

Final Paper:

The First Arms Race:

The British and French Navies from the Seven Years War to the American Revolution

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History 635-002: The First Global Wars

Fall 2017

December 14, 2017

To conduct a Global War, a nation-state must be able to conduct operations on a global scale. This requires the capability to apply force, both with firepower and mobility, at critical geographical locations. In the mid-eighteenth century, the only viable method to accomplish this was a navy with global reach. This point was clear to both Britain and France at the onset of the Seven Years War, as they entered an arms race to organize, train and equip their navies. It took several years after the war began to reach full mobilization, but each navy built ships of the line and acquired, by impressment and enlistment, seamen to man them. At the end of the war, with colonies far and wide, British and French momentum to grow their global naval capabilities continued. The Royal Navy largely maintained and expanded its naval strength. France, even after suffering substantial wartime losses, also improved its naval capabilities, in part by increasing its budget from around 30 million livres on average during the Seven Years War to a total of 200 million livres by 1782.¹

The investments made by each country in ships of line, seamen, and technology, reflected in intense desire to achieve naval superiority over the other, or at the very least parity, in order to achieve policy aims. **The thesis of this paper therefore is that Britain and France competed in a naval arms race for nearly three decades, from 1755-1782.** It develops and explores this thesis through four sections. In the first section, this paper asserts this naval competition meets the definition and criteria of an arms race. Section two explores the British and French navies by examining their ships of the line, resources, seamen, and technological developments² throughout the inclusive years. While this section's intention is to provide a general description, the third section provides comparative details, identifying the factors which enabled naval superiority over the other. In some cases, this was a temporary tactical advantage; in other cases, this was an enduring advantage conferred by strategic investments. Section four is the conclusion. This paper aims to expose how this naval arms race was both historically compelling and consequential. It is necessary to start therefore, on making the case that this naval competition was in fact, an arms race.

¹ Richard Ketchum, *Victory at Yorktown: The Campaign that Won the Revolution* (New York: Henry Holt and Company, LLC, 2004), 42.

² This paper's view of technology is broad, not strictly focused on a particular item such as a naval gun. From Merriam-Webster, the following definition guides this view: The practical application of knowledge, especially in a particular area, such as engineering and medical technology. Also, the capability given by the practical application of knowledge.

Section One: The Case for a Naval Arms Race

The concept of an arms race is not a new concept, but definitions and descriptions are widely disparate, inconsistent, and even vague.³ The intent of this paper is not to exhaustively examine, nor argue, that an arms race existed. Rather, it aims to affirm that Britain and France participated in what was undeniably a naval arms race from 1755-1782. The beginning date, 1755, is the effective beginning of naval confrontation in the Seven Years War, when both navies attempted to mobilize for combat. The end date of 1782 is near the conclusion of the American Revolution, after major combat had finished, and after which France began to divest in its navy, particularly from a budgetary standpoint.⁴ In contrast, the Royal Navy would remain strong after 1782, dominating other navies of the world, and powering a global empire for nearly two centuries.

For purposes of this paper, an arms race definition is required. Established via peer-reviewed scholarship in *The Journal of Conflict Resolution* nearly four decades ago, the following definition provides a simple and effective way to consider the efficacy of the naval arms race assertion:

Participation of two or more nation-states in apparently competitive or interactive increases in quantity or quality of war material and/or persons under arms. Though a race usually involves at least two parties-independent states-one may be far more committed to racing than another. The competition must last a minimum of four years. An arms race then begins in a year for which military spending rises and hostility toward some adversary nation-state has been declared as government policy.⁵

This definition has three criteria. First, a competition in both quality and quantity; second, a duration of at least four years; and third, military spending rising accompanied with a government policy of hostility towards the opposing state. All three criteria are clearly met in the British and French naval arms race.

First, two or more nation-states, Britain and France, and later Spain and the Dutch as allies of France, competed in quantity and quality of war material and persons under arms. This will primarily be examined as ships of the line (as the primary eighteenth century naval combatants) and seamen, in both quantity and

³ Theresa Clair Smith, "Arms Race Instability and War," *The Journal of Conflict Resolution* 24, No. 2 (June, 1980): 258.

⁴ Paul Kennedy, , in *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Vintage Books, 1987), 118.

⁵ Smith, 255. Smith's excellent study serves as the basis for the arms race concept developed in this paper.

quality, which each side could bring to bear against the other. Both Britain and France showed determination to increase the numbers of ships of the line and seamen over this period; but they were equally as determined to increase the quality of each as well. Addressing the second criteria, the duration of this arms race was well over four years. Each side at times was more committed to racing than the other, consistent with the definition. Britain showed significant commitment during the Seven Years and immediately afterwards, while France showed equal commitment before and during the American Revolution. Third and last, military spending increased for each belligerent, albeit at different times, and government policy was clearly hostile in the form of two wars, each of which had critical naval components. The British and French navies battered one another, reset and rebuilt when able, and devised ways to confront the other on terms favorable to it.

Thus, there is simply no doubt this was an arms race, and this paper argues that it was indeed the first one. This assertion is lofty, but well supported. Historians and authors who have extensively studied Britain and France during this period highlight this naval competition, including four sourced in this paper: Daniel Baugh, Jonathan Dull, Roger Morriss and Christy Pichichero.⁶ Also, other historians who have authored research on empires and military history do not assert, nor provide evidence, of an earlier arms race, including seminal works from Jeremy Black and Paul Kennedy. Whereas neither explicitly labels this naval arms race, they both discuss the British and French navies comparatively during this period.⁷ Additionally and apart from

⁶ Daniel Baugh, in *The Global Seven Years War: 1754-1763* (New York: Routledge, 2011), recognizes that the British Navy “remained strong in the post-war years” and provides a short narrative on the French naval recovery, conveying that the focus of each navy was in part on each other. (646) Jonathan Dull, in *The French Navy and the Seven Years’ War* (Lincoln, Nebraska: University of Nebraska Press, 2005), argues that even with its shipbuilding program stalled and dockyards depleted of supplies in 1774, the French Navy had “hidden strengths and was superior to the navy of twenty years earlier,” indicating France’s continued participation in the arms race. (248) Roger Morriss, in *The Foundations of British Maritime Ascendancy: Resources, Logistics and the State, 1755-1815* (Cambridge: Cambridge University Press, 2011), starts his narrative at the beginning at the Seven Years War, and shows the build-up of the Royal Navy throughout, highlighting the competition with France between the wars. (60-61) Christy Pichichero, in *The Military Enlightenment: War and Culture in the French Empire from Louis XIV to Napoleon* (Ithaca: Cornell University Press, 2017), asserts outright the “unfolding naval technology arms race” starting in 1761. (35)

⁷ Jeremy Black, in *War and the World: Military Power and the Fate of Continents, 1450-2000* (New Haven: Yale University Press, 1998), recognizes the British Navy’s fleet displacement of 375,000 metric tons in 1760, then compares British, French and Spanish ships. (127) The first arms race he specifically calls out is that between the United States (U.S.) and Soviet Union (U.S.S.R.) during the Cold War. (279-281, 284) Paul Kennedy, in *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Vintage Books, 1987) highlights how the French “would concentrate their resources upon a naval and colonial war” and specifies its build-up to take on the British Navy during the American Revolution. (118) As with Black, the only arms race he calls out is that between the U.S. and U.S.S.R.

these historians, a claim to an earlier arms race is dubious at best, given that arms competition before the Seven Years War, even in Europe, generally fails to meet the defined arms race criteria above. Finally, the inclusive period was at the front edge of the industrial revolution; it, and earlier periods, would not benefit from mass production technology and techniques which would facilitate arms productions, and thereby arms races, for future opposing nation-states. Yet, despite this industrial challenge, the British and French navies would still attempt to out-produce each other. The next section illuminates how this competition unfolded.

Section Two: The British and French Navies, 1755-1782

This section provides a general description, to include charts, of the British and French navies in terms of ships of the line, seamen, resources, and technologies during the inclusive period. The story of each was not one of unrelenting development. Rather, advancement was uneven, and there were both gains (in naval budgets for example) and losses (in ships of the line from combat for example). The general trend however, was clearly one of progress, where each navy attempted to gain an edge over the other; exemplars include, numerical superiority of ships of the line; improved morale and health of its seamen, enabling a fleet to stay at sea longer; or even improved technology or capability of a specific ship, to more precisely navigate or shoot an enemy naval combatant more effectively.

One of the most important data points in this naval arms race were the total numbers of ships of the line. **Table 1** displays representative years of the inclusive period.⁸ A clear upward trend (annotated in a red oval) for British ships of the line (in red containers), is evident starting in the Seven Years War and peaks prior to the American revolution. For French ships of the line (in blue containers), the trend upward (annotated in a blue oval) starts at the end of the Seven Years War and peaks in 1781, during the American Revolution. Of

during the Cold War. (383-389) It could be surmised that since neither Black nor Kennedy claim an arms race between the British and French navies over this period, they reject such an assertion. This argument has merit. Arguably and just as likely, neither Black nor Kennedy considered the eighteenth century as capable of producing an arms race. The industrial revolution had not yet begun in earnest. Further, the scale of the Cold War arms race which they address, including nuclear weapons, dwarfed that between the British and French navies in the middle-late eighteenth century.

⁸ British and French navy data for this period is uneven. In general, research revealed that Royal Navy data is readily accessible, complete and detailed. French Navy data lacks this accessibility, completeness, and is at times vague. Thus, some years are not used because of this disparity of data, such as the period of 1764-1773 for Table 1. Despite this challenge, comparative data was found in specific years, and does enable effective comparisons between the two navies.

note, this table does not take into account frigates, which were used extensively by the French, nor does it include the significant numbers of merchant ships used by both navies for a variety of logistical services. It does, however, convey the essential story of combat power, as ships of the line represented the firepower necessary to engage and attempt to destroy each other's fleet. This paper now addresses how each navy built up its fleet to conduct these maritime operations.

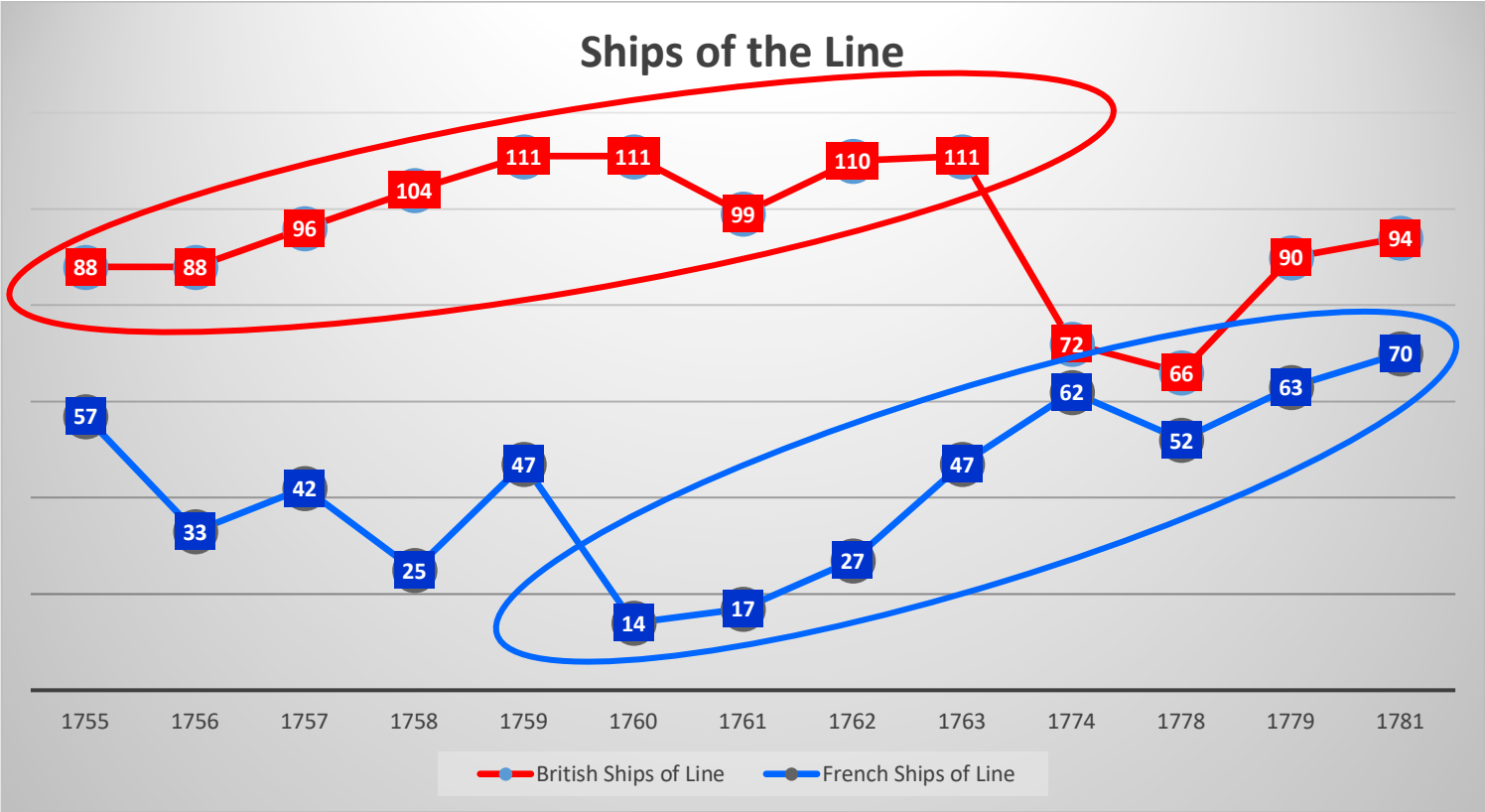


Table 1: British and French Ships of the Line, 1755-1781⁹

The Royal Navy

At the onset of the arms race, Britain had the substantial advantage of having the strongest navy in Europe.¹⁰ Throughout the arms race, the Royal Navy possessed an experienced officer corps, well-equipped

⁹ There were three sources which provided the data for this table, all authored from Jonathan Dull: *The French Navy and the Seven Years' War* (Lincoln, Nebraska: University of Nebraska Press, 2005), 47, Appendix C, Appendices H-L; *The French Navy and American Independence: A Study of Arms and Diplomacy, 1774-1787* (Princeton: Princeton University Press, 1975), 12; *The Miracle of American Independence: Twenty Ways Thinking Could Have Turned Out Differently* (Lincoln: University of Nebraska Press, 2015), 33, 38, 87, 111, 132. The numbers annotated here represent the effective ships of line, which the respective navy could put into use immediately because it had the crews, supplies, and the ship itself was able to sail with minimal maintenance.

¹⁰ Roger Morriss, *The Foundations of British Maritime Ascendancy* (Cambridge: Cambridge University Press, 2011), 33.

dockyards, victualling facilities, overseas bases, superb medical support to its seamen, and a remarkable capacity to build warships in private yards.¹¹ For the majority of time over the arms race, the Royal Navy could put to sea at least 90 ships of the line. Total fleet numbers were even more impressive; starting from 137 ships in 1755, the Royal navy could count 398 ships in its fleet by 1782.¹² To man and employ these ships, the Royal Navy grew from over 33,000 to a high of over 85,00 seamen in 1760.¹³ Numbers dropped substantially after the Seven Years War, but then rose dramatically to the high during this period of over 98,000 seamen in 1781 during the American Revolution, as can be noted in **Table 2**.¹⁴

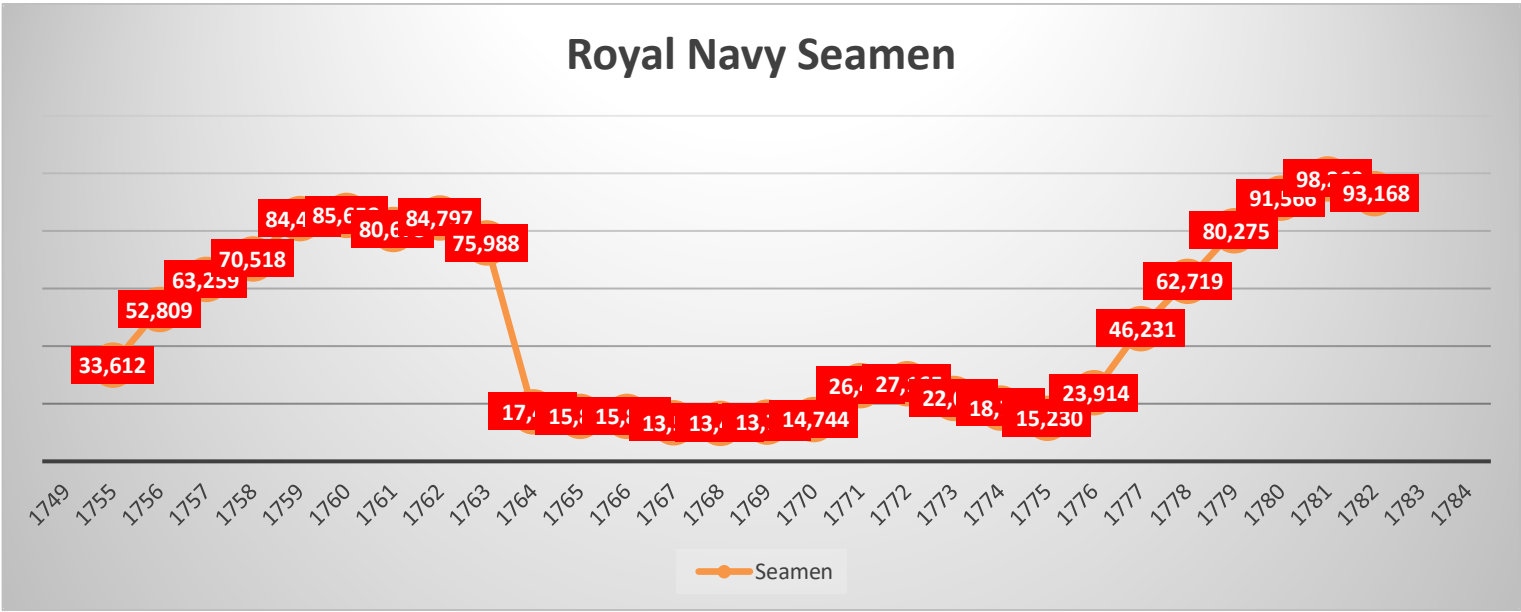


Table 2: Royal Navy Seamen, 1755-1782¹⁵

The scale of this fleet build-up and maintenance reflected a British state which possessed a “financial system capable of rivalling that of any other European power...”¹⁶ Undeniably, the strengths of the British economy and financial system underpinned its naval strength. Further, it was a maritime economy, which offered three important advantages over a land-based economy: first, the transport of long-distance transport

¹¹ Baugh, 623.
¹² Morriss, 37.
¹³ Ibid, 226.
¹⁴ Ibid.
¹⁵ Ibid. Morriss’ narrative provides the data used in this data.
¹⁶ Ibid, 9.

on rivers and seas cut the costs of conveyances; second, the sea supplied a variety of markets, vital in wartime and permitting flexibility in the use of commercial connections; third, Britain’s economy possessed colonies which added labor and materials for which they also served as a market.¹⁷ To protect this economy, the Royal Navy protected the sea lines of communication, established colonial bases, and provided escort to fend off privateers. The Royal Navy thus drove and benefitted from this maritime economy as a sort of flywheel, connecting naval power, state bureaucracy, and the financial system. **Table 3** displays the Royal Navy’s expenditures over the course of the arms race.

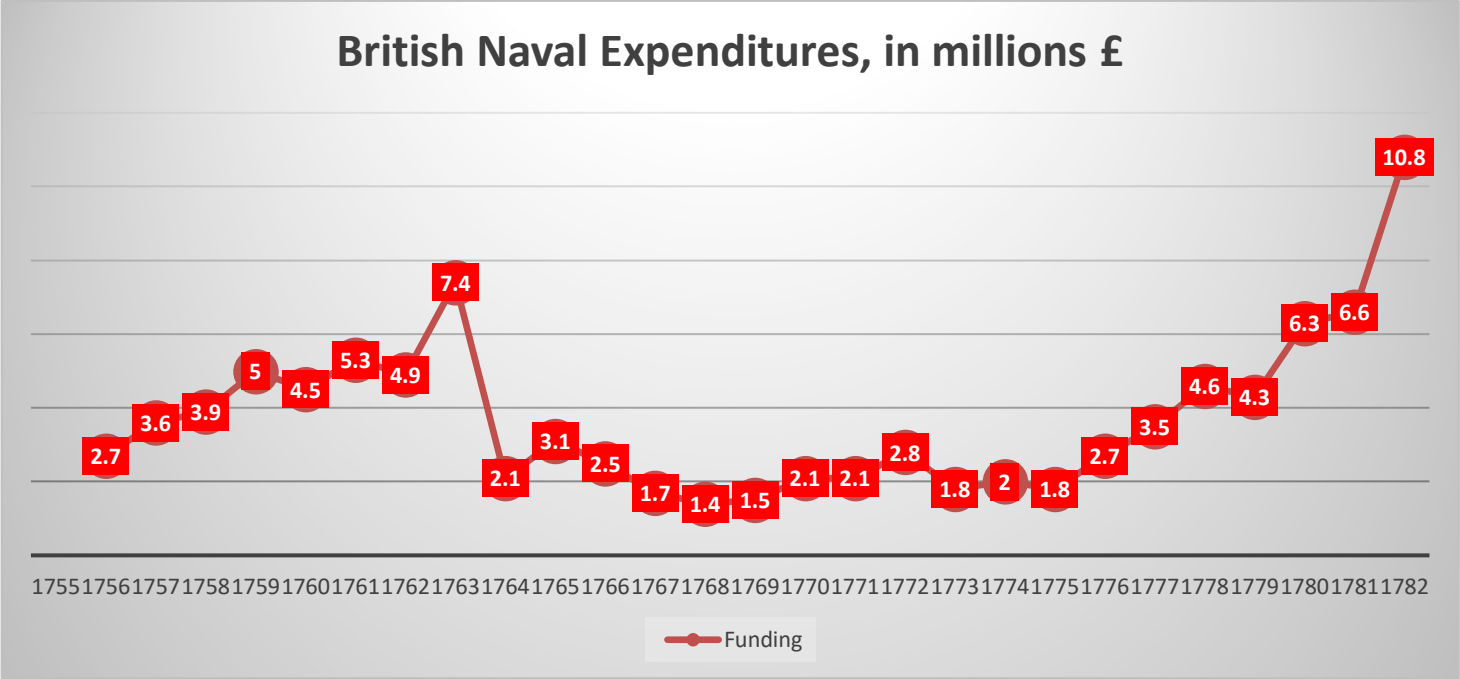


Table 3: British Naval Expenditures, 1755-1782¹⁸

The story of the Royal Navy of this period is not complete without a discussion of the technology which empowered the fleet. There was a pervasive and long-standing effort to improve navigation in the eighteenth century,¹⁹ but during this arms race two aspects stand out: first, the attempt to improve and achieve superior firepower and second, the enhancements in medical practices. For the first aspect, it is important to note that

¹⁷ Morriss, 79.
¹⁸ Ibid, 97.
¹⁹ Dava Sobel, *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time* (New York: Penguin Books, 1995), 7-8.

both the British and the French consistently sought to improve firepower, which included gun manufacturing, both quantity and quality, along with gunpowder. The transfer of technology ensured relative parity in this area.²⁰ In spite of this challenge, the British did achieve superior gun technology by 1782, when it started to produce carronades for fleet deployment. These weapons were shorter, lighter, more powerful at shorter distances, and required less men to fire; perhaps most importantly, carronades were able to shoot more rapidly, over twice as fast, than conventional long guns.²¹

Medical practice enhancements, the second aspect, were evident throughout the period. From the outset of the Seven Years War, Royal Navy surgeons applied increasing medical knowledge, such as the treatment of scurvy, to improve seamen health, albeit in limited ways due to eighteenth century production and logistical limitations. Further, the Royal Navy invested in medical administrative and bureaucratic improvements, such as the Sick and Hurt Board; this organization evaluated cures and preventatives that were practicable for the fleet.²² While these technologies improved the Royal Navy's capabilities, the French Navy was just as determined to meet this challenge.

The French Navy

In 1755, the French Navy was still a proud and powerful combat organization. It had a storied past, and was the powerful navy in the world as late as the 1690s.²³ As with most of the eighteenth century, France had roughly 60,000 seamen through 1782.²⁴ However, the Seven Years War was devastating for the French Navy. Almost nothing went right. It mobilized far too slowly, endured crippling combat losses, suffered horribly from diseases, and perhaps most damaging, was simply prioritized behind the French Army.²⁵ It started the war with less than 800 officers, with few junior officers, increased to about 1,000 officers by 1757, and struggled to

²⁰ Black, 127.

²¹ Morriss, 206-212.

²² Erica Charters, *Disease, War, and the Imperial State: The Welfare of the British Armed Forces during the Seven Years' War* (Chicago: University of Chicago Press, 2014), 216.

²³ Dull, *The French Navy and the Seven Years' War*, 9.

²⁴ The exact numbers of French seamen are somewhat of a mystery, as none of the sources consulted provided year-by-year figures. This number (60,000 seamen) is cited in Baugh, 299 and 623, and Pichichero, 34. Dull, in *The French Navy and the Seven Years' War*, 47, cites a somewhat smaller number of 52, 466, in 1755.

²⁵ Baugh, 623.

maintain this level to the end; the French Navy lost a staggering 6,500-7,000 seamen in 1756 alone, captured by the British.²⁶ By the end of the war, the total number of French seamen dipped to perhaps as low as 21,000.²⁷ This story is vividly displayed in **Table 1**, which depicts a low of 14 ships of the line combat ready in 1760. Although it possessed excellent port facilities at Brest, Rochefort and Toulon, it lacked both the resources and manpower to make up for the losses.

The start of this recover could not occur until the financial system which funded the French Navy was reformed. By 1760, the merchant bankers who financed the navy, along with the government, were bankrupt.²⁸ It took the prodigious efforts by the highly capable administrator duc de Choiseul to re-establish credit for the Navy over the next several years.²⁹ Further, in accordance with the treaty of Paris of 1763, the French kept the fisheries off the coast of Newfoundland and the Gulf of Lawrence, including the small islands of St. Pierre and Miquelon, along with the Caribbean islands of St. Lucia and the sugar-rich Martinique.³⁰ The renewed financial solvency, the fisheries which enabled training for seamen, and the Caribbean colonies, propelled a resurgent French Navy which maintained more the 60 ships of the line on average from 1774 onward, as seen in **Table 1**. Powered by increasing financial investments, as can be seen in **Table 4**, and made stronger by allying with the Spanish and Dutch navies, the French were able to engage, challenge, and even tactically defeat the Royal Navy during the American Revolution.

²⁶ Dull, *The French Navy and the Seven Years' War*, 48, 62.

²⁷ This 21,000 seamen number is derived from three numbers from Baugh's narrative: 5,500 seamen who died from the Louisbourg expedition, (299) 25,000 naval prisoners of war (POW) in British prisons, and 8,500 POWs who died in captivity. (300) Added together, these numbers equal 39,000. Subtracted from 60,000, the result is 21,000. Given that the French could only "fit out 14 ships of the line..." out of their 63, (300) this number appears to be a valid estimate.

²⁸ J.F. Boshier, "Financing the French Navy in the Seven Years War: Beaujon, Goossens et Compagnie in 1759," *Business History* 28, No. 3 (Jul., 1986), 128-129.

²⁹ Ibid, 129.

³⁰ Dull, *The Miracle of American Independence*, 74, and Baugh, 640.

French Naval Expenditures, in millions livres

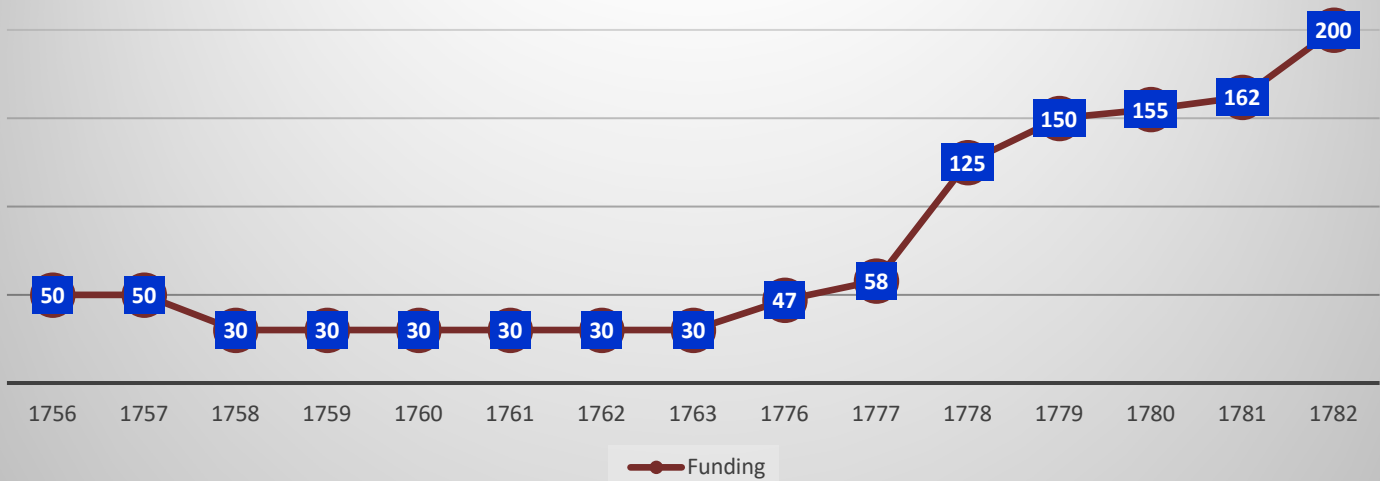


Table 4: French Naval Expenditures, 1756-1782³¹

As with the Royal Navy, the French Navy sought to improve its through technology. They also strove to improve their firepower and navigational capabilities, which included the use of espionage.³² Two significant improvements stand out. First, the French invested in the capability and knowledge of the individual naval officer. This was enabled by an “enlightenment” culture, focused in part on science and math, and evident throughout the eighteenth century in both formal and informal professional education.³³ The French naval academy at Brest, founded in 1752 (made royal academy in 1769), serves as a formal education exemplar; an informal education exemplar was the *Journal de la marine*, initially published in August 1778, which concentrated first on technical communications on maritime subjects, and secondarily on administrative topics, such as ordinances.³⁴ The second noteworthy improvement was a focus on French seamen well-being,

³¹ Ketchum and Dull, *The French Navy and the Seven Years’ War*, 62, and *The Miracle of American Independence*, 123-124. As previously addressed, there are holes in the data, specifically from 1764-1775 in this table. Even with this limitation however, this table still conveys French naval investments broadly over this period.

³² Sobel, 124 and Christy Pichichero, *The Military Enlightenment: War and Culture in the French Empire from Louis XIV to Napoleon* (Ithaca: Cornell University Press, 2017), 35.

³³ Pichichero’s entire narrative focuses on this concept, and the French Navy benefitted from the fact that “...the eighteenth century was a great age of naval experimentation in France...” (34).

³⁴ Pichichero, 35, 59-60

including naval medicine, even if the tangible improvements were not as impressive as those of the Royal Navy. There were advancements in military psychology, which drove reforms to better care for seamen and their families.³⁵ These , and all the other efforts addressed above, propelled the naval arms race. Thus, this paper now turns to analyzing those factors with the most significant impacts.

Section Three: Analysis—the factors which impacted the arms race

The military theorist Carl von Clausewitz postulated that “...the nature of war is complex and changeable...many roads lead to success, and they do not all involve the opponent’s outright defeat.”³⁶ This description aligns to the British and French naval arms race, with war accompanying the beginning and end of it. No single road, or factor, enabled a continuing advantage for either navy. However, five factors, in combination or in single abundance, seemed to afford an advantage, and are respectively: logistics, alliances, strategy, asymmetric initiatives, and perseverance. Discussions on each follows.

Logistics. For purposes of this paper, this factor focuses on supply chains and funding. The record of logistics for each navy enabled it to gain advantages. For the balance of the arms race, the advantage rested with the British, as the Royal Navy was better funded by comparison than the French Navy. In general, the British were far more successful than France at increasing taxes and raising loans, in large part “...because British merchants and other taxpayers felt they had a direct part in governing the country.”³⁷ Further, it possessed strong logistical administration. The Victualing Board had no comparable French organization, and helped deliver food provisions and naval equipment more efficiently and with less cost.³⁸ It is hard to envision how the Western Squadron in 1759-1760 could have maintained a near-constant blockade of French shipping, while protecting British merchant vessels, without a strong logistical chain. This required a large fleet, fully

³⁵ Pichichero, 131-138, 190.

³⁶ Carol von Clausewitz, *On War*, ed. And trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), 90, 94.

³⁷ Dull, *The French Navy and the Seven Years’ War*, 47.

³⁸ Chistian Buchet, *The British Navy, Economy and Society in the Seven Years War* (New York: The Boydell Press, 2013), 9.

manned and healthy to sustain a presence off the coast of Brest; the effort paid off, as it culminated in the Battle of Quiberon, where Admiral Hawke led the Western Squadron to a decisive victory.³⁹

The story of logistics, however, is not one of sole Royal Navy superiority. As discussed above, the French Navy did indeed come back strong after the Seven Years War, and mobilized effectively to challenge the Royal Navy during the American Revolution. The French maintained a registry of seamen, some of whom could be called up for immediate service; this included trained seamen from the West Indies and the fisheries off the coast of Newfoundland.⁴⁰ Additionally, by 1782, French annual naval expenditures were equivalent to those of the British, providing them the ships of the line and associated logistics needed for effective combat.⁴¹ The French could also count on the Spanish for help: when Admiral de Grasse prepared to move towards the Chesapeake in 1781 but was in critical need of funds, Francisco Saavedra de Sangronis, a Spanish official of the secretary of state with considerable political and customs, provided him a half million pesos' loan; further, Saavedra enabled, with security assurances, de Grasse to deploy his entire fleet, bringing to bear two hundred more cannon than his British opponent, Admiral Graves.⁴² In fact, the French found these alliances, even while cumbersome in some ways, generally worked to their favor in the naval arms race.

Alliances. The discussion of alliances during this period is lopsided, for the reason that the British did not have, nor sought out, any naval alliances. Perhaps this worked in their favor for some of it, but it hardly accorded any advantage from 1778 on. In contrast, the French sought out, gained, and maintained strong naval alliances with the Spanish and Dutch. Beyond the emergency funding exemplar above, the Spanish brought several things to the French. First, their warships were among the world's best, particularly those built in Havana of tropical hardwoods, such as the 114-gun *Santisima Trinidad*.⁴³ While lacking both experience and training in fleet maneuvers, the Spanish were able to blockade Gibraltar during the American Revolution,

³⁹ Charters, 207.

⁴⁰ Dull, *The Miracle of American Independence*, 28, 107.

⁴¹ Ibid, 123-124.

⁴² Barbara A. Mitchell, "Bankrolling the Battle of Yorktown: Gold and Silver from Havana allowed American troops to trap Lord Cornwallis and his army," *The Quarterly Journal of Military History* 19, No. 3 (Spring 2007): 22.

⁴³ Dull, *The Miracle of American Independence*, 113.

thereby tying down the Royal Navy's Mediterranean Squadron and preventing it from use in America.⁴⁴ In the same way, the Dutch Navy was strong enough to threaten control of the North Sea, impairing the British attempt to deny the French Navy access to masts, timber, copper, and naval stores from the Baltic Sea.⁴⁵ In sum, these alliances offered, on balance, the French Navy a path to temporary advantage.

Strategy. While the British generally derived combat advantages in logistics, and the French gained their own advantages in their alliances, the issue of strategy arguably points to a tie. The Western Squadron provides two Royal Navy exemplars for successful naval strategy. First, its patrols off the French coast in 1757, varying locations and employing mass in certain places, produced two results: first, French naval ministers shied away from sending out squadrons to harass British cruisers and privateers; second, the French navy no longer provided strong escorts for convoys. The strategic effect was dramatic: while French merchants discontinued Atlantic commerce almost entirely, British commerce thrived throughout the war.⁴⁶ Second, the Western Squadron's blockade of Brest and eventual decisive battle win in Quiberon Bay in 1759 thwarted a planned invasion, delayed sailings, and temporarily eliminated the Brest Squadron.⁴⁷ These victories in strategy would be matched in full by the French nearly two decades later. Two examples tell this story.

First, the French Navy risked virtually all of its Atlantic Fleet by sailing to the western approaches of the British isles in 1778 and engaging the Western Squadron in its entirety during the Battle of Ushant. This show of courage produced inconclusive tactical results, with the French suffering more casualties and the British suffering more damage to ships. It was, however, a psychological victory for the French and confidence builder, while the British fleet was thrown into turmoil, with blame accusations in all directions.⁴⁸ Second, a combined French-Spanish fleet provided a viable threat of invasion when it reached an area off Plymouth in August 1779; later, another combined fleet cruised to the south of England. The net effect was the British were forced to keep ships at home for fear of another invasion attempt, although none was planned; this in turn

⁴⁴ Dull, *The Miracle of American Independence*, 113, 115.

⁴⁵ Ibid, 127-128.

⁴⁶ Baugh, 624.

⁴⁷ Ibid, 623.

⁴⁸ Dull, *The Miracle of American Independence*, 110.

enabled the French and Spanish navies more freedom of maneuver in the Western Hemisphere, exactly what they lacked during the Seven Years War.⁴⁹ As the Royal Navy had done in the Seven Years War, the French Navy produced winning strategies two decades later.

Asymmetric Initiative. Like logistics, the advantages derived for this factor point towards the British. This paper defines asymmetric in the following way, using the US military's definition from Joint Publication 1-02: "In military operations the application of dissimilar strategies, tactics, capabilities, and methods to circumvent or negate an opponent's strengths while exploiting his weaknesses." Two specific capabilities netted the British a way to both negate the French Navy's strength and exploit its weaknesses. First, the French Navy possessed ships qualitatively comparable to the British, but the British were better able to keep its ships sailing, and sailing for longer periods of time. While the French had four dry docks, the British had sixteen; this tipped the operational effectiveness scales towards the Royal Navy.⁵⁰

The second asymmetric initiative took the form of stronger medical support for its seamen, resulting in the Royal Navy's ability to stay at sea longer than the French Navy, most notably with the Western Squadron under Admiral Hawke in 1759.⁵¹ Naval surgeons like James Lind sought to cure scurvy and address the seamen's sea life in total, by prescribing regular exercise, diluting liquors for salted meat, vinegar, and especially fresh meat and vegetables to combat scurvy.⁵² To get these fresh provisions to the fleet required administrative and bureaucratic improvements that supported the fleet, such as the aforementioned Sick and Hurt Board. As part of its duties to bring practicable solutions to the fleet, it instituted the deployment of portable soup throughout the Navy, credited with preserving the lives of sailors until they reached naval hospitals.⁵³ The Board possessed considerable medical expertise, developed a robust standardized process for implementing promising prevention, cures and methods, and codified the Admiralty's investment in medical

⁴⁹ Dull, *The Miracle of American Independence*, 114.

⁵⁰ Baugh, 304.

⁵¹ Ibid, 10.

⁵² Charters, 206.

⁵³ Ibid, 217.

care for sailors and pursuit of health care solutions for these men.⁵⁴ As stated above, the French also made attempts to improve their seamen's health, but they had no equivalent to either James Lind or the Sick and Hurt Board; indirectly, the British exploited this French weakness by putting out to sea a healthier fleet.

Perseverance. No matter how each respective navy fared in the other four factors, if it exercised perseverance, it could and did overcome other disadvantages. Each navy offers an exemplar for this factor. First, the Royal Navy experienced nearly three years of defeats after the beginning of the Seven Years War: it failed to block resupply to Canada in 1755; it failed to effectively assist in the defense of Minorca, which was lost to the French in 1756; it failed again in Canada in 1757, when French ships were able to make it across the Atlantic and help save Louisbourg; and it participated in the failed amphibious raid of Rochefort in 1757. Although the conduct of its officers largely escaped blame for Rochefort, it was subjected to intense scrutiny of its actions. By 1758, the Royal Navy could have merely focused on home defense since the threat of invasion was a constant fear, and resupply of its forces in North America, Europe and India; it would likely have not been faulted for such a strategy.

Instead, the Royal Navy had strong and experienced leaders, such as Admirals Boscawen, Saunders, Howe, Keppel and Hawk,⁵⁵ who chose to go on the offensive. It mobilized somewhat slowly, but ships were both built and maintained (over 40 ships of the line were built during the war⁵⁶), seamen were mobilized (impressed at times), logistics were purchased and efficiently delivered, and the medical support to help the fleet stay afloat generated impressive advancements. By 1758, the Royal Navy made any cross-Atlantic journey by a French merchant untenable, and it conducted raids along the French Channel coast.⁵⁷ In 1759, the British achieved complete naval superiority over the French: it "...assisted in the capture of Guadeloupe; dominated the Coromandel Coast; carried Wolfe's army up to Quebec; destroyed or captured five of the Toulon squadron's ships of the line off Lagos; and maintained a blockade of Brest while also watching the troop

⁵⁴ Charters, 217-218.

⁵⁵ Baugh, 624.

⁵⁶ Morriss, 61.

⁵⁷ Baugh, 299, 306.

transports in the bay of Morbihan.”⁵⁸ The Royal Navy contributions to British war success were undeniable, and these contributions had everything to do with a culture of perseverance.

In the midst of this Royal Navy success, the French Navy virtually collapsed. Its perseverance story would start with a fleet that was broke in all ways: dispirited seamen, financially bankrupt, and operationally outmatched. From these ashes, a series of French leaders rebuilt the French Navy. Starting in 1760, Choiseul reestablished the French Navy’s credit, and started to rebuild the fleet, as discussed above. His cousin and successor, the Duke de Choiseul-Praslin continued on this vector, filling the dockyards with material and reforming naval administration.⁵⁹ Later, Antoine de Sartine would assume these duties from 1774-1780. While having no naval experience, Sartine would become one of the capable naval ministers in French history, guiding the French Navy with prudence, courage, and innovation; he focused on the health of his ships’ crews, reestablished order in the administration of ports, and starting the overhauls required to ready the ships of the line for combat with the British.⁶⁰ His successor, the marquis de Castries, guided the navy through its operations in the American Revolution, all the while starting the process of naval reforms by which France would provide better care for seamen and their families.⁶¹

From 1760-1781, the French Navy would grow from 14 effective ships of the line to 70, as seen in **Table 1**. Its fleet was generally well-provisioned, well taken care of, well trained and professional. From the Battle of Ushant in 1778 to the Battle of Yorktown in 1781, the French Navy successfully confronted the Royal Navy. When Admiral de Grasse arrived in the Chesapeake in 1781, landed his troops, defeated a smaller British fleet, and ensured the British Navy under Admiral Graves could not get into the Chesapeake to reinforce Lord Cornwallis, he completed a feat reminiscent of the 1759 Royal Navy. Taking over two decades to get to this point, the French Navy’s impressive performance embodied perseverance.

⁵⁸ Baugh, 623.

⁵⁹ Dull, *The French Navy and American Independence: A Study of Arms and Diplomacy, 1774-1787*, 11.

⁶⁰ Ibid, 14-15, 26.

⁶¹ Pichichero, 190.

Conclusion

The thesis of this paper is that Britain and France competed in a naval arms race for nearly three decades, from 1755-1782. In section one, this paper affirmed this naval competition clearly met the definition and criteria of an arms race. Additionally, it provided evidence that it was the first arms race. Throughout this period, the British and French built and maintained ships which clashed in battle and sustained their colonies. They spent considerable resources and mobilized seamen to do this. Yet they also sought to provide care for these seamen, as well as advance technology better than the other side. This naval arms race contained historically compelling and consequential qualities: it was both driven and drove operations in global war and global affairs, contained elements of intrigue and espionage, and motivated talented people on both sides to accomplish prodigious feats.

Both navies attained victories in battle, which were decisive in the consequences of both the Seven Years War and the American Revolution. Analysis reveals how this happened: logistics strongly favored the British, while alliances were a significant advantage for the French. Both sides developed winning strategies, while assessment of asymmetric initiatives reveals stronger British results. Each side possessed perseverance, which enabled operational victories at different times in the arms race. Taken together, the preponderance of evidence points to an overall British victory in this race, based not only on its superiority in logistics and asymmetric initiatives, but also on the fact that after 1782, the Royal Navy remained the most capable and feared naval service in the world, for well over a century longer. This powered a global empire which “would shape the future of world politics for two centuries.”⁶² This paper asserts this would not have been possible without a naval arms race with France from 1755-1782, the first arms race.

⁶² Baugh, 665.

Bibliography

- Baugh, Daniel. *The Global Seven Years War: 1754-1763*. New York: Routledge, 2011.
- Bosher, J. F. "Financing the French Navy in the Seven Years War: Beaujon, Goossens et Compagnie in 1759." *Business history* 28, No. 3 (Jul., 1986): 115 - 133.
- Black, Jeremy. *War and the World: Military Power and the Fate of Continents, 1450-2000*. New Haven: Yale University Press, 1998.
- Buchet, Christian. *The British Navy, Economy and Society in the Seven Years War*. New York: The Boydell Press, 2013.
- Charters, Erica. *Disease, War, and the Imperial State: The Welfare of the British Armed Forces during the Seven Years' War*. Chicago: University of Chicago Press, 2014.
- Clausewitz, Carol von. *On War*. Edited and Translated by Michael Howard and Peter Paret. Princeton: Princeton University Press, 1984.
- Dull, Jonathan. *The French Navy and the Seven Years' War*. Lincoln, Nebraska: University of Nebraska Press, 2005.
- Dull, Jonathan. *The French Navy and American Independence: A Study of Arms and Diplomacy, 1774-1787*. Princeton: Princeton University Press, 1975.
- Dull, Jonathan. *The Miracle of American Independence: Twenty Ways Thinking Could Have Turned Out Differently*. Lincoln: University of Nebraska Press, 2015.
- Kennedy, Paul. *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*. New York: Vintage Books, 1987.
- Ketchum, Richard M. *Victory at Yorktown: The Campaign that Won the Revolution*. New York: Henry Holt and Company, LLC, 2004.
- Merriam-Webster. "Definition of Technology." <https://www.merriam-webster.com/dictionary/technology>. Accessed on December 10, 2017.

- Mitchell, Barbara A. "Bankrolling the Battle of Yorktown: Gold and Silver from Havana allowed American troops to trap Lord Cornwallis and his army." *The Quarterly Journal of Military History* 19, No. 3 (Spring 2007): 16-25.
- Morriss, Roger. *The Foundations of British Maritime Ascendancy: Resources, Logistics and the State, 1755-1815*. Cambridge: Cambridge University Press, 2011.
- Nelson, James L. *George Washington's Great Gamble: And the Sea Battle That Won The American Revolution*. New York: McGraw-Hill, 2010.
- Pichichero, Christy. *The Military Enlightenment: War and Culture in the French Empire from Louis XIV to Napoleon*. Ithaca: Cornell University Press, 2017.
- Smith, Theresa Clair. "Arms Race Instability and War." *The Journal of Conflict Resolution* 24, No. 2 (June, 1980): 253-284.
- Sobel, Dava. *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*. New York: Penguin Books, 1995.