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National defense interest during the early republic period centered on the defense of the coasts and harbors of the United States. This paper surveys the development of American coastal and harbor defense policy from the colonial period through the termination of the War of 1812, and argues that the continuance and expansion of the coastal fortifications, gunboats, and underwater weaponry from the period would have provided a more effective coastal defense system than the third system coastal fortifications that characterized the nineteenth century.

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"A PALTRY FRIGATE DARE NOT THEN INSULT US"

U.S. COASTAL AND HARBOR DEFENSE, 1776-1834

An Essay

Submitted to

The Faculty of the

United States Naval War College

In Partial Fulfillment

of the Requirements for the

Graduate Certificate in Maritime History

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by
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May 23, 2022

"A PALTRY FRIGATE DARE NOT THEN INSULT US"

U.S. COASTAL AND HARBOR DEFENSE 1776-1834

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A national security concern that captivated the interest of early American policymakers was the issue of how to defend coasts and harbors against potential foreign adversaries. The extensive two-thousand-mile coastline that meets the Atlantic Ocean presented significant challenges. The range of possible threats included bombardment of coastal towns, invasion via sea landing, blockade, and raids against merchant shipping. Each of these threats required different approaches to defense that the fledgling nation could not realistically implement for all times and places without facing insolvency. Consequently, the first U.S. policymakers prioritized the defense of harbors from bombardment, from which unrecoverable economic damage remained the foremost concern, and to a lesser extent the harassment of American shipping by foreign naval powers. The objective that soon emerged was a system that hoped to effectively deter, and if necessary, defend against such an attack. As General Horatio Gates expressed to President Thomas Jefferson in a letter on October 19, 1804, with such a system, "A paltry frigate dare not then insult us."[1]

Before the United States established itself as an independent nation, coastal and harbor defense decisions for the colonies occurred at the local level. During the Colonial period, the typical means of defense consisted of hastily constructed earthen batteries manned by militiamen. Primarily, the colonies depended on the British for defense of their coasts and harbors. After the War of Independence, Americans wrestled with how to defend their vast coastlines and vulnerable harbors. They prioritized earthen constructed batteries and later, mortar constructed land batteries that formed the core of coastal and harbor defenses through the War of 1812. Additionally, the desire for more economical alternatives during the Jefferson administration saw the implementation of a naval gunboat program and experiments with

[1] *American State Papers: Documents Legislative and Executive of the Congress of the United States Naval Affairs* [hereafter *ASP, NA*], *Vol. 1,* Washington, DC: Gales and Seaton, 1834, 164.

underwater weapons. However, the devastating American losses during the War of 1812 marked a turning point in coastal and harbor defense policy. Following the war, policymakers prioritized a vast system of permanently constructed coastal fortresses, known as the third system. Ultimately, the third system proved ineffective due to construction delays, the inability to arm and maintain the fortifications, and technological obsolescence.

The institution primarily responsible for the failed third system was the powerful Army Board of Engineers. The board sought to maintain the status quo of third system fortifications despite the uniqueness of American geography, the recent role of navies in coastal defense, and the emergence of the undersea as a warfighting domain. Among the coastal and harbor defense alternatives considered prior to 1815, there was potential for an effective system that included a mix of strategically positioned batteries, coastal craft, and underwater weaponry that, had it been developed, would have led to a more effective coastal defense system than the conglomeration of coastal fortresses that characterized the mid-nineteenth century.

Despite the voluminous historical writing on U.S. coastal and harbor defense, relatively little attention has centered on the early republic period.[2] The bulk of the historical research has focused on design and construction of the fortresses built through the mid-nineteenth century. Other historians have devoted research to the development of early American coastal defense

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[2] For a representation of the available historiography, see Dale E. Floyd's *Defending America's Coasts, 1775-1950: A Bibliography*. Accessed at https://www.hsdl.org/?abstract&did=748281. Emanuel R. Lewis, *Seacoast Fortifications of the United States: An Introductory History* (Missoula: Pictorial Histories Publishing Company, 1990) surveys the design and construction of American coastal fortifications spanning from the colonial period through the twentieth century. Descriptions of coastal fortifications' military actions are detailed in J. E. Kaufmann and H. W. Kaufmann, *Fortress America: The Forts That Defended America 1600 to the Present* (Cambridge: Da Capo Press, 2004. For gunboats, Gene A. Smith, *"For the Purposes of Defense": The Politics of the Jeffersonian Gunboat Program* (Newark: University of Delaware Press, 1995) provides an overview of the politics surrounding the evolution of the gunboat program, while Spencer C. Tucker, *The Jeffersonian Gunboat Navy* (Columbia: University of South Carolina Press, 1993) delves more into the boats' operational performance during both peacetime and the War of 1812.

alternatives, such as gunboats or torpedoes. Efforts aimed at evaluating American coastal and harbor defense systems from a national policy level perspective are fewer still.[3] This paper endeavors to enter the historical conversation by examining U.S. policy level coastal and harbor defense decision-making leading into the War of 1812 to evaluate how a continuation and enhancement of that policy would have been better for the nation than the drastic turn toward permanent fortifications in the post-war period.

Colonial Coastal and Harbor Defense

The coastal and harbor defenses leading up to the American Revolution consisted largely of small, earthenwork batteries. The structures were reinforced with whatever materials were locally available. A typical design that proved relatively sturdy would have stone or brick structures spaced twelve to fifteen feet on opposite ends, and the middle filled with earth or sand. Normal armament was small caliber guns on rolling carriages such as 18- or 24-pound, but larger guns up to 44- pound were also used. The standard life cycle of a colonial coastal battery was a rapid and thrifty construction in view of an impending threat, followed by a quick descent into neglect and disrepair.[4] The state of these coastal defenses going into the American War for Independence meant that most of them posed no formidable threat to the British Navy.[5] However, instances of serviceable battery defenses employed in tandem with industrious alternatives improvised by Patriots provide an exception. The defenses employed to protect Philadelphia at the Delaware River illustrate such a case.

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[3] Robert S. Browning III, *Two if by Sea: The Development of American Coastal Defense Policy* (Westport: Greenwood Press, 1983), xii. Browning traced the development of American coastal defense policy starting in the colonial period on through the twentieth century, arguing that deterrence was the common thread driving national decision makers.

[4] Emanuel Raymond Lewis, *Seacoast Fortifications of the United States: An Introductory History* (Missoula: Pictorial Histories Publishing Company, 1990), 15,17.

[5] J. E. Kaufmann and H. W. Kaufmann, *Fortress America: The Forts That Defended America 1600 to the Present* (Cambridge: Da Capo Press, 2004), 100.

George Washington thought that the alternative defenses implemented by the Philadelphians appropriately complemented existing land batteries, provided they were restored to serviceable condition. He wrote to the President of Continental Congress, "that the obstruction in the [Delaware] River, with the help of the gallies [*sic*], floating batteries, and with tolerable industry to put the land works in a proper state, will be extremely formidable to the enemy…The Fire ships also will contribute…there is some probability of its succeeding, and they will be at least an embarrassment and terror to the enemy, and will oblige them to use precaution, inconvenient to them, and serviceable to us."[6] The established defenses at the Delaware River were considerable enough that a planned British troop landing was diverted to the Chesapeake Bay. Captain Andrew Snape Hamond of the British Navy remarked "that the Enemy expecting the Fleet to come into the River had made uncommon preparations to annoy the Men of War…with Fire Ships & fire rafts, and had besides a considerable number of Row Galleys, Xebecks & Floating Batteries, which in the Narrow Navigation & rapid tides of the River might do great damage among the Transports."[7] The British ships involved in the October 1777 engagement included the 64-gun frigate *Augusta*, the 44-gun frigate *Roebuck*, 18-gun *Merlin*, and the galley *Cornwallis* equipped with a 32- pound gun. After *Augusta* and *Merlin* grounded, the Patriots engaged them with twelve galleys and two floating batteries. The resulting fire on *Augusta* claimed the lives of 150 sailors, while *Roebuck* suffered ten casualties and was driven away along with the other vessels.[8] While the batteries and galleys effectively held back British warships at the Delaware River, a more novel approach to defense was tested against British ships in the region a couple months later, albeit with far less favorable results.

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[6] George Washington to the President of Congress, August 10, 1777, in *Naval Documents of the American Revolution Vol. 9* (Washington, DC: The Government Printing Office, 1964), 731.
[7] Narrative of Captain Andrew Snape Hamond, July 31, 1777, in *NDAR Vol 9*, 363.
[8] Commodore John Hazelwood to Thomas Wharton, Jr., October 29, 1777, in *NDAR Vol 10*, 343-344.

The unique approach to defense attempted at the Delaware River involved the employment of an experimental weapon: David Bushnell's floating mine. An eyewitness described the device as "a piece of Clockwork, a Barrel with Gunpowder."[9] Bushnell had tested the weapon against the British warship *Cerberus* at New London in August 1777, but the three casualties the mine caused resulted more from the sailors' reckless fascination with the novel device than its operational effectiveness.[10] The Delaware River provided another opportunity to examine the weapon's worthiness. Bushnell planned for the current to carry the mines toward the British ships positioned at Philadelphia in December 1777. Once released, the mines took much longer than expected to arrive at the ships' vicinity. As at New London, the mine detonated when a few curious onlookers in a boat mishandled the device.[11] After these largely unsuccessful experiments, support for Bushnell's weapons waned, and he accepted a role working for the Engineer Corps before falling off the historical record for the remainder of his life.[12] The reluctance to adopt Bushnell's floating mines is understandable. Once deployed, the weapons succumbed to the mercy of nature, with the likelihood of inflicting harm on the innocent just as probable as the enemy. However, Bushnell's invention marked the introduction of new possibilities for coastal and harbor defense weaponry that would continue under Robert Fulton nearly thirty years later.

Although Bushnell's mines failed to contribute to the Patriots' cause in their struggle for independence, American innovation elsewhere, particularly at the Delaware River, left an indelible mark on future coastal and harbor defense decisions. The successful experience of batteries, floating batteries, and coastal craft in fending off British warships at the Delaware

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[9] Diary of Elizabeth Drinker, December 27, 1777, in *NDAR Vol 10*, 816.
[10] Alex Roland, *Undersea Warfare in the Age of Sail* (Bloomington: Indiana University Press, 1978), 82.
[11] *NDAR Vol 6*, 1507.
[12] Roland, *Undersea Warfare in the Age of Sail*, 84.

River would inform policy makers onward through the second system defenses leading into the War of 1812. Now that America had won its independence, the young republic made a concerted effort to develop a system for defense of its coasts and harbors.

The First System: 1794 - 1806

In June 1777, John Adams toured the Delaware River defenses during his term as the first Chairman of the Marine Committee. He recalled that the fortification consisted of eighteen 18-pound guns, and he noted the availability of fire ships, fire rafts, floating batteries, galleys, the brig *Andrew Doria*, and the frigate *Delaware* at the sole unobstructed passage for defense. Apparently, Adams found the defenses suitable, and described some improvised defenses as "the strongest works that I have ever seen."[13] The favorable impression undoubtedly influenced Adams as he assumed executive offices as first Vice President, followed by President, in the period that saw the creation of the initial system of U.S. coastal and harbor defenses. Congress first raised the need for coastal fortifications in 1794, when sixteen ports and harbors were identified as needing defenses. Ultimately, Congress approved funding for the construction of coastal batteries at twenty-one ports and harbors, which collectively came to be called the first system.[14]

The design, construction, and armament of the first system fortifications was not unlike those erected pre-Revolution. The concern of possible war with Britain provided the impetus for prioritizing attention and funds from Congress. Consequently, as the threat of war waned, so did progress on the first system. A January 1796 inquiry by Secretary of War Timothy Pickering found that sixteen sites were unfinished, and progress had ceased at five locations a mere two

[13] John Adams to Abigail Adams, June 8, 1777, in *NDAR Vol 9*, 76.
[14] Browning, *Two if by Sea*, 7.

years after Congress' authorization.[15] The premature end to the first system of fortifications in the 1790s demonstrated that America's priority on coastal and harbor security remained unsettled, as would the debate on the best means of defense. During this period, the question of whether to integrate coastal craft in the defense system was raised in Congress.

In 1797, Congress considered acquiring galleys for coastal defense. During the deliberations, House Representative Samuel Smith raised that the galleys under consideration were better suited for rivers and inland waters, and that the boats were not optimal for confronting heavily armed ships. An additional objection by Josiah Parker suggested that ten revenue cutters already possessed by the government were better suited for the purpose of coastal defense, should they be needed.[16] Parker had similarly dismissed a proposal for the purchase of galleys in 1794, arguing that the vessels were of no use, even under the cover of fortifications. However, Representative Thomas Fitzsimons disagreed, stating that galleys "had been of very great service in the war. They were of much use in the Delaware. They stopped for some time the progress of the British army."[17] The admirable performance of galleys in the Delaware River settled the effectiveness of such craft in inland waters, but the suitability of such a platform for coastal waters remained untested during this period. Although the galley proposal was not adopted by Congress, the subject of debate is significant because it represents an interest by some policymakers to look beyond coastal fortifications and consider mobile defense possibilities offered by coastal craft.

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[15] Browning, *Two if by Sea*, 9-10.
[16] Annals of Congress, 5th Cong., 1st sess., 339-340.
[17] Annals of Congress, 3rd Cong., 1st sess., 761.

The Second System: 1807 - 1815

By the time Congress revived the need for coastal and harbor defenses, the fortifications of the first system had largely deteriorated. The debates in Congress on the appropriate system of defense resumed in 1807 in the wake of the *Chesapeake-Leopard* affair. The resultant second system of fortifications featured several improvements in construction and design over their predecessors. First, professional engineers implemented more elaborate geometric design in the fortification layout, such as circular and pentagonal structures. Second, these fortifications included full masonry construction, which featured casemated guns. Consequently, larger caliber guns such as 42- pounders were commonly placed in second system fortifications.[18] Coastal and harbor defense policy decision-makers also endeavored to look beyond a dependence on fixed coastal fortifications, and to consider alternative means of defense.

One proponent of a more diverse set of options was Secretary of War Henry Dearborn. Dearborn had served as an officer in the Continental Army during the American War for Independence. Consequently, he was undoubtedly familiar with the capabilities and limitations of fixed artillery and may have also been aware of the improvised defenses erected by the Patriots. In a report to Congress in 1806, Dearborn argued that relying on fixed batteries alone as a coastal and harbor defense system was insufficient, and offered other options for consideration, centering on New York Harbor as an example. The Secretary of War challenged the long-held notion that a fixed battery positioned at a passage of one nautical mile or narrower, such as that found at the entrance to the harbor, proved an adequate deterrent. Dearborn recounted recent examples, such as the Dutch failure to stop the British fleet with coastal batteries at Copenhagen in 1801, and even in New York harbor itself in 1776, when a British

[18] Lewis, *Seacoast Fortifications*, 25-26, 31-32.

warship managed to cruise the Hudson past otherwise ready batteries. Dearborn summarized his petition to Congress "that the harbor…is not susceptible of such defense as ought to be relied on by permanent or fixed batteries, must be evident of everyone who has reflected on the subject; and consequently, that some other system ought to be adopted."[19] For all the merits that fixed fortifications offered for coastal and harbor defense, their immobility presented a fatal flaw that demanded maneuverable options to work in coordination with them. Consequently, in addition to improved fortifications, early nineteenth century coastal defense would feature a system of coastal craft for the first time.

A System of Gunboats

Unlike the first system of coastal defense, which focused squarely on a collection of coastal batteries, President Thomas Jefferson envisioned a combination of fixed batteries and mobile defense systems working together in the second system. The components consisted of fixed coastal batteries, mobile artillery that could be moved to areas lacking land batteries, floating batteries, and gunboats. The latter was especially emphasized as an important capability, as they could maneuver easily and work in coordination with the coastal batteries. The typical gunboat design spanned a length between forty to eighty feet, fifteen-to-twenty-foot beam, and powered by oars and sail on one or two masts. The typical armament consisted of one or two guns, usually a 24- or 32-pounder mounted up forward.[20]

The first gunboats authorized during Jefferson's administration were not for defense in American coastal waters, but for the naval expedition countering the Barbary States. Congress authorized fifteen gunboats for such service in February 1803. The grounding of the frigate

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[19] Report of Secretary of War to the House of Representatives, February 13, 1806, in *ASP MA Vol. I,* 193-4.
[20] Gene A. Smith, *"For the Purposes of Defense": The Politics of the Jeffersonian Gunboat Program* (Newark: University of Delaware Press, 1995), 1-2.

Philadelphia off Tripoli eight months later while endeavoring to maintain a close blockade confirmed the requirement for shallow draft coastal craft. Consequently, Commodore Edward Preble purchased six gunboats from Messina in May 1804. The gunboats measured 56'6" length, 18' beam, and armed with a single 24-pound gun up forward. The gunboats proved invaluable in the attack on Tripoli in August 1804 that claimed the lives of 108 Tripolitan sailors and three enemy gunboats as prizes. These tactical victories demonstrated that the Mediterranean naval squadron could enforce a close blockade of Tripoli. Upon the arrival of a more powerful relief squadron to the Mediterranean, the threat of overwhelming force effectively terminated the war in June 1805. By the time the first nine Jeffersonian gunboats arrived in the Mediterranean in May 1805, their service was not needed.[21]

Many American policymakers during the Jefferson administration viewed gunboats as an effective platform for coastal and harbor defense and regarded them as the successor of the galley. In a February 1807 letter to Congress, Jefferson surveyed the advantages of gunboats over the older galleys, which he perceived as more expensive in their construction, maintenance, and manpower. He backed his assertions with the endorsement of military officers. General Horatio Gates thought that the gunboats could target ships in coordination with small and inexpensive batteries, much like his French contemporaries employed to repel British attacks on their harbors. Commodore Samuel Barron, who had relieved Preble as the Mediterranean squadron commander, offered that the shallow draft of gunboats made them especially suitable for a tactic of rapid strike followed by immediate retreat to cover, and that between ten to twelve gunboats were adequate to repel a frigate. Captain Thomas Tingey emphasized the versatility of gunboats used as either an independent platform capable of movement in all directions or formed

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[21] Spencer C. Tucker, *The Jeffersonian Gunboat Navy* (Columbia: University of South Carolina Press, 1993), 13-14, 16.

several together in a line abreast to concentrate combat power. Tingey noted that the only coastal areas that proved ineffective for gunboat employment were those characterized by deep water devoid of any hazards to navigation. His conviction on the advantages of gunboats echoed the sentiment of Dearborn, that the gunboat's utility "must be obvious to every person capable of reflection."[22]

The apparent advantages of gunboats are evident in the adoption of the platform around the world in the late eighteenth and early nineteenth century. Jefferson appealed to the employment of gunboats during the Barbary Wars, in recent European maritime conflict, and by the Russians against Turkish warships in the Liman Sea in 1788 as proof of the platform's efficacy. His mention of their utilization in Europe without citing specific examples suggests that the employment of gunboats in this region was widely known. European nations constructed gunboats in large quantity for coastal and harbor defense during the period spanning the French Revolutionary and Napoleonic Wars.[23] The performance record of Danish gunboats during these conflicts was particularly impressive. After Britain decimated the Danish fleet at Copenhagen, Denmark built at least 273 gunboats. In the summer of 1808, the gunboats managed to take the British sloop *Seagull* and gun-brigs *Tickler* and *Tigress* as prizes and repelled the frigate *Tartar*. During another engagement, twenty-five gunboats disabled two British gun-brigs providing convoy protection. The Danish gunboats even proved remarkably effective faced against a ship of the line. In October 1808, twenty-five gunboats attacked the 64-gun *Africa* for four hours until favorable wind allowed the ship to get away with nine sailors

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[22] Thomas Jefferson to the Senate and House of Representatives, February 10, 1807; Extract of a letter from General Horatio Gates to Thomas Jefferson, October 19, 1804; Copy of a letter from Commodore Samuel Barron to Thomas Jefferson, February 8, 1807, in *ASP, NA, Vol. 1,* 163-4.
[23] N.A.M. Rodger, *The Command of the Ocean: A Naval History of Britain, 1649-1815* (London: Penguin, 2004), 417.

dead and fifty wounded.[24] The Spanish also employed gunboats to great effect for a close blockade during their "Great Siege" at Gibraltar (1779-1782) against the British.[25] These examples illustrate that although the adoption of gunboats for coastal defense purposes was new for the United States, that was hardly the case among more established states. By the time Jefferson pushed for a gunboat program as part of his coastal and harbor defense policy, the platform had a noteworthy track record across a myriad of nations employing the craft in diverse theaters of operation.

Jefferson proposed a requirement for two hundred gunboats, which would be kept in ordinary until activated and manned by local militiamen. The gunboat program was perceived as considerably less expensive than the construction of additional coastal batteries. By January 1807, thirteen gunboats were in service, fifty-six constructed, and appropriations requested for an additional sixty.[26] However, it was soon apparent that the gunboat program would not deliver the cost savings originally proposed. By June 1809, 176 gunboats were completed, and the Navy Department reported that without ongoing maintenance and repair, a gunboat left in port and exposed to the elements degraded beyond repair over the course of one year. Due to the higher-than-expected cost of the program, the Navy petitioned for investment in frigates and small cruisers over additional gunboats.[27] Soon thereafter, proponents for a deep-water navy argued that more conventional warships provided better defense of the American coast. In November 1812, Captain Charles Stewart advised the Naval Committee of Congress that, "Ships of the line

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[24] James Davey, *In Nelson's Wake: The Navy and the Napoleonic Wars* (New Haven: Yale University Press, 2015), 243-244.
[25] Agustin Guimera, "The Offensive Strategy of the Spanish Navy, 1763-1808," in *Strategy and the Sea: Essays in Honour of John B. Hattendorf*, eds. N.A.M. Rodger, J. Ross Dancy, Benjamin Darnell, and Evan Wilson (Woolbridge: Boydell Press, 2016), 105.
[26] Secretary of the Navy to the House of Representatives, December 10, 1806; Thomas Jefferson to the Senate and House of Representatives, February 10, 1807, in *ASP, NA, Vol. 1,* 161, 163.
[27] Paul Hamilton to Joseph Anderson, June 6, 1809, in *ASP, NA, Vol. 1*, 194.

are best calculated for the defence of our coast…when engaged in war with a foreign maritime Power."[28] The rationale for the larger combatants included the necessity of keeping similarly matched enemy warships far off the coast, lest maritime commerce and lighter warships become vulnerable to attack.

The U.S. Navy's prioritization on conventional warships meant that the gunboat program was effectively set aside as the prospect of war with Britain loomed. When the United States declared war on Britain on June 18, 1812, only 62 gunboats remained in service, many of which still required considerable repairs. In order to complement the gunboats with sufficient coastal craft, Congress authorized construction of galleys, interchangeably referenced as barges, in 1813. The galleys ranged from 50 to 75 feet long, 12-to-15-foot beam, had around 4-foot draft, and were powered by oars. Armament varied among 18-pound, 24-pound, and 32-pound guns, and the intended crew size was forty to fifty. By February 1814, 32 galleys were in service, of which thirteen were at Baltimore.[29] Although political opposition meant the cancellation of Jefferson's gunboat program, the onset of war in 1812 and subsequent rush to construct galleys demonstrated that coastal craft held a firm position in coastal defense policy through 1815.

Emerging Torpedo Technology

The early nineteenth century introduced the possibility of underwater weapon technology for the defense of coasts and harbors. In February 1810, Robert Fulton submitted a report to Congress which described his underwater weapon inventions and proposed methods of employment. One such invention was a time delay torpedo deployed by a gun-fired harpoon. The idea was that the harpoon would strike the bow of the target ship and proceeded to drag a float towards the hull that connected to the torpedo at a length roughly equal to the ship's draft.

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[28] Copy of a letter from Captain Charles Stewart to Paul Hamilton, November 12, 1812, in *ASP, NA, Vol. 1,* 278.
[29] Tucker, *The Jeffersonian Gunboat Navy*, 103, 105-106.

This design ensured that the torpedo was close to the hull to detonate at the set time delay. The British Navy attempted to employ this weapon against a French gun brig at Boulogne in October 1805. Although the torpedoes discharged, they failed to cause damage to the vessel. Fulton determined that the problem was that the current caused the torpedo to hang directly under the float on the ship's side, instead of dragging under the keel where an upward blast would lift the ship out of water and force the hull to break. Fulton claimed that he made the necessary adjustments to account for the current and force placement of the torpedo under the keel at detonation.[30] Although there is no record that Fulton confirmed the effectiveness of the torpedo design adjustments, his transparent report of the malfunction and demonstrated resolve to correct problems substantiated the promise afforded to this emerging technology.

Another invention Fulton proposed to Congress was essentially the first moored contact mine, which he called the anchored torpedo. These torpedoes featured a weight and anchor adjusted for the depth of water and draft of the vessel. Although the anchored torpedo was not proved operationally, Fulton conducted experiments to prove the gunpowder remained dry and mechanisms in working order when left in place for twenty-four hours in rough seas.[31] The lack of successful operational employment for Fulton's weapons raised questions regarding their efficacy. Such questions would need to be addressed through additional tests and further development of the technology. However, the destructive power of Fulton's torpedo was demonstrated in the experiment using the Danish brig, *Dorothea* on October 15, 1805. In this experiment, Fulton set a time delay of eighteen minutes on a floating torpedo. After the current carried the torpedo to the brig, the torpedo detonated as expected. The blast lifted the hull

[30] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 215, 217.
[31] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 214.

approximately six feet upward, severed the keel, and sunk the ship apart from the drifting debris that remained behind on the surface.[32] A subsequent test by Fulton in August 1807 in New York harbor yielded similar results, but more readily demonstrated the inherent challenges of operationally employing the weapon. In the experiment's first attempt, the torpedo rolled over in such a manner that the powder flushed out of the casing. In the second attempt, the torpedo did not drift to the brig, but successfully detonated and projected water approximately sixty feet upward. Finally, on the third try the torpedo drifted to the brig, detonated, and destroyed the ship to a degree comparable to the *Dorothea* experiment.[33]

Even though Fulton's experimental torpedoes required further testing and development for use in an operational environment, he still managed to anticipate the countermeasures that could be employed against such a weapon. Consequently, Fulton viewed his torpedoes as elements in a coastal and harbor defense as opposed to a standalone solution. Fulton acknowledged that an enemy could sweep for the torpedoes to clear a safe passage into a harbor. He offered two factors that would render the success of such a countermeasure as unlikely. First, Fulton envisioned that the deployment of hundreds of anchored torpedoes in a passage would drive the time required to sweep up toward unreasonable limits. Second, the painstaking work of sweeping would inevitably expose the enemy to other coastal defense weaponry, including batteries and gunboats. Throughout this course of events, a psychological toll weighed on an adversary consists of the uncertainty on any residual torpedoes present after sweeping, and whether any new devices were introduced under cover of darkness.[34]

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[32] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 212.
[33] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 213.
[34] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 214.

Despite the evident potential in Fulton's torpedo weaponry, coastal defense policymakers ultimately opted against investing in the technology. There are a few likely reasons for this decision. One issue was that the new weapons introduced a new paradigm with associated ethical deliberations. It is clear from Fulton's report to Congress in 1810 that ethical objections to employment of such weaponry had already been raised. Fulton defended charges that utilization of such weapons with the capacity to destroy an entire ship and its crew amounted to a barbaric form of warfare.[35] He did not specify who raised these objections, but it was likely the British, or perhaps the French, both of whom Fulton attempted to sell his torpedo ideas to no avail. Aside from the inherent risks investing in technology that requires further development, the reason for rejection by European states may have rested more in the threat such a weapon could pose to mature sea powers. Fulton testified as much concerning Britain. When Earl St. Vincent witnessed the explosion of *Dorothea* he confided that "Pitt was the greatest fool that ever existed, to encourage a mode of war which they who commanded the seas did not want, and which, if successful, would deprive them of it."[36] This reason for British rejection of the torpedo seems plausible, especially in consideration of the claim of barbarism, which Fulton adequately exposed. He countered that exploding torpedoes were far less egregious than raiding commerce, besieging a city, or inflicting harm on civilians in conflict. Moreover, Fulton appealed to the defensive purpose of his weapons, and that should any enemy shipping dare to attack a harbor and get struck by a torpedo, then any notion of barbarism would fall to them.[37]

The young American republic had every reason to embrace the weapons offered by Fulton. The technological innovation signaled the introduction of a novel warfighting domain,

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[35] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 223.
[36] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 213.
[37] Report on use of the torpedo in the defence of ports and harbors, February 26, 1810, in *ASP, NA, Vol. 1*, 223.

where ships at sea would not only contend with an attack from across the water's surface, but also from below. The potential ability to attack in the undersea domain offered a new type of deterrence to an adversary who would otherwise dare to attack American coasts or harbors. The large coastal fortresses that comprised the third system and would characterize American coastlines after the War of 1812 presented a conventional, visible type of deterrence. Fulton's weapons, if developed to maturity, would have introduced an invisible deterrent with inordinate psychological impact through fear of the unknown. Such a weapon, especially when combined with strategically placed, small, and inexpensive coastal batteries, along with an adequate system of coastal craft would have offered a far more formidable deterrence for much of the nineteenth century.

Coastal Defense Performance during the War of 1812

The coastal and harbor defenses established during the years leading up to the War of 1812 aimed to address a narrow range of threats. The strategy in mind was that these defenses could prevent foreign warships from laying siege to a port and inflicting irrecoverable damage to the infrastructure. American policymakers never considered defenses adequate to break a blockade of the American Atlantic coastline. They had little reason to plan for such an event, considering that the prospect of maintaining a tight blockade on two thousand miles of coastline would be a daunting endeavor, even for Britain's fleet. However, the naval capability to maintain an extended blockade for more than a few months emerged as a relatively recent development in the early nineteenth century. Late eighteenth-century technological innovations, to include copper sheathing on ship's hulls, and advancements in naval medicine and hygiene

that eradicated scurvy, all contributed toward greater effectiveness for extended blockade operations.[38] The British Navy supplemented the extended blockade with raids.

Both the merits and the limitations of the second system fortifications are apparent in the British attacks. On the one hand, adequately prepared coastal fortifications deterred British raids. This was the case in New York, where the coastal batteries and ready gunboats poised to deter an otherwise attractive option for British raids. The New York Committee on Defense charged the Chief Engineer of the Army, Joseph Swift, to expand the fortifications in New York Harbor. Swift enlisted the help of 38,000 New Yorkers during the fall of 1814 to build the needed defenses at Brooklyn that would defend Long Island, as well as additional fortifications on Manhattan Island.[39] To seaward, New York harbor offered the best deterrence with more gunboats than any other harbor at fifty-three at the start of the war, although this was reduced to thirty-one by March 1814 due to maintenance and crew manning challenges. The commander of the New York flotilla, Captain Jacob Lewis, considered the gunboats incredibly useful platforms. Indeed, his flotilla managed to capture the British sloop *Eagle* in July 1813 and facilitated the return of the New Orleans schooner *Plantagenet* from British possession the following November.[40] Unlike the defenses of New York Harbor during the American War for Independence, the harbor defenses during the War of 1812 held off British attacks from the sea and deterred a siege on the city, effectively diverting British interest towards raids to the south.

Since the prospect of raiding New York appeared too costly, the British Navy turned their sights toward the Chesapeake Bay. Hampton Roads, while a particularly attractive target for a

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[38] Wade G. Dudley, "The Flawed British Blockade, 1812-1815," in *Naval Blockades and Seapower*, eds. Bruce A. Elleman and S.C.M. Paine (New York: Routledge, 2006), 36-37.
[39] Kaufmann, *Fortress America*, 167.
[40] Tucker, *The Jeffersonian Gunboat Navy*, 115-117.

raid, nonetheless proved capable in its deterrence. Fort Norfolk and Fort Nelson, both of which had existed as earthen construction batteries under the first system and were converted into masonry batteries under the second system, had thirty and thirty-seven guns, respectively.[41] In March 1813, *Constellation* and gunboats took station around Craney Island to deter a British invasion. In June, the squadron, under Joseph Tarbell, launched an offensive attack against two British frigates and a gunboat in Chesapeake Bay. Rough seas precluded the gunboats from firing for more than thirty minutes before retreating.[42] However, this naval action, along with the prepared fortifications, deterred a British landing of two thousand strong at Norfolk and forced them to divert toward the more lightly defended Hampton, at which they achieved a successful landing.[43]

The contrast in effectiveness of coastal fortifications during the War of 1812 is evident in the British fleet engagements with Fort Washington at the Potomac River, and Fort McHenry at Baltimore. Fort Washington was designed for eighteen guns, but due to manning and equipment shortfalls, as few as five were operational. When the British fleet attacked the fort on 27 August 1814, the garrison commander, Captain Samuel T. Dyson, ordered his fifty troops to abandon the defenses and ignite the magazine to destroy the fort. The resulting explosion meant that any British firing on Fort Washington only served to finish the job.[44] The defense of Washington in Chesapeake Bay fell under the command of Joshua Barney. The composition of Barney's flotilla included the sloop *Scorpion*, two gunboats, the thirteen recently constructed Baltimore galleys, and an additional galley.[45] He valiantly held off an attack by the British fleet for two months.

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[41] Kaufmann, *Fortress America*, 166.
[42] Smith, *For the Purposes of Defense*, 116.
[43] Kaufmann, *Fortress America*, 166-167.
[44] Kaufmann, *Fortress America*, 167.
[45] Tucker, *The Jeffersonian Gunboat Navy*, 132.

The flotilla launched an attack against two British frigates, a schooner, rocket boat, and several barges. The Americans drove the British ships back and were met with reinforcements of more barges and two additional schooners. The British attempted additional advances against Barney's flotilla, and each time held them off, and on 26 June the British ships retreated into the Chesapeake Bay. However, the British returned on 19 August with a fleet comprised of two 74-gun ships, a 64-gun ship, seven frigates, a razee, and a dozen smaller craft. The overmatch left Barney with no alternative but to scuttle the gunboats to prevent their capture.[46]

What the British encountered at Fort McHenry two weeks later could not have been more different then at Fort Washington. The garrison manned twenty-three guns within the fort consisting of 18- and 24- pounders, and there were an additional thirty-six 18- and 36- pound guns on the exterior. Despite a twenty-five-hour long assault with approximately 1500 rounds fired, the British fleet could not affect beyond superficial damage and was subsequently driven back.[47] No gunboats were involved in the defense at Baltimore, as Barney's flotilla had already been exhausted with the defense of Washington. However, Barney's stalwart resistance arguably bought time for the garrison at Fort McHenry to prepare their defense. The commendable standoff at Fort McHenry, which inspired the writing of the national anthem and perpetually etched the event into American memory, upholds the claim to the second system fortifications' effectiveness at protecting American coasts and harbors.

A final case in the War of 1812 that deserves examination is the defense of New Orleans. Two aspects mark this theater as unique for an understanding of coastal and harbor defenses during the war. First, the gunboat engagements with British boats at the Battle of Lake Borgne

[46] Smith, *For the Purposes of Defense*, 116-117.
[47] Kaufmann, *Fortress America*, 168-169.

demonstrated the potential of Jefferson's gunboats commensurate with their design and conceived purpose.[48] Second, the fortifications at the Battle of New Orleans were not second system fortifications. In early December 1814, British ships including a ship of the line, two frigates, a brig, and two schooners arrived outside Lake Borgne in its approach to New Orleans. The shallow waters caused problems for the British flotilla, as two gunboats under the charge of Lieutenant Thomas ap Catesby Jones mounted an attack and retreat, which lured two of the British ships to run aground in shoal water. The British adapted by transferring their men to small boats in preparation for a landing. Jones anchored his five gunboats in a line abreast across the passage. The British commander, Captain Nicholas Lockyer, ordered his boats toward the gunboats, but to halt just outside effective firing range. Although the current closed the distance, the small boats managed to avoid direct hits from the higher firing gunboats, and the engagement devolved into close quarters battle involving pistols and cutlasses. Consequently, the British strength estimated at 1200 men across approximately forty-five boats dwarfed the 182 defenders over the five gunboats. At the battle's end, the British captured Jones's five gunboats. This achievement secured tactical victory for the British, even though they suffered greater personnel casualties. However, the Battle of Lake Borgne provided positive effects for the U.S. operations ashore.[49] Much like Barney's holdout in the Chesapeake Bay impacted defenses at Baltimore, Jones's resistance at Lake Borgne bought time for the shore artillery to ready at New Orleans.

Aware that a British troop landing was imminent, General Andrew Jackson hastily prepared shore defenses. American troops prepared four-foot-tall earthen work batteries with log reinforcements that stretched out upwards of one mile. The defenses were adequate for

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[48] Tucker, *The Jeffersonian Gunboat Navy*, 170.
[49] Tucker, *The Jeffersonian Gunboat Navy*, 165-166, 168-169.

Jackson's 6,700-man army to defeat the 7,500 British troops at the Battle of New Orleans.[50] Jackson's improvised fortifications at New Orleans demonstrated that even simple shore batteries can yield effective defenses along the coast. In considering any criticism that second system fortification designs were not sufficiently robust for adequate defense, the performance of Fort McHenry, and especially New Orleans, warrant pause before any discreditation.

The Third System: 1817 – 1861

Despite the noteworthy deterrence effect and operational effectiveness of certain second system fortifications and coastal craft, the consensus among national policymakers rested on the assertion that the Adams and Jefferson era defenses failed to meet expectations during the War of 1812. Consequently, at the conclusion of the war President James Madison pursued a vision toward a more robust and enduring system of fortifications that came to be known as the third system. This system adopted a more centralized approach to the planning and construction of coastal fortifications, led by a board of professional army engineers. A navy captain filled one seat among the board, but the otherwise army membership assumed a myopic view toward an elaborate system of coastal and harbor fortifications.[51] Over the long term, the board viewed the system of fortifications as one aspect of an overall defense system. Specifically, the Board of Engineers directed that the system's components include, "first, a navy; second, fortifications; third, interior communications by land and water; and fourth, a regular army and well organized militia: these means must all be combined, so as to form a complete system."[52] However, the navy would take considerable time to build, and therefore the board insisted that a

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[50] Kaufmann, *Fortress America*, 173.
[51] Lewis, *Seacoast Fortifications*, 37-8.
[52] Brigadier General Bernard, Captain J.D. Eliot, and Lieutenant Colonel Joseph G. Totten to John C. Calhoun, February 7, 1821, in *ASP MA Vol. 2,* 305.

comprehensive network of fortifications were necessary for the sole protection of coasts and harbors in the interim.[53]

The Board of Engineers established six requirements for the third system, for which each fortification had to fulfill one or more of the listed criteria. First, the fortifications would deny harbor access to the enemy. Second, the fortifications would prevent enemy invasion and occupation of the homeland. Third, they would protect against attack on major cities. Fourth, the system would render blockade attempts ineffective. Fifth, the defenses would protect coastal and inland navigable areas. Sixth, the fortifications would protect essential naval infrastructure.[54] These six requirements reflected a considerable expansion to the role and purpose of American coastal defense. Whereas the previous two systems aimed to deter raids on the major port cities, the third system architects aspired to thwart enemy blockade and prevent invasion. The comprehensive scope envisioned for the third system clearly represented a response to the perceived failures of the War of 1812. In particular, the Board of Engineers sought to prevent a repeat of the inadequate defenses at Fort Washington that allowed the British to burn the Capitol and the White House.

In order to satisfy the broad array of defensive requirements, the third system engineers planned for fortifications that were much larger and incorporated heavier armament than their predecessors. Built with the intention of permanence, the structures were nearly exclusively brick construction, but some included granite depending on location availability. Battery layouts were typically linear, but some were fashioned along a circular, semi-circular, or crescent orientation. The layout of the fortifications ranged between four- and seven-sided structures.

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[53] Russell F. Weigley, *The American War of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana University Press, 1973), 60.
[54] Brigadier General Bernard, Captain J.D. Eliot, and Lieutenant Colonel Joseph G. Totten to John C. Calhoun, February 7, 1821, in *ASP MA Vol. 2,* 305.

The structures accommodated upper and lower levels of casemates for guns. A few of the larger fortifications, such as at New York, contained up to four levels of guns. Consequently, the third system fortifications were capable of housing armament at an unprecedented scale. A few designs placed upward of one hundred guns along a single line of bearing, with the total arsenal for certain fortifications featuring over four hundred guns.[55] An important feature for the larger enclosed works was the incorporation of venting that helped clear the smoke after each firing. Practical considerations for the garrison included the installation of storage chambers and barracks.[56] Even though the third system fortifications were architectural marvels of the time and featured some impressive technological advancements, in many respects they fell short on their promises. Issues and limitations that plagued prior fortification systems recurred in the third system, and the structures soon became obsolete.

Problems with the Third System

The six requirements presented by the Board of Engineers for the third system fortifications illuminate a conceptual problem. The board carried the assumption that coastal fortresses could fulfill all the listed criteria, instead of deliberating whether other means of defense may be more appropriately suited for certain objectives. Many members of Congress declined to question the board's claim that a third system of fortifications could exclusively solve the nation's coastal defense problem, as they were more than willing to allow the extensive expenditures in their respective districts. Consequently, the Monroe administration dedicated the full measure of national resources to one means of coastal defense, without hedging to account for other important capabilities. The limitations of fortifications, namely their immobility and the potential for enemy shipping to bypass them, were understood due to the issues raised under

[55] Lewis, *Seacoast Fortifications*, 39, 43, 45, 53.
[56] Kaufmann, *Fortress America*, 228.

previous administrations. It was not reasonable to conceive that the fortifications alone could fulfill all the coastal defense requirements envisioned by the Board of Engineers.[57] Moreover, many of the issues evident in the previous second system fortifications were not addressed with the third system but persisted and even amplified.

A foundational problem with the third system fortifications involved the extensive time period for construction. A common reason for delays involved the release of funds for the projects. Initially, the Board of Engineers possessed the authority to allocate funding for construction, but beginning in the 1830s, further authorization for funds resided in Congress. The bureaucracy meant that progress on many coastal fortifications ceased by 1834. Moreover, outright political opposition also worked against the continued funding needed to complete the fortifications. Secretary of War Lewis Cass believed that the third system fortifications were a waste, favoring a coastal defense system comprised of floating batteries. Cass managed to persuade a majority in Congress to reduce funding for the third system fortifications. After a generation of inconsistent effort, the third system included major coastal works at Boston, Newport, New York, Hampton Roads, Charleston, Savannah, Pensacola, Mobile, New Orleans, Florida Keys, and San Francisco.[58] Since the Board of Engineers had pitched that the fortifications were vital for protecting infrastructure necessary to build a navy, the long duration of construction meant that the third system fortifications inevitably failed to fulfill their role in security for naval yards. In the end, many of the planned fortifications were simply never finished.

Another issue with the third system fortresses was procuring adequate armament. In February 1823, Secretary of War John C. Calhoun urged Congress for the supply of vast

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[57] Browning, *Two if by Sea*, 30, 37.
[58] Kaufmann, *Fortress America*, 208-9.

quantities of cannon, carriages, and shot in order to arm the fortifications commensurate with their intended design. Calhoun claimed that some of the fortifications stood ready to receive their guns but had not yet been equipped. Additionally, the appeal to the Senate expressed concern that without upfront investment in cannon production, the foundries would be unwilling to incur the expense of castings required for long run manufacture.[59] Even by 1861, the fortifications stood woefully short of their intended armament. For example, Fort Sumter possessed less than half of its cannon per design, but other sites fared even worse—down toward fifteen percent of designed armament. As war broke out between the states, insufficient supply of gunnery was available to remedy this condition.[60] The shortage of cannons was not unique to the third system fortifications, but a predominant issue throughout the history of fortifications in America. Since national leaders never addressed the manufacturing challenges that undergirded the supply issues, the impacts on the third system, with their calls for vastly greater levels of armament, were exacerbated. The result was that the third system fortifications never embodied the deterrence affect afforded by the plans for heavier armament.

The final major issue that plagued the third system fortifications was imminent technological obsolescence. The development of rifled gunnery and the transition from sail to steam ships in the mid nineteenth century relegated the third system fortifications to near uselessness. It turned out that the masonry and granite materials could not withstand the advancements in gunnery and necessitated the return to earthen work constructed fortifications.[61] This limitation was proved during the Civil War, when General Quincy A. Gillmore unleashed a bombardment of rifled guns against Fort Sumter, which even at ranges fired at 4,000 yards,

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[59] John C. Calhoun to the Senate, February 6, 1823, in *ASP MA Vol. 2,* 529-530.
[60] Lewis, *Seacoast Fortifications*, 65.
[61] Kaufmann, *Fortress America*, 231.

managed to penetrate the walls and reduce the fortress to a wreck. Neither were the fortifications effective at stopping the faster and more maneuverable steam ships, demonstrated when Commodore David G. Farragut steamed his ships right past fortresses at New Orleans and Mobile.[62] Although some of these technological innovations, such as the impact of rifled gunnery, could not have been reasonably anticipated in the 1820s, the limitations of fixed fortifications were widely known and the prospect that technological advancement would exploit these vulnerabilities was a reasonable expectation.

The Case for a Continued and Expanded Second System Post-1815

Rather than waging all bets on the massive system of fortifications that comprised the third system for universal defense of the nation's coasts and harbors, the United States would have achieved a more effective coastal defense system by continuing, and even expanding, the options of the second system. Specifically, an ideal coastal defense system would have consisted of a system of smaller, but well-equipped coastal batteries, coastal craft, and the further development of underwater weaponry. Overall, the second system fortifications during the War of 1812 exhibited noteworthy performance. The fortifications at New York and at Norfolk effectively prevented British raids, and the Fort McHenry stand-off at Baltimore remains legendary to this day. Even the batteries at New Orleans demonstrated the promise of improvised, non-permanent works. Indeed, these successes lent credibility to the Board of Engineers' assertions that fortifications were the answer to the nation's coastal defense concerns. However, these same voices insisted that the second system fortifications were inadequate. The basis for this claim was the performance at Fort Washington. However, an examination of what went wrong at Fort Washington is worthy of consideration.

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[62] Browning, *Two if by Sea*, 116-117, 121.

In November 1814, a committee reported to the House of Representatives on the events, causes, and losses associated with the British invasion of Washington. The official findings asserted that the defenses at Fort Washington were acceptable based on an inspection at the site prior to the invasion. The committee reported, "The examination was made, and Colonel Wadsworth reported that the battery at Fort Washington was in such a state, and it so effectually commanded the channel of the Potomac, that it was not to be apprehended that the enemy would attempt to pass it while its present defences remained entire."[63] The finding holds consistent with a report furnished by Secretary of War John Armstrong to the Senate on the defenses at Washington in July 1813. Armstrong issued no reservations on the fortification's state of readiness, having assessed that:

> on the water line, the means of defence are of two kinds, naval and military; that there are of the former, one frigate, two schooners, and three gunboats, so stationed as to co-operate with Fort Washington; that this fort and its covering work have recently been put into a state of thorough repair, are well equipped with heavy cannon, furnaces…and are now occupied by a competent garrison of United States' artillerists.[64]

Although the committee report findings suggested that defenses at Fort Washington stood ready to deter the British, additional testimony attached as appendices to the report offer conflicting perspectives. First, a letter from Armstrong noted that more substantial and permanent fortifications were recommended for Washington, but that costs prohibited such a project. Even so, Armstrong expressed that other means were necessary to ensure acceptable defenses, the devastation at Washington having demonstrated that "no works on the Potomac will, of themselves, be a sufficient defence for the seat of Government."[65] Unlike his report to the Senate from the previous year, Armstrong expressed little confidence that even more

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[63] Report on capture of the city of Washington, November 29, 1814, in *ASP MA Vol. 1,* 533.
[64] John Armstrong to the Senate, July 12, 1813, in *ASP MA Vol. 1,* 384.
[65] Copy of letter of John Armstrong, October 17, 1814, in *ASP MA Vol. 1,* 539.

expansive fortifications at Washington would have averted the course of events that devastated the city. The reason for the reversal may have been in the interest of self-preservation. The statement provided by General John P. Van Ness on the state of defenses at Fort Washington did not portray Armstrong positively. He charged that Armstrong exhibited ambivalence toward repeated pleas for improvements to the defenses at Fort Washington. Van Ness interpreted the underwhelming response from Armstrong as bias against any notion that Britain would attack Washington.[66]

Also among the attachments to the committee report was a 25 July 1814 letter from Lieutenant James L. Edwards of Fort Washington itself, where he indicated his responsibility to report the "defenceless situation" there. Edwards drew attention to the five 18-pound guns, without ammunition available, and that recently received columbiad guns were incompatible for mounting on the available platforms. A response to the report from Colonel Wadsworth conceded that there were design problems with the platform, and that he ordered help be sent for alterations and delivery of two hundred rounds of shot for the existing guns.[67] An ordinance report confirmed that the requested ammunition was delivered to Fort Washington by 27 August.[68] So although Wadsworth supplied needed ordnance, the matter of sufficient firepower and manpower commensurate for defending the nation's capital by way of Fort Washington remained unresolved by the time of the British fleet's arrival.

The reports that offer the local government perspective on the failures that allowed for the British invasion of Washington further concluded that the fortifications were not ready for

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[66] Statement of General John P. Van Ness, November 23, 1814, in *ASP MA Vol. 1,* 580.
[67] Report of Lieutenant James L. Edwards and Colonel Wadsworth, July 25, 1814; Report of , in *ASP MA Vol. 1,* 545.
[68] Report of Captain Jno. Morton, November 4, 1814, in *ASP MA Vol. 1,* 587.

protection of their city. Officials evaluated that for a deep-water port that permitted close approach of shipping, it was woefully underdefended.[69] They further referenced the previous calls for increasing the armament at Fort Washington made to the Secretary of War, but that the subsequent inspection of the fortification by an army engineer in May 1813 determined that "an additional number of heavy guns at Fort Warburton, and an additional fort…are both to be considered unnecessary."[70] The collective sentiment characterizing the local government was that the issues at Fort Washington were widely known, communicated, and reiterated, but that the federal leadership took no action beyond sending an inspector to the site. Between the local government officials and the command leadership at Fort Washington sounding the alarm on the deficient armaments, it was rather apparent that those closest to the problem believed that the defenses were not ready to repel a British attack. The disagreement by senior army leaders and the Secretary of War himself only held until the aftermath forced reconsideration on the matter. Even then, Armstrong did not go so far as to confess that he was mistaken on Fort Washington's readiness, but merely rested on the belief that no fortifications could have spared the devastation that occurred.

Senior army leadership not only declined to back their subordinate commanders at Fort Washington, but in the end held them responsible. Dyson, the Commanding Officer at Fort Washington, was court-martialed in November 1814 and found guilty of charges related to the abandonment of his post and conduct unbecoming an officer.[71] Dyson's defense that he held orders to retreat from Fort Washington when confronted with an overmatched force failed to exonerate him. The conviction prompts the narrative that the defenses at Fort Washington were

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[69] Committee of Council report on the occupation of Alexandria, September 29, 1814, in *ASP MA Vol. 1,* 590.
[70] Statement of J. Mason, October 31, 1814, in *ASP MA Vol. 1,* 595. Fort Warburton and Fort Washington were names used interchangeably for the same site.
[71] Sentence of the Court Martial in relation to Captain Dyson, August 29, 1814, in *ASP MA Vol. 1,* 588-9.

adequate, and that the blame rested on incompetent leadership. Such a conclusion demands the question of what might have transpired had Dyson acted instead of retreating, or if a different commander had been in charge at Fort Washington. A fair comparison might involve Barney, who was charged with holding back the same British forces, also with relatively meager resources in the form of his small flotilla. Unlike Dyson, Barney was hailed as a hero. Senior commanders praised Barney's leadership and courage, as well as the impact of his actions against the British Navy.[72] However, after Barney's admirable effort repelling the British for two months, he decided to destroy the flotilla to prevent it from falling into the hands of the enemy, left with no other viable alternative. As the British force proceeded to Fort Washington, had Dyson fought with the limited firepower available, it might have made a difference for his reputation and avoidance of criminal charges, but likely not for the outcome at Washington.

The conclusion by Armstrong that "no works on the Potomac will, of themselves, be a sufficient defence for the seat of Government"[73] has a certain measure of truth. Indeed, the second system fortifications were never intended to act alone, but at a minimum were to coordinate with gunboats for the defense of the coast. However, this does not mean that the state of Fort Washington could not have been better. The actions at Fort McHenry, Norfolk, and New York all testified to the deterrent value of the second system fortifications when properly equipped and manned. The appropriate lesson from Fort Washington is that priority and oversight should have ensured that it was equipped with the eighteen guns per its design, with the commensurate manpower assigned. If as much priority were placed on the armament at Fort Washington as at Fort McHenry, such attention would have imbued confidence in the local and command leadership at Washington, while simultaneously solidifying its potential deterrence

[72] Statement of Brigadier General William H. Winder, August 27, 1814, in *ASP MA Vol. 1,* 548.
[73] Letter of John Armstrong, October 17, 1814, in *ASP MA Vol. 1,* 539.

value. Such a fortification would have stood ready to fend off a British attack, provided a substantial coastal naval force were available to complement its actions.

Just as the War of 1812 highlighted the lesson that the second system fortifications' effectiveness provided they were equipped and manned appropriately, so it likewise affirmed the place of coastal craft, such as the gunboats. The original vision by Dearborn, Jefferson, and other proponents emphasized that gunboats were not intended to act alone, but in coordination with the fortifications of the second system. Armstrong continued this sentiment, having insisted in his 1813 report to the Senate that, "the means of defence are of two kinds, naval and military" and recounted the limited naval force working in the vicinity of Fort Washington[74]. However, the full potential of the gunboats was never realized since the program had all but been abandoned in the years leading up to the War of 1812. An 1809 congressional report by Secretary of the Navy Paul Hamilton recorded nine gunboats available in ordinary at Washington, and ten at Baltimore.[75] Armstrong recounted three gunboats available in 1813, and Barney only possessing two gunboats in his flotilla for the combined defense of Washington and Baltimore demonstrated just how far the gunboat program had eroded by the onset of conflict. Since Commodore Samuel Barron advised Jefferson that between ten to twelve gunboats could adequately repel a single frigate,[76] the two residual gunboats available for defense of Washington comprised a woefully deficient resistance for a single menacing warship, much less for the British fleet—the preeminent naval power of the nineteenth century. Nevertheless, the pair of gunboats, along with the hastily constructed galleys from Baltimore, presented a formidable front to the British fleet and held them off over the course of several weeks, much to the credit of

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[74] John Armstrong to the Senate, July 19, 1813, in *ASP MA Vol. 1,* 384.
[75] Report on fortifications from Henry Dearborn to Thomas Jefferson, February 13, 1806, in *ASP MA Vol. 1,* 195.
[76] Copy of a letter from Commodore Samuel Barron to Thomas Jefferson, February 8, 1807, in *ASP NA Vol. 1,* 164.

Barney's daring leadership. The results Barney could have achieved had the nineteen gunboats available for the region in 1809 been maintained are incontrovertible.

Critics of the gunboat program may charge that the gunboats were not particularly useful for coastal defense and were often employed for other uses not originally envisioned. Indeed, the gunboats offered a variety of functions during their service life to include prevention of illicit maritime commerce in keeping with the Embargo Act of 1807, for counter-piracy operations, for convoy protection, as logistics craft for naval yards, as troop transport vessels, hospital boats, pilot boats, and as test craft for new signals techniques and tactics.[77] However, such variety of uses for gunboats should not be considered a detriment but rather testifies to the versatility of the platform. A broad range of uses could become especially important to justify continued investment in a relatively expensive capability during peacetime. Most early nineteenth century Americans did not support the funding of a navy, but the gunboat program found broad public support, and the added utility the vessels offered when no threat of war loomed could ensure the continued political support necessary to perpetuate the vessels' cost for manning and maintenance.

One purpose that the gunboats did not fulfill during their existence, which could have afforded considerable utility in the post-1815 security environment would have been as experimental torpedo boats for the further development of underwater weapons. When Armstrong concluded that, "no works on the Potomac will, of themselves, be a sufficient defence for the seat of Government,"[78] there is the sense that something was lacking for a complete solution for the defense of Washington. In his mind, he had adequate fortifications, as well as the naval defenses, but aside from these, something was missing. The torpedo technology that

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[77] Tucker, *The Jeffersonian Gunboat Navy*, 86, 92, 108.
[78] Letter of John Armstrong, October 17, 1814, in *ASP MA Vol. 1,* 539.

Robert Fulton proposed in 1810 could have offered a supplemental means of defense. At that time, there were advocates in Congress who called for incorporating the devices into an integrated coastal defense system. For instance, Representative Jonathan Fisk called for the establishment of a torpedo corps: "let us make a respectable provision to purchase torpedo munition, and create a torpedo corps…we have got military and naval armaments; let us make a torpedo armament."[79] Even though the technology was not sufficiently developed by the War of 1812 to have averted the devastation that occurred at Washington, the destructive potential of Fulton's anchored torpedo may have been sufficient to give the British force pause, had policymakers exploited the opportunity.[80] An exploding torpedo blast that even missed a British ship may have inflicted psychological terror capable to slow the advance on Washington, or perhaps deter it altogether in favor of a location with lighter defenses.

Although further testing and development of Fulton's torpedoes were undoubtedly necessary to achieve operational effectiveness, by 1810 the technology already demonstrated enough promise to justify government investment. Unlike Bushnell's devices from the latter eighteenth century, Fulton's torpedoes demonstrated their destructive power, underwent several experiments and field tests, and were accompanied by proposed tactics for their operational employment. The technology was far enough in development that others could have assumed responsibility for its research and development, considering Fulton's untimely death in February 1815. However, interest in the underwater weaponry had dissipated in the years preceding his death. Fulton directed his effort toward steamship technology and invented the first steam warship in 1814. Even though Fulton's *Demologos* steam warship was not perceived a success,

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[79] Annals of Congress, 11th Cong., 2nd sess., 1629.
[80] Wallace Hutcheon, Jr, *Robert Fulton: Pioneer of Undersea Warfare* (Annapolis: Naval Institute Press, 1981), 114.

the breakthrough engineering marvel laid the foundation that ushered the U.S. Navy out of the age of sail.[81] Until navies embraced the steam technology that would ultimately transform the character of war at sea, the underwater technology offered the greatest promise for advancement in the realm of coastal and harbor defense systems. A mix of an adequate system of coastal fortifications, sufficient quantities of coastal craft, and anchored torpedoes would have comprised a formidable system that no force would have wanted to confront in the nineteenth century.

Conclusion

The coastal and harbor defense methods enacted from the colonial period through the War of 1812 reflected the ingenuity and industriousness that came to embody the American spirit. Patriots utilized existing coastal batteries but went beyond their limitations to improve them and improvise other means of defense. From the employment of galleys and fireships, to the introduction of the first sea mines, the American people considered any means necessary to defend their coasts and harbors and secure their independence. The Adams and Jefferson administrations continued in that tradition by investing in a prudent system of fortifications, followed by a gunboat program, and a revisitation on the potential of novel underwater weaponry. However, the losses during the War of 1812 forced American policymakers to reconsider the effectiveness of the extant coastal defense methods.

The resultant third system fortifications did not represent an advancement in coastal and harbor defense policy, but rather a regression. Instead of capitalizing on the full spectrum of defense offered by fortifications and coastal craft, along with the possibilities of new technology for the undersea domain, the fate of policy was relegated to the Board of Engineers intent on

[81] Hutcheon, *Robert Fulton*, 148, 153.

clinging to a centuries old paradigm. Fortunately, such short-sightedness in American coastal defense policy did not persist. In the latter-half of the nineteenth century, the perspective on what constituted an effective coastal defense system returned to a system more recognizable to that preceding 1815.

The coastal defense challenges during the early republic period offer valuable lessons that apply to the present-day security environment. Proponents of the second system of coastal defense were early witnesses to the advantages of joint combined arms. Fortifications, coastal craft, and torpedoes each offered defense options that, when combined, stood to produce a combat effect well beyond what any of these could inflict in isolation. Additionally, the early republic period casts a warning on the impact of obsolescence. Hindsight provides the benefit of seeing how technological change, such as steam ships and rifled gunnery, merely managed to exploit vulnerabilities that were long since identified. The introduction of a novel warfighting domain, such as the subsurface, only threatened to hasten the path to obsolescence. Therefore, a reliance on proven methods from yesteryear without seizing the opportunities afforded by the new domain constitutes a grave mis-step for defense decision-makers.

In November 1887, Brigadier General Henry L. Abbott, Colonel Corps of Engineers of the U.S. Army, delivered a series of lectures at the U.S. Naval War College on U.S. coastal defense. In a lecture entitled "Art of War Applied to Coast Defence," Abbott offered that, "maxims of grand tactics applicable to coast defence teach us the following…to provide for offensive movements of our own torpedo-boats, and of our armored ships if any be present…to so place our land guns as to assure their mutual support…; to provide means for offensive returns against countermining operations in the absence of torpedo-boats of our own."[82] The tactics

[82] Henry L. Abbott, *Course of Lectures upon Defence of the Sea-Coast of the United States* (New York: D. Van Nostrand, 1888), 15-16.

prescribed what would continue to reflect sound coastal defense policy until the introduction of the airspace as a warfighting domain further altered the strategic landscape decades later. Until then, a coastal and harbor defense policy relying on the army's fortifications on land, cooperating with naval power projected from coastal waters outward, would guarantee the security of the vast coastline of the United States.

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