 6–7.

<sup>49</sup>Hall, *Britain, America, and Arms Control, 1921–37*, 30.

to succeed in limiting a major weapon system . . . the proceedings at Washington can be said to have given birth to the first of the modern arms control treaties.”<sup>50</sup>

Before war broke out again there would be more naval arms limitation conferences, among them a meeting in London in 1930 that extended the capital ship holiday to 1936,<sup>51</sup> but none of them would be as sweeping in its results as the pioneering 1921 Washington conference, and none of them would be as effective in limiting the proliferation of what was seen as the mightiest naval weapon of the day. In the series of naval limitation agreements that started in 1921, arms control came to the most industrialized and technologically advanced Western powers, blazing the way for similar efforts that would take place decades later, even if they would occur only after the worst bloodbath that the world had yet seen.

It is an unfortunate fact that nations tend to abide by treaties only as long as it is in their self-interest to do so or as long as circumstances compel them to. The naval arms limitation pacts of the 1920s and early 1930s proved to be no exceptions to this truism. “By 1933–4, it had become clear that the high tide of disarmament was receding.”<sup>52</sup> Governments began to realize that they might need all the weapons they could get before long and that their

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<sup>50</sup>O’Connell, *Sacred Vessels*, 274.

<sup>51</sup>Hall, *Britain, America, and Arms Control, 1921–37*, 102.

<sup>52</sup>*Ibid.*, 143.

respective economies would benefit from the stimulus that rearmament could provide.

Japan was the most restive of the three major naval powers, and at the end of 1934, the Japanese announced their intention to abrogate the naval arms agreements.<sup>53</sup> A little over a year later, they walked out of another conference, again in London, and their withdrawal “marked the end of naval arms control.”<sup>54</sup> Even before the treaties expired, they had secretly begun work on a trio of enormous superbattleships that would rupture treaty limits,<sup>55</sup> ships so big—and powerful—that the United States would be unable to match them unless it built dreadnoughts too large to transit the Panama Canal.<sup>56</sup>

Although they were unaware that the Japanese were working on the most powerful battleships ever to take to the sea, the Americans began building dreadnoughts again once the naval treaties expired, and they would eventually go on to construct more new battleships and battle cruisers than the rest of the world combined.<sup>57</sup> In Germany, Italy, Japan, France, Britain, and the United States, the battleship, like some aging matinee idol intent on a comeback, slipped once again into its accustomed role as the most fearful

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<sup>53</sup>Ibid., 169.

<sup>54</sup>O’Connell, *Sacred Vessels*, 298–299.

<sup>55</sup>One of these vessels would be converted from a battleship into an aircraft carrier before commissioning.

<sup>56</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 359.

<sup>57</sup>Willmott, *Battleship*, 151.

individual expression of man's needs to intimidate his neighbors."<sup>58</sup>

Altogether, "by 1937 fifteen new Dreadnought battleships and battle cruisers were under construction."<sup>59</sup> Only two years later, those warships would be put to their final test in combat, when a world war even bigger than the first one broke out.

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<sup>58</sup>Richard Hough, *The Death of the Battleship: The Tragic Close of the Era of Sea Power* (New York: Macfadden-Bartell, 1965), 72.

<sup>59</sup>Hough, *Dreadnought*, 193.

## CHAPTER 5: THE END OF THE LINE

There would be no Trafalgar or Tsushima in the Second World War, and there would not even be a Jutland, but battleships would nevertheless perform much useful service in a variety of roles before they were retired from the fleets of the world. They would fight their peers and other warships of course, either singly or in small groups, but they would also find employment as convoy escorts and commerce raiders, as heavy artillery in support of amphibious assaults, and as bodyguards for aircraft carrier task forces, protecting them from aerial attack with streams of antiaircraft fire.<sup>1</sup> Battleships would even occasionally function as fleet oilers, replenishing the fuel supplies of other, smaller vessels from their capacious fuel tanks.<sup>2</sup> As always, battleships would stand as symbols of national power, even though it would become increasingly clear that they were no longer the backbone of the fleet.

In the course of the war, the doubts of prewar critics would be confirmed: the mighty warships would prove to be vulnerable to far less expensive but more plentiful weapons despite their tough armor and other defensive features. All too often, they would succumb to bombs and torpedoes—delivered by aircraft and submarines—as well as to gunfire from other warships. A few would even be sunk by frogmen piloting miniature submersibles. Altogether, more than 40 percent of the capital ships engaged in the war would be lost, either in combat or by scuttling to keep them out of

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<sup>1</sup>Hough, *Dreadnought*, 196.

<sup>2</sup>O'Connell, *Sacred Vessels*, 317.

enemy hands.<sup>3</sup> It was becoming increasingly clear that the day of the dreadnought was coming to a close in spite of the fact that navies were finding additional missions that the mighty ships could carry out.<sup>4</sup>

If the battleship was on the way out, it was at the same time becoming faster and more powerful than its predecessors even while it grew to proportions that would have astounded the architects of HMS *Dreadnought*. Battleships built after—and in a few cases before—the expiration of the naval arms limitation treaties doubled, tripled, and even nearly quadrupled the tonnage of the *Dreadnought*.<sup>5</sup> Of course they were becoming even more expensive too as they incorporated the advances in technology that came during the interwar years.

One of the most significant advances came with the advent of radar. It could be used for navigation, air and surface search, and above all fire control, supplanting the optical range finders that had guided naval gunfire since the beginning of the 20th century.<sup>6</sup> Battleships could now shoot with increased accuracy at long range and in conditions of limited visibility, such as at nighttime. Radar did not completely overcome the thorny difficulties of providing accurate gunfire at sea of course, but it provided a quantum

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<sup>3</sup>Willmott, *Battleship*, 155.

<sup>4</sup>During the interwar years, the word “dreadnought” faded from widespread currency, with “battleship” taking its place. Nevertheless, the battleships and battle cruisers built immediately before and during World War II were dreadnoughts in every sense of the term.

<sup>5</sup>This is calculated using tonnage figures from Breyer, *Battleships and Battle Cruisers, 1905–1970*.

<sup>6</sup>Norman Friedman, *U.S. Battleships: An Illustrated Design History* (Annapolis, Md.: 1985), 289–290.

improvement in aiming the big guns of the battleship. During the war, the majority of the capital ships of the major combatants would be equipped with a variety of radar sets for both offensive and defensive purposes, and radar would more than once prove to be the deciding factor in combat.<sup>7</sup> (For example, in a nighttime action off Guadalcanal, the American battleship *Washington*, equipped with radar, needed only seven minutes to reduce the Japanese battleship *Kirishima*, which lacked radar, to a blazing hulk.<sup>8</sup>)

New equipment and new missions may have been given to the battleships, but old, familiar ways of regarding them persisted—at least until the actual experience of battle made it clear how much naval warfare had changed since the *Dreadnought*'s day. In Germany, for example, before the war, Hitler, with some misgivings about the effectiveness of battleships,<sup>9</sup> gave equal priority to the construction of battleships and submarines, despite the fact that the latter had proved far more effective and valuable during the last war than the former. He was not building primarily to vanquish the British fleet in a massive sea battle, though. Instead he intended to use his planned battleships “not merely as military instruments but also as political levers,” employing his new naval might to convince the British that with a powerful navy, the Third Reich would make a valuable ally of Britain.<sup>10</sup> The

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<sup>7</sup>Willmott, *Battleship*, 284.

<sup>8</sup>*Ibid.*, 190.

<sup>9</sup>See, for example, David J. Bercuson and Holger H. Herwig, *The Destruction of the Bismarck* (New York: Overlook Press, 2001), 16, 309.

<sup>10</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 85.

ambitions—and delusions—of Tirpitz and the Kaiser were still alive in Germany when hostilities broke out.

Hitler was not the only leader to believe that the deployment of battleships was still an effective lever in influencing the plans and actions of other powers: In Britain, Churchill, formerly the First Lord of the Admiralty and currently the Prime Minister, took a similar view. Two years after the war began, he dispatched a new battleship and an older battle cruiser to Singapore to deter the Japanese from threatening British possessions in the Far East.<sup>11</sup> The gambit failed: Japanese aircraft sank both ships, and Singapore fell in one of the most disheartening of blows to the British Empire. Deterrence by battleship was a thing of the past in the face of modern weapons, particularly the airplane.

Germany had embarked on the war with only a handful of modern battleships, and those few that Germany possessed were to be used primarily for commerce raiding,<sup>12</sup> a mission for which submarines—orders of magnitude less costly than battleships—were far better suited. The construction of U-boats soon came to take precedence over the building of all other warships.<sup>13</sup>

The same thing would happen in other countries as well: navies would come to emphasize the production of other types of craft instead of

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<sup>11</sup>Hough, *Death of the Battleship*, 111.

<sup>12</sup>Padfield, *The Battleship Era*, 263.

<sup>13</sup>Ibid.

battleships. In the United States, for example, during the war, the building of battleships was accorded only the sixth highest priority;<sup>14</sup> vessels such as submarines, aircraft carriers, freighters, and amphibious landing craft were clearly needed far more urgently. The abortive career of the American battleship *Kentucky* is a case in point.

The keel was laid down in 1942, the year that the United States entered the war, but construction was stopped and the work that had been done was dismantled in order to produce landing craft instead. Work was resumed—and suspended again—and then started once more. The ship would not be launched until the war had been over for two years, but the *Kentucky* would never be completed and commissioned. Instead work was stopped again and the hulk of the unfinished warship was finally broken up for scrap.<sup>15</sup>

If battleships no longer deterred and other ships were more valuable in wartime, they retained their symbolic power well into the war—and even after. No warship illustrates this more clearly than the British battle cruiser HMS *Hood*. Conceived during the First World War and commissioned two years after the war ended, the *Hood* was at the time she was completed “the largest, fastest and in many ways one of the most powerful capital ships in existence.”<sup>16</sup>

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<sup>14</sup>O’Connell, *Sacred Vessels*, 316.

<sup>15</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 247.

<sup>16</sup>John Roberts, *Battlecruisers* (London: Caxton Publishing Group, 1997), 62.

A long, narrow, graceful ship, the *Hood* showed the British flag around the world during the interwar years, advertising the might of Britain and its Royal Navy. In the florid words of one journalist, “In her mass and speed and perfection of armament, the *Hood* symbolizes the valorous determination of war-weary Britain to maintain intact for the good of mankind the far-flung Empire she has built up through the centuries.”<sup>17</sup>

As potent a symbol as the *Hood* was, however, two decades is a long time for a warship to remain an effective weapon. The truth is that she was obsolescent by the time the war broke out, “a virtually unaltered floating museum of 1920 naval technology.”<sup>18</sup> The *Hood* was due for replacement, but the Royal Navy’s perceived need between the wars to deploy as many capital ships as possible—and economic considerations as well—meant that she would never be taken out of service long enough to have her armor reinforced to meet modern standards.<sup>19</sup>

In May of 1941, the *Hood*, in company with the brand-new battleship *Prince of Wales*, was sent to hunt down the newly commissioned German battleship *Bismarck*, which was prowling the Atlantic on a commerce-raiding mission. The British force located the German warship and both sides opened fire at long range. Within minutes, a 15-inch shell from the *Bismarck*

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<sup>17</sup>Bruce Taylor, *The Battlecruiser HMS Hood: An Illustrated Biography 1916–1941* (Annapolis, Md.: Naval Institute Press, 2005), 20.

<sup>18</sup>Corelli Barnett, *Engage the Enemy More Closely: The Royal Navy in the Second World War* (New York: W. W. Norton, 1991), 64.

<sup>19</sup>Antony Preston, *The World’s Worst Warships* (London: Conway Maritime Press, 2002), 100.

penetrated the scanty deck armor of the *Hood* and set off a magazine explosion similar to the ones that had sunk three British battle cruisers at Jutland. The mighty *Hood*, symbol of the British Empire, broke into two pieces and sank immediately. Of a complement of 1,419 men, only three survived.<sup>20</sup>

Shocked and dismayed by the sudden loss of the *Hood*, the British redoubled their efforts to hunt down the *Bismarck*, assigning whatever ships they could possibly muster to take up the chase.<sup>21</sup> Churchill personally directed the effort to find and defeat the *Bismarck*, issuing detailed tactical orders that were more properly the prerogative of senior naval officers.<sup>22</sup>

The British had good reason to call on every resource to pursue the German battleship: the *Bismarck* embodied “the culmination, indeed the crowning glory, of German battleship building.”<sup>23</sup> “She was undoubtedly the most formidable gunned ship in the fleet of any belligerent power, and as Britain had nothing [no single capital ship] that could catch and destroy her, she represented the most serious threat to British shipping since the unrestricted U-boat campaign of the First War.”<sup>24</sup>

Reconnaissance planes spotted the *Bismarck* and vectored the British task force onto her trail. Obsolescent Swordfish aircraft, slow, fabric-covered

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<sup>20</sup>Ibid.

<sup>21</sup>Barnett, *Engage the Enemy More Closely*, 300

<sup>22</sup>Ibid.

<sup>23</sup>Bercuson and Herwig, *The Destruction of the Bismarck*, 32.

<sup>24</sup>Padfield, *The Battleship Era*, 275.

biplanes, attacked with torpedoes, one of which found the battleship's most vulnerable spot, her steering gear,<sup>25</sup> and the damaged *Bismarck* began steaming helplessly in circles. When the British battleships caught up, they began to hammer her relentlessly with their big guns, turning the ship into a blazing wreck that obstinately remained afloat.

Torpedoes failed to sink the sturdy ship, but the Germans knew that there was no hope for the *Bismarck*, and to keep the pride of the German fleet out of enemy hands, they set off scuttling charges that finally sent the battleship to the bottom. Over 2,000 men were lost with the *Bismarck*, and it took 30 secretaries three days to type the letters notifying the next of kin that one of their family members was dead or missing.<sup>26</sup>

For the British, the result was worth the effort, "for in hunting down and destroying the *Bismarck* the Royal Navy had sunk not just a single battleship, however formidable; it had sunk Grand Admiral Raeder's [the commander of the German navy] entire strategy, so long pursued, of breaking down Britain's Atlantic communications by means of a surface fleet."<sup>27</sup> As in the First World War, Germany would now have to resort to submarine warfare to choke off the flow of supplies to Britain.

While the destruction of a battleship could force a change of tactics in the Atlantic, the destruction of a fleet of battleships in the Pacific would do even more; it would cause the United States to join the fight against the Axis

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<sup>25</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 87.

<sup>26</sup>Bercuson and Herwig, *The Destruction of the Bismarck*, 296.

<sup>27</sup>Barnett, *Engage the Enemy More Closely*, 315–316.

powers and it would generate a groundswell of determination among Americans to crush the Japanese.

By the beginning of 1941, relations between the United States and Japan had nearly reached the breaking point. A powerful faction in Japan wanted to go to war with the United States, and detailed preparations for a conflict shortly got under way. Admiral Isoroku Yamamoto, the commander of Japan's battle fleet, was responsible for the navy's plans. He recognized the magnitude of the task before him, having spent much time in the United States. Nevertheless, he began thinking about what Japan would have to do to fight the United States, telling a subordinate that "if we are to have war with America, we will have no hope of winning unless the U.S. fleet in Hawaiian waters can be destroyed."<sup>28</sup> Accordingly, he directed the subordinate to start examining the feasibility of a surprise aerial attack on the American navy's fleet and main base in the Pacific at Pearl Harbor. An exponent of air power, Yamamoto had predicted as early as 1915 that ships carrying airplanes would be the most important naval weapons of the future.<sup>29</sup> With the Pacific fleet knocked out, it was believed, the Americans would eventually be forced to give Japan a free hand in the Pacific.

The Japanese thought that they had received confirmation of the soundness of their plan in the example of a British raid on the Italian fleet anchorage at Taranto. There 11 obsolete Swordfish torpedo planes put all six

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<sup>28</sup>Walter Lord, *Day of Infamy* (New York: Henry Holt, 1957), 10.

<sup>29</sup>Hough, *The Death of the Battleship*, 65.

of Italy's battleships out of action, sinking one and badly damaging the others.<sup>30</sup> Altogether, at Taranto the British aircraft "inflicted more damage upon the Italian fleet than was inflicted upon the German High Seas Fleet in the daylight action at the Battle of Jutland."<sup>31</sup> It seemed that even a handful of obsolete weapons were capable of dealing deadly blows to battleships.

Yamamoto's plan called for a massive assault by waves of carrierborne torpedo planes and bombers, with the American aircraft carriers as the primary target,<sup>32</sup> and on Sunday, December 7, 1941, the Japanese struck. The carriers were not in the harbor, but there were eight battleships there; four were sunk, one was badly damaged, and three escaped with minor damage.<sup>33</sup> (Three of the ships that sank would be salvaged and two eventually returned to duty.) The U.S. fleet in the Pacific was crippled—or so it seemed.

Such was not the case, however; the attack on Pearl Harbor did not succeed in compelling the United States to come to terms with Japan. Instead it failed badly, in part because, as one historian somewhat hyperbolically put it, the battleships put out of action at Pearl Harbor "were hollow symbols of national power, not effective fighting machines. With the exception of the men

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<sup>30</sup>David Hamer, *Bombers versus Battleships* (Annapolis, Md.: Naval Institute Press, 1998), 74.

<sup>31</sup>Barnett, *Engage the Enemy More Closely*, 249.

<sup>32</sup>Gordon W. Prange, *At Dawn We Slept: The Untold Story of Pearl Harbor* (New York: Penguin, 1981), 25. According to Prange, Yamamoto originally emphasized sinking battleships in the hope of destroying U.S. morale. *Ibid.*, 21.

<sup>33</sup>*Ibid.*, 184.

who died in them and the blow to national pride, the loss of these vessels hardly constituted any setback at all.”<sup>34</sup>

While this overstates the case against the battleship, there is a considerable measure of truth to it: the attack on Pearl Harbor did not cripple the United States, and what at first appeared to be a mortal blow turned out to be merely a flesh wound, painful but not life-threatening. Battleships simply could not determine the outcome of a war. The battleship would not decide the war in the Pacific because its place as the primary naval weapon had been taken by the airplane, and the submarine would be the second most valuable warship—American submarines would cut off Japan’s supply of many raw materials, such as petroleum, making it increasingly difficult for Japan to continue the war.

An enraged United States set out to avenge Pearl Harbor and defeat Japan by invading Japanese possessions in the Pacific, with each landing steadily moving closer to Japan. In this island-hopping campaign, the battleship proved to be useful at scouring the beaches of the assault targets with large-caliber gunfire. “Except for the first assault on the Solomons, every major amphibious assault was preceded by the thunder of the Dreadnoughts’ guns, in every case saving American lives and easing their assault task.”<sup>35</sup> While they needed to be protected by air cover, the big ships could remain on

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<sup>34</sup>O’Connell, *Sacred Vessels*, 315.

<sup>34</sup>*Ibid.*, 184.

<sup>35</sup>Hough, *Dreadnought*, 227.

the firing line, providing highly accurate gunfire support, far longer than planes could remain on station.

Throughout the Pacific, shore bombardment in support of amphibious operations became the primary mission of old, relatively slow battleships; newer, faster battleships were assigned the principal mission of escorting the fast aircraft carrier task forces that spearheaded the march on Japan.<sup>36</sup> The new battleships—those built after the end of the arms limitation agreements—could carry many more antiaircraft guns than other warships could, and many times they warded off Japanese planes intent on sinking the American carriers. To cite just one example of the big ships' prowess at providing antiaircraft gunfire, at the Battle of Santa Cruz, the new battleship *South Dakota* shot down a total of 26 attacking Japanese aircraft.<sup>37</sup> While the small-caliber antiaircraft guns of the new battleships were proving invaluable in guarding fast carrier task forces, their large-caliber guns were proving less useful. "Only rarely did they [the new battleships] find employment for their heavy guns."<sup>38</sup>

If the new American battleships used their big guns—their very reason for being—only rarely, the same was often true of their Japanese counterparts. For example, the Japanese superbattleships *Yamato* and *Musashi* fired their

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<sup>36</sup>Friedman, *U.S. Battleships*, 345.

<sup>37</sup>Willmott, *Battleship*, 192.

<sup>38</sup>Friedman, *U.S. Battleships*, 346.

very big guns in anger only a few times before they were sunk by American forces.

The two Japanese ships represented the ultimate development of the line that had started with HMS *Dreadnought*.<sup>39</sup> They were the biggest, most powerful battleships ever to go to sea. The lead ship of the class, the *Yamato*, displaced almost 70,000 tons, over 17,000 tons more than the ships of the American *Iowa* class, the next largest battleships. In firepower, she outdid her rivals as well, being armed with 18-inch guns that could hurl a projectile weighing more than a ton and a half almost 24 miles and penetrate any existing armor.<sup>40</sup> So great was the blast effect of her big guns, the discharge of hot gases from the guns' muzzles, that it could injure nearby crewmen and damage structures aboard the ship.<sup>41</sup>

Her own armor was thick enough to withstand the impact of an 18-inch shell, something that no other navy could fire at her. In every dimension and characteristic, she was superlative, and she would likely have dominated the battle if the second Tsushima for which the Japanese had prepared had actually come to pass. Instead, the *Yamato* and her sister ship became seagoing white elephants, representing a waste of resources that could have been more profitably employed elsewhere. More than any other battleships, they exemplified the obsolescence of the dreadnought.

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<sup>39</sup>A third sister ship, the *Shinano*, was converted while under construction into an aircraft carrier. See Breyer, *Battleships and Battle Cruisers, 1905–1970*, 359.

<sup>40</sup>Preston, *World's Worst Warships*, 143.

<sup>41</sup>*Ibid.*

Many Japanese officers recognized that they did not have a particularly useful weapon in their superbattleship, joking that “the three most useless things in the world were the Pyramids, the Great Wall of China and the battleship *Yamato*.”<sup>42</sup> Their air-minded commander, Admiral Yamamoto, shared their jaundiced view: speaking of the *Yamato* and the *Musashi*, he said, “These ships are like elaborate religious scrolls which old people hang up in their homes. They are of no proved worth. They are purely a matter of faith—not reality.”<sup>43</sup> For all that the Japanese spent in constructing the *Yamato* and the *Musashi*, they received only a negligible return.

Both superbattleships would meet the same fate: near the end of the war, American carrierborne aircraft would finally succeed in sinking them after pummeling them for hours with torpedoes and bombs.<sup>44</sup> The *Musashi* succumbed after being hit with 20 torpedoes and 17 bombs.<sup>45</sup> The *Yamato* was later sunk in similar fashion while on a suicide mission. With insufficient fuel for a round trip, the biggest kamikaze in the world was dispatched with orders to ground herself in the shallows off Okinawa and function there as a shore battery.<sup>46</sup> She never reached her destination, taking more than 2,000 sailors with her when her magazines exploded and she sank to the bottom. The ultimate battleship had come to a dead end.

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<sup>42</sup>Willmott, *Battleship*, 151.

<sup>43</sup>O’Connell, *Sacred Vessels*, 312.

<sup>44</sup>Breyer, *Battleships and Battle Cruisers, 1905–1970*, 359.

<sup>45</sup>Padfield, *The Battleship Era*, 287.

<sup>46</sup>Preston, *The World’s Worst Warships*, 145.

When the Second World War came to a close, after six years of fighting, the Allies sought a suitably dignified location for the formal surrender of Japan. Accordingly, they decided to hold the ceremony on the deck of the new American battleship *Missouri*. There, on September 7, 1945, representatives of the victorious nations assembled to watch as Japanese officials signed the instrument of surrender.

Battleships had proved useful in the war in the Pacific, particularly for shore bombardment and antiaircraft fire support for carrier task forces, and the warships had on a few occasions fought as they were designed to do, slugging it out with their peers, but it was clear that their day had passed; other weapons could perform many of the missions that they could—at far less expense—and they themselves were too vulnerable to other, more modern weapons to be worth their enormous cost. The aircraft carrier, with planes that could strike from far beyond the range of the battleships' big guns, had replaced the battleship as the new capital ship.

After the end of the Second World War, there were occasional flurries of action, such as the use of the *Iowa*-class battleships for shore bombardment during the Korean War, but one by one the mighty warships began disappearing from the navies of the world, most of them ending up being sold for scrap. By the early 1960s, there were no battleships left in service anywhere. It should have been the end of the story but it was not: the United States, now the strongest and richest superpower in the world, would resurrect the antiquated weapon system more than once, refurbishing and

recommissioning the ships of the *Iowa* class to provide offshore gunfire support.

The first revival of the battleship took place during the Vietnam War:

In the summer of 1966, as the United States found itself sinking deeper and deeper into the Vietnam quagmire, Marine Corps Brigadier General James D. Hittle, addressing a group of battleship veterans in San Diego, delivered a heartfelt plea for the return of the dreadnought to provide artillery support to his troops. The American Battleship Association needed no more prompting, immediately launching a publicity campaign to bring the sacred vessels out of retirement. Significantly, the chief of naval operations and most of the naval hierarchy were opposed on the grounds that carrier aviation was perfectly capable of performing this sort of close support. But Senator Richard Russell, chairman of the Senate Armed Services Committee, fervently believed in battleships, and in April 1968, amid much fanfare, the modernized USS *New Jersey* was recommissioned and sent to Vietnam.<sup>47</sup>

Cruising back and forth off the coast of Vietnam, the *New Jersey* fired a total of 5,688 16-inch rounds, more than seven times the number of shells she had fired during all of the Second World War.<sup>48</sup> This resulted in a mere 113 confirmed enemy deaths,<sup>49</sup> a meager return for such a prodigious expenditure of large-caliber ammunition. After one cruise off the coast of Vietnam, the *New*

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<sup>47</sup>O'Connell, *Sacred Vessels*, 318.

<sup>48</sup>Friedman, *U.S. Battleships*, 393.

<sup>49</sup>O'Connell, *Sacred Vessels*, 318.

*Jersey* was placed in mothballs once again, but the battleship's many adherents did not cease advocating for the return of the ships to duty.

The *New Jersey* and her three sisters would not languish in mothballs forever. In the 1980s, as part of an expansion of the navy, all four ships were put back into service, at an estimated cost of \$2 billion.<sup>50</sup> As part of their modernization, the ships were equipped with Tomahawk cruise missiles and Harpoon antiship missiles,<sup>51</sup> both of which far outranged their 16-inch guns. In 1982 and 1983, the *New Jersey* saw action shelling Syrian artillery positions from the coast of Lebanon. There was one big problem, however: "The propellant was old and of very variable quality, the result being that no one could tell whether a salvo, despite its being fed the correct range, would fall short, be massively over or, by chance, hit the target."<sup>52</sup> A Marine officer who investigated the ship's shooting estimated that she had missed some of her targets by as much as six miles.<sup>53</sup> This should not be surprising; some of the propellant for the 16-inch guns dated back to the 1930s, and the newest had been manufactured in the early 1950s.<sup>54</sup> Faulty propellant may also have caused a tragedy that befell the *Iowa* in 1989. One of the ship's 16-inch guns blew up during target practice, killing 47 sailors.

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<sup>50</sup>Ibid., 320.

<sup>51</sup>Friedman, U.S. Battleships, 395.

<sup>52</sup>Willmott, Battleship, 230.

<sup>53</sup>Charles C. Thompson, *A Glimpse of Hell: The Explosion on the USS Iowa and Its Cover-up* (New York: Norton, 1999), 140.

<sup>54</sup>Thompson, *A Glimpse of Hell*, 51.

During the Gulf War, in 1991, the *Wisconsin* and the *Missouri*, the only remaining battleships in service, fired their Tomahawk missiles against Iraqi targets up to 800 miles away.<sup>55</sup> The big guns remained silent. It was the last time that battleships would see action, and a year later the last of the ships was finally decommissioned—this time presumably for good. The 86-year-long career of the dreadnought was over.

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<sup>55</sup>Willmott, *Battleship*, 231.

## CHAPTER 6: CONCLUSION

The dreadnought was a product of the culture and circumstances of Western Europe of the late 19th and early 20th centuries, an age when European imperialism was at its zenith and the industrialization of Europe was virtually complete. The beliefs and attitudes that underlay the dreadnought were articulated most authoritatively and influentially by a naval theorist who considered the British Empire to be the apogee of civilization and a model for his own nation to follow. He held that control of the sea was a necessary condition for the protection of commerce with overseas colonies and that such commerce formed the basis of empire. This control could be achieved and maintained only by the deployment of fleets of the most powerful warships of the day.

A quantum leap in the advance of naval warfare, the dreadnought reflected and embodied the whirlwind technological progress of the day and the intensive development of heavy industry among the Western powers. It was the apotheosis of the Machine Age, an incarnation in steel of European materialism and the nationalistic drive for international influence and power, and it wrought a transformation in character of the social institutions that operated it, the naval forces of the day.

The major industrialized powers—and certain lesser powers too—strained their resources competing to construct fleets of dreadnoughts, regardless of the costs and trade-offs involved in doing so. Desirable social programs, such as the provision of health care and old-age pensions, suffered because the worldwide quest for naval power devoured substantial amounts

of national budgets—such as Argentina’s expenditure of 20 percent of its national income—that could well have been put to other, less bellicose ends. Nations competed to see which could acquire the greatest number of the most powerful ships, sometimes when there was little rational purpose served by the possession of these weapons. These efforts were controversial in the nations that were competing, but they generally enjoyed widespread popular support, since dreadnoughts were potent proclamations of national prestige even if they were not always highly likely to be used in battle.

During the first decade and a half of the 20th century, Germany and Britain, the first ambitious to build an empire and the second determined to maintain one, became locked in the most protracted and consequential race to build dreadnoughts that the world would ever see. Other nations, such as certain countries in Latin America, ended their participation in their own regional dreadnought races when the exorbitant costs of constructing and operating battleships became too great for them to bear. They came to realize that they were spending excessively on a weapon system that they did not really need, building powerful navies that they could neither afford nor use.

The motivation underlying the Anglo-German race, and other, similar contests, was not simply the desire to attain or preserve mastery of the seas in order to protect trade routes. The quest to garner national prestige, alluded to above, played a highly significant role, and an intention to use dreadnoughts as diplomatic bargaining chips, levers to influence the behavior of other nations, were also crucial factors. Personal ego gratification and an attempt to allay envy constituted motives as well, as can be seen by Kaiser Wilhelm II’s

behavior in the Anglo-German race. In short, a rational calculation of military necessity was not always foremost in the minds of the participants in the contest.

When dreadnoughts were tested in battle—something that happened on a large scale only once—they did not play the decisive role that had been so widely and confidently expected of them. Instead they merely upheld the status quo, in the process revealing shortcomings and vulnerabilities that had not been anticipated before the war. They were greatly limited by the fact that while some of the technologies they employed were adequate to carry out their intended mission, some of the technologies simply were not up to the job. Communications and fire control proved to be particular weaknesses, and a shell that penetrated a dreadnought's armor and detonated in her magazine could in a few seconds obliterate the ship in a pillar of flame. In addition, the underwater detonation of a torpedo or a mine against a dreadnought's hull could sink even the most powerful battleship in short order.

In the aftermath of the war, the deeply indebted victors acted in concert to stop a fresh dreadnought race that was getting under way. Pioneering attempts at arms control showed that nations could limit the proliferation of strategic weapons if they really wanted to do so, but the powers that sat at the conference table were impelled to limit arms far more for economic reasons than from pacific motives. Like the lesser naval powers, they could no longer afford to construct dreadnoughts. We can only wonder if these nations would have given up battleships as readily as they did if the weapons had proved more decisive and less vulnerable in war.

When Europe rearmed in the 1930s, the naval powers eagerly resumed building battleships, but there was a growing realization that such vessels had seen their day: aircraft and submarines were increasingly seen to be taking their place as the ultimate arbiters at sea. In addition, modern weapons challenged the dominance of the dreadnought. Naval traditionalists struggled mightily, but vainly, to uphold the primacy of the battleship.

The battleship did prove useful when conflict broke out again, even if not primarily in the way that had once been taken for granted. Increasingly, naval commanders found that they needed other vessels, such as aircraft carriers and even cargo ships, far more than they needed the costly leviathans and their big guns. When peace came to the world, the battleship faded from the scene. There were a few attempts to revive it, but the age of the dreadnought was over.

The preceding is not just a story of a particular major weapon system, its trajectory from strategic necessity to national status symbol and finally to obsolete irrelevance. It is an illustration of what once happened when nations committed substantial amounts of their finite resources to the acquisition of a costly and complex weapon. The course of the dreadnought over its lifetime raises several issues that are worthy of our consideration.

The most obvious issue is the question of trade-offs. What is a society willing to forgo in order to procure the most advanced weaponry? What does that society really need in order to protect itself from aggression and what does that society need in order to improve or even just make more bearable the lives of its citizens? What can a society afford? We face the same dilemma

that the builders of dreadnoughts did: like them, we have to judge whether such an investment is more worthwhile than an investment in other, more socially beneficial projects. Which is the necessity and which is the luxury?

In the United States, we have consistently voted—both by action and by acquiescence—to procure weapon systems that push the frontier of technology but cost billions of dollars to design, develop, produce, deploy, and operate. Do we really need to spend more on defense than the next 25 nations combined?<sup>1</sup> Do we really need the weapons we are paying so much for? Such projects as the Strategic Defense Initiative, the Future Combat System, and the most advanced ships and aircraft are only a few of the defense projects that come to mind, but there are many others in our massive defense budget that are open to questions of utility and affordability.

We, and citizens in other technologically advanced industrialized countries, also have to ask if our motives in building a particular weapon system are wholly those of military utility, for we have seen that other reasons can impel the acquisition of major weapon system. Such factors as a desire for prestige or profit or even feelings of envy sometimes caused dreadnoughts to come into being. Are we, and others, acting out of similar motives? Is a weapon primarily a tool to be used rationally or may it be first of all a symbol? We have seen in the case of the dreadnought that sometimes, for some nations, the latter was the case. Could such, for example, also be the case with nations that seek to maintain nuclear weapons, or those attempting to obtain

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<sup>1</sup>R. Jeffrey Smith and Ellen Nakashima, “Gates Planning Major Changes in Programs, Defense Budget,” *Washington Post*, April 4, 2009.

them? The stakes are much higher now than they were at the beginning of the last century.

We also have to ask whether a weapon system will do what we want it to. Could it have the opposite effect, making an already bad situation even worse? We have seen in the case of the dreadnought that such can indeed be the case. The Anglo-German dreadnought race did not make its participants safer; on the contrary, it made them less secure. Are we or others, as arms limitation experts put it, simply destabilizing the situation when we deploy our most advanced weapons? It can be and has been argued that intercontinental ballistic missiles, for example, made the world a more dangerous place.

We also must recognize that we are gambling when we put our trust in weapons on the leading edge of technology—particularly in a time when technology advances with lightning speed. The makers of the dreadnought believed that they were deploying an ultimate weapon, something that could settle all arguments. Only the most farsighted could imagine that the same wave of technological and industrial development that was responsible for the dreadnought would one day wash over it, rendering it irrelevant and impotent. We cannot know what situations we will face and whether our tools will be appropriate and effective; all we can do is place our bets and hope that we will never have to learn whether we were right or wrong.

The example of the dreadnought also shows us that weapons can indeed be limited if nations really wish to do so, but it also shows that arms limitation agreements can be fragile things that governments will quickly

break if they believe it in their best interest to do so. Also, it shows that arms limitation agreements may not spring wholly from a desire for peace. Nations agreed to limit dreadnoughts only when they realized that they just could not afford them.

The dreadnought dominated the seas for only a brief period, although it remained in service for a remarkable length of time. Its career does not show us what must inevitably happen with our complex, frightfully expensive, and increasingly dangerous weapons. Instead it shows us what happened once and what could conceivably happen again. It reminds us, as we must always remind ourselves, of the limits of human power and the transience of even the most seemingly potent and permanent human creations.

## BIBLIOGRAPHY

- Barnett, Corelli. *Engage the Enemy More Closely: The Royal Navy in the Second World War*. New York: W. W. Norton, 1991.
- Bercuson, David J., and Holger H. Herwig. *The Destruction of the Bismarck*. New York: Overlook Press, 2001.
- Breyer, Siegfried. *Battleships and Battle Cruisers, 1905-1970: Historical Development of the Capital Ship*. Garden City, N.Y.: Doubleday, 1973.
- Churchill, Winston S. *The World Crisis*. New York: Charles Scribner's Sons, 1955.
- Fairbanks, Charles H. Jr. "The Origins of the Dreadnought Revolution: A Historiographical Essay." *International History Review*, 1991, vol XII.
- Fanning, Richard W. *Peace and Disarmament: Naval Rivalry and Arms Control 1922-1923*. Lexington, Ky.: University of Kentucky Press, 1995.
- Farwell, Byron. *Eminent Victorian Soldiers: Seekers of Glory*. New York: Norton, 1985.
- Forester, C. S. *The Last Nine Days of the Bismarck*. Boston: Little Brown, 1959.
- Friedman, Norman. *Battleship Design and Development 1905-1945*. Greenwich, UK: Conway Maritime Press, 1978.
- . *Naval Firepower*. Annapolis, Md.: Naval Institute Press, 2008.
- . *U.S. Battleships: An Illustrated Design History*. Annapolis, Md., 1985.
- Gardiner, Robert, ed. *The Eclipse of the Big Gun: The Warship 1906-45*. Edison, N.J.: Chartwell Books, 1992.

- Gibbons, Tony. *The Complete Encyclopedia of Battleships: A Technical Directory of Capital Ships from 1860 to the Present Day*. New York: Crescent Books, 1983.
- Goldman, Emily. *Sunken Treaties: Naval Arms Control between the Wars*, University Park, Pa.: Pennsylvania State University Press, 1994.
- Gordon, Andrew. *The Rules of the Game: Jutland and British Naval Command*. London: John Murray, 1996.
- Hall, Christopher. *Britain, America, and Arms Control, 1921–37*. London: Macmillan Press, 1987.
- Hamer, David. *Bombers versus Battleships: The Struggle between Ships and Aircraft for the Control of the Surface of the Sea*. Annapolis, Md.: Naval Institute Press, 1998.
- Herwig, Holger. *Luxury Fleet: The Imperial German Fleet 1888-1918*. London: Allen & Unwin, 1980.
- Hoover, Robert. *The Interwar Naval Limitation Agreements*. Denver, Colo.: Graduate School of International Studies, University of Denver, 1980.
- Hough, Richard. *Admiral of the Fleet: The Life of John Fisher*. New York: Macmillan, 1970.
- . *The Big Battleship or The Curious Career of H.M.S. Agincourt*. London: Michael Joseph, 1966.
- . *Death of the Battleship: The Tragic Close of the Era of Sea Power*. New York: Macfadden-Bartell, 1965.
- . *Dreadnought: A History of the Modern Battleship Dreadnought*. New York: MacMillan, 1964.

- Howarth, David. *The Dreadnoughts*. Alexandria, Va.: Time-Life Books, 1979.
- Keegan, John. *The Price of Admiralty*. New York: Viking, 1988.
- Kennedy, Paul. *The Rise and Fall of British Naval Mastery*. New York: Scribner, 1976.
- . *Sir John Fisher's Naval Revolution*. Columbia: University of South Carolina Press, 1999.
- Keefer, Scott A. "Reassessing the Anglo-German Naval Arms Race." Trento, Italy: University of Trento School of International Studies Working Paper 03/2006.
- Lambert, Nicholas A. "'Our Bloody Ships' or 'Our Bloody System'? Jutland and the Loss of the Battle Cruisers, 1916," *Journal of Military History*, Vol. 62, No. 1 (Jan. 1998).
- Langenberg, William H. "Rise and Fall of the Dreadnought." *Military History Quarterly*, Vol. 11 (winter), 1999.
- Lord, Walter. *Day of Infamy*. New York: Henry Holt, 1957.
- Mahan, A. T. *The Influence of Sea Power upon History*. New York: Dover, 1987.
- Marder, Arthur. *From the Dreadnought to Scapa Flow: The Royal Navy in the Fisher Era*. London: Oxford University Press, 1961–1970.
- Massie, Robert. *Dreadnought: Britain, Germany, and the Coming of the Great War*. New York: Random House, 2003.
- . *Castles of Steel: Britain, Germany, and the Winning of the Great War at Sea*. New York: Random House, 1991.

- McMahon, William E. *Dreadnought Battleships and Battle Cruisers*. Washington, D.C.: University Press of America, 1978.
- Mitchell, B. R., ed. *British Historical Statistics*. New York: Cambridge University Press, 1988.
- Mitsuru, Yoshida. *Requiem for Battleship Yamato*. Seattle, Wash.: University of Washington Press, 1985.
- O'Connell, Robert. *Sacred Vessels: The Cult of the Battleship and the Rise of the U.S. Navy*. Boulder, Colo.: Westview Press, 1991.
- Padfield, Peter. *Aim Straight: A Biography of Admiral Sir Percy Scott*. London: Hodder & Stoughton, 1966.
- . *The Battleship Era*. New York: Macmillan, 1975.
- . *The Great Naval Race: The Anglo-German Naval Rivalry*. New York: McKay, 1974.
- Paret, Peter, ed. *Makers of Modern Strategy: From Machiavelli to the Modern Age*. Princeton, N.J.: Princeton University Press, 1986.
- Gordon W. Prange. *At Dawn We Slept: The Untold Story of Pearl Harbor*. New York: Penguin, 1981.
- Preston, Antony. *The World's Worst Warships*. London: Conway Maritime Press, 2002.
- Ransom, Harry H. "The Battleship Meets the Airplane." *Military Affairs*, Vol. 23, No.1 (Spring, 1959).
- Roberts, John. *Battlecruisers*. London: Caxton Publishing Group, 1997.
- Roskill, Stephen. *Naval Policy Between the Wars*. New York: Walker and Company, 1968.

- Rüger, Jan. *The Great Naval Game: Britain and Germany in the Age of Empire*. Cambridge: Cambridge University Press, 2007.
- Spector, Ronald H. *At War at Sea: Sailors and Naval Combat in the Twentieth Century*. New York: Viking, 2001.
- Steel, Nigel, and Peter Hart. *Jutland 1916: Death in the Grey Wastes*. London: Cassell, 2003.
- Steinberg, Jonathan. *Yesterday's Deterrent: Tirpitz and the Birth of the German Battle Fleet*. London: Macdonald, 1965.
- Sumida, John Tetsuro. *In Defence of Naval Supremacy: Finance, Technology, and British Naval Policy, 1889–1914*. Boston: Unwin Hyman, 1989.
- . "Sir John Fisher and the Dreadnought: The Sources of Naval Mythology," *The Journal of Military History*, vol. 59, no. 4, 1995.
- Tarrant, V. E. *Jutland: The German Perspective*. London: Arms and Armour, 1990.
- Taylor, Bruce. *The Battlecruiser HMS Hood: An Illustrated Biography 1916–1941*. Annapolis, Md.: Naval Institute Press, 2005.
- Thompson, Charles C., III. *A Glimpse of Hell: The Explosion on the USS Iowa and Its Cover-up*. New York: W. W. Norton, 1999.
- Tuchman, Barbara. *The Guns of August*. New York: Macmillan, 1962.
- . *The Proud Tower: A Portrait of the World before the War, 1890–1914*. New York: Macmillan, 1966.
- Willmott, H. P. *Battleship*. London: Cassell, 2002.

Yates, Keith. *Flawed Victory: Jutland 1916*. Annapolis, Md.: Naval Institute Press, 2000.