

Dana M. Wegner, "An Apple and an Orange: Two *Constellations* at Gosport, 1853-1855," *The American Neptune* 52, #2 (Spring, 1992): 77-93.

This article received the national Peterson Prize for the best article published in a scholarly historical journal in 1993.

Courtesy of *The American Neptune, A Quarterly Journal of Maritime History and the Arts* published by the Peabody Essex Museum, East India Square, Salem, MA 01970. www.pem.org/Neptune

An Apple and an Orange: Two *Constellations* at Gosport, 1853-1855

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The present USS *Constellation*, said to have been built in Baltimore in 1797, was transferred in 1955 by the Navy to a group of Baltimore citizens for preservation and display. Since 1947 some historians have believed the ship now on display is an entirely different warship with the same name built near Norfolk, Virginia in 1855. Others disagree. Was she built in 1797, or is the claim a mistake or a hoax? Despite the debate, millions of federal, state, and city dollars plus gifts-in-kind have been granted by individuals, patriotic groups, tourists, and corporations to support the ship's upkeep and restoration.

The controversy over the age of the existing *Constellation* has been waged in newspapers, on television, and in books for almost half a century. The Navy and the Interior departments, Congress, the Maryland state legislature, the City of Baltimore, the Maryland Historical Society, the National Archives, and the Smithsonian Institution have all been involved in the dispute.

In September 1991, the Navy's David Taylor Research Center published an official report called *Fouled Anchors: The Constellation Question Answered*, written by the author with appendices by Colan Ratliff and Kevin Lynaugh.¹ The purpose of the study was to utilize an interdisciplinary team to examine new evidence in order to

determine the identity of the present *Constellation*. Was she built in 1797 or 1855? Since the controversy is one of the most emotionally charged debates in recent American maritime history, the subject would not have been revived had not fresh and considerably important historical, artifactual, and technological evidence been discovered. Is the *Constellation* the oldest warship afloat in the world? Or is she the last sail-only warship designed by the U.S. Navy? Responsible stewardship of this irreplaceable ship, still afloat in Baltimore, demands that we fully understand her history.

Fouled Anchors concluded that available documentary, artifactual, and architectural evidence indicated that the frigate *Constellation* was built in 1796-97 and torn apart in 1853. In 1853-55 a new sloop-of-war named *Constellation* was designed and built. It is the new sloop-of-war which is displayed today. Regardless of whether the ship was built in 1797 or 1855, however, the *Constellation* of today is an artifact of first importance that truly deserves to be preserved and displayed for the American public.

Part One of *Fouled Anchors* began with a very brief specific history of the ship followed by a review of the debate over its authenticity from 1947 until 1975. Best known were the champions of each side of the debate: Howard I. Chapelle, who advocated an 1854 origin, and Leon Pollard, who advocated the 1797 date. But other major figures in the controversy included Marion V. Brewington, William A. Baker, John Lyman, and Admiral Ernest M. Eller. A modern study of the argument had to

The views represented in this article are those of the author and not necessarily those of the David Taylor Model Basin, Naval Surface Warfare Center, or the Department of the Navy.

1. Dana M. Wegner, *Fouled Anchors: The Constellation Question Answered* (Bethesda, MD: David Taylor Research Center Technical and Administrative Services Department Research and Development Report DTRC-91/CT06, September 1991). Hereafter, this report will be cited as *Fouled Anchors*. As this article was drafted, plans had been made for serialized publication of the report, without footnotes, in *Seaways* magazine throughout 1992. The first installments appeared as Dana Wegner, Colan Ratliff, and Kevin Lynaugh, "Fouled Anchors: The *Constellation* Question Answered," *Seaways* 3, no. 1 (January/February 1992): 18-23 and 3, no. 2 (March/April 1992): 12-16. The full illustrated

version with notes and bibliography is available for a fee through the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Reference report AD A241-916. On 2 January 1992, the David Taylor Research Center was renamed the David Taylor Model Basin, Carderock Division Headquarters, Naval Surface Warfare Center. The old name will be used here for consistency.

account for the documentation each researcher used in reaching his conclusions. Until the discovery of a large body of important records in private hands, much of that documentation had been obscured from scholarly examination. The review also included an account of how the actual age of the vessel became clouded.²

Part Two of *Fouled Anchors* documented the efforts and findings of a team of researchers at the David Taylor Research Center assembled to investigate the documentary, artifactual, and architectural evidence relating to the problem. The Federal Bureau of Investigation, the Bureau of Alcohol, Tobacco and Firearms, the Library of Congress, and the Smithsonian Institution also aided in the examination.

The report found, among other things, that about twenty-two significant historical documents had been regularly used to support the 1797 origins of the present *Constellation*. The Federal Bureau of Investigation and the Bureau of Alcohol, Tobacco and Firearms showed four of these documents to be modern forgeries. Seventeen other documents could not be found in the archival sources from which they were supposed to originate, and they also contained certain grammar, syntax, appearances, and sources similar to the proven forgeries. One document was ambiguous. Essentially all of the explicit historic documentation commonly employed until 1975 to support the eighteenth-century building of the present ship appeared to have been forged between 1956 and 1965 by a former long-standing researcher and employee of the ship who was unmasked by Leon Pollard, a fellow supporter. The forger had access to the *Constellation*'s on-board historical files. There was no evidence found that indicated that others associated with the ship fully appreciated the extent to which the supporting case had been poisoned.

Appendix A of *Fouled Anchors* was written by Colan Ratliff, a ship model conservator on the staff of the Navy's Curator of Ship Models and a specialist in the design of nineteenth-century American ships. His contribution offered a reconstruction of nineteenth-century naval architectural standards and techniques. One result was a method of comparing the developing designs of early wooden warships, based on displacement and hydrodynamics rather than the traditional comparisons of tonnage, guns, decks, and length. This mode of comparison was used to examine, as controls, a number of different

contemporary ship's plans, including the designs of the *Constellations* in 1795 and in 1853.

Appendix B was written by Kevin Lynaugh, a supervisory naval architect at the David Taylor Research Center and a specialist in applying computer technology to ship design who is also experienced in historic ship preservation. Lynaugh provided a similar examination of the hydrodynamic design of the ship from a modern perspective using state-of-the-art computers.

Official records state that the ship that entered the Gosport Navy Yard near Norfolk, Virginia in 1853 was a two-gun-deck frigate built in 1797 and the ship that emerged in 1855 was a one-gun-deck sloop-of-war. This article will begin with the story about what happened at Gosport. Some of the documentary, artifactual, and architectural evidence employed in reconstructing the Gosport story will then be described and explained. The basic opposing theories will be discussed and their supporting evidence evaluated. In the end, the potential of the ship as an artifact will be examined. Interwoven in this presentation will be the answers to two basic questions. First, is there any portion of the hull form of the frigate of 1797-1853 present in the vessel today? Second, is there any substantial material from the frigate of 1797-1853 present in the vessel today?

GOSPORT, 1853-55

The introduction of the shell gun and steam propulsion in the nineteenth century made it clear that the future of frigates and ships-of-the-line was limited. Consequently, the Navy yards' stockpiles of spare structural timbers for both repair and new construction of such vessels were large and potentially surplus. The *Constellation* had been brought to the waters near the Gosport Navy Yard in 1845 and placed in mothballs, or "in ordinary." Her hull twisted and drooping, she had been much repaired but was still the old frigate of 1797. By 1853 the Navy realized the poor condition and antiquated design of the *Constellation* and decided to break up the ship and build a new one.³

2. From 1854 until 1908, official records listed the *Constellation* as built in Norfolk in 1854. Beginning in 1909, for undetermined reasons, records began to show her as built in Baltimore in 1797. By 1914 the Navy believed she was launched in 1797 and doubts about her age were not realized until 1948. *Fouled Anchors*, 6-10.

3. "Constellation. Commenced Repairing at Gosport in the Month of Jany — Completed July 1829," "At Gosport repaired in Feby - March 1832," "Commenced repairing at Gosport 16th Decem 1834 and was finished October 1835," all from "Returns of Repairs to Vessels, 1820-1849," Naval Records and Library, Entry 5, Record Group 45, National Archives and Records Administration, Washington, D. C. (Hereafter this record group will be cited as NA, RG 45); Returns for repairs on U.S. Frigate *Constellation*, April, June, September, October, November, December 1825; "Returns . . . of Materials used in Repairing U.S. Ship *Constellation* . . .," March, April, May, June, July, September, October-

The nation's foresighted provision for the Gradual Increase of the Navy had its roots in the years soon following the War of 1812. A little-acknowledged but important legislative contribution to the welfare of our Navy, this act of 29 April 1816 provided \$1 million a year for eight consecutive years to purchase timber and build a fleet of ships to be kept ready on stocks. Five years into the program, the amount provided was adjusted downward to \$500,000 a year. The "Act for the Gradual Improvement of the Navy of the United States" was readily renewed by Congress on 3 March 1827, now authorizing the president to procure substantial amounts of live oak timber each year to be placed in stockpile. In other words, Congress granted \$500,000 per year for each of six consecutive years at a time when the national debt was \$10 million. Although in 1827 Congress believed that no new ships needed to be built immediately, they were told the oak could be safely stored in sheds or submerged for as long as a century. Funds under this appropriation could not be applied for other purposes, nor could the funds be declared surplus. If not spent, money in the appropriation could be accumulated and carried over from year to year. The Gradual Increase Act was renewed for another six years in 1833. Beginning in 1840, the appropriation was renewed annually in the regular naval appropriation acts with language also permitting other timber, repairs, and armament for ships. The Navy called the appropriation "Gradual Increase, Repairs, Etc."⁴

November, December 1828 and January-April, May, June, July, August 1829; "Constellation Repairing. Report of the State and Condition and of the Work done . . .," 15-30 November, 1-15 December, 16-31 December 1838, 16-28 February, 1-15 March, 15-31 March, 1-15 April, 16-30 April, 16-31 May, 1-15 June, 16-30 June, 1-15 July, 16-31 July, 1-15 August, 10-31 August 1839 and 16-31 March, 1-15 April, 15-30 April, 1-15 May 1840, all in Subject File AR, "Repairs to U.S. Ships, 0-1859," NA, RG 45; Samuel Hartt, "Report of the examination of vessels on the stocks & in Ordinary, to ascertain their positions, stability, etc., in accordance with the Circular Order of 26th January 1833," 1 May 1846, Subject File AL, "Ships in Ordinary and Reserve; Gosport Navy Yard, 0-1859," NA, RG 45; W. B. Shubrick to John Kennedy, 18 August 1852, John Lenthall to J. C. Dobbins, 17 December 1853, in "Letters Sent to the Secretary of the Navy," Records of the Bureau of Ships, Entry 49, Record Group 19, National Archives, Washington, D. C. (hereafter cited as NA, RG 19); *Annual Report of the Secretary of the Navy*, 1850, 231; Harold D. Langley, "James Cochrane Dobbin," in Paolo E. Coletta, ed., *American Secretaries of the Navy*, vol. 1 (Annapolis: Naval Institute Press, 1980), 279-300; Alfred T. Mahan, *From Sail to Steam: Recollections of Naval Life* (New York: Harper Brothers, 1907), 3-10, 25-35. The Gosport Navy Yard is now known as the Norfolk Naval Shipyard despite the fact that it is not located in Norfolk.

4. "An Act for the gradual increase of the Navy of the United States," 14th Cong., 1st sess., April 29, 1816, in Richard Peters, ed., *The Public Statutes at Large* . . . , vol. 3 (Boston: Charles C. Little and James

Suitable live oak timber was an essential material for naval shipbuilding, and it took a long time to obtain. For specific ships, sets of full-sized templates called "rough moulds," representing the components of each ship's frames, were transported to the contractors — "live oakers" who encamped in swampy, largely uninhabited areas, initially along the South Carolina, Georgia, and Florida coasts. In the field, the rough moulds were matched directly to the wood grain of specific parts of individual trees. The trees were felled and dressed on the spot to rough mould size with axes and adzes, marked, then hauled by oxen to piers and loaded on coastal vessels for delivery to the yards. Live oak, prized for its iron-like strength, was best harvested from December to March when the sap made the wood easier to cut.⁵

Beginning in 1816, but primarily between 1827 and 1839, stockpiles of live oak deposited at the Navy yards were developed for each type of vessel: ships-of-the-line, frigates, sloops, steamers, and brigs. The hull form within each type of ship was relatively similar, and each stockpile therefore embodied generic precut, or "moulded," pieces of live oak timber for frames. The stockpiles also had pieces which were not specifically preshaped called "promiscuous timber." Keels, keelsons, and beams for each type ship were also stockpiled. Spare frame components for each type of ship were stored segregated and submerged in timber ponds or under sheds, awaiting their need. Live oak framing timber could be stored safely for decades. In July 1853 at the Gosport Navy Yard near Norfolk, Virginia, the stockpile included, for example, 90,400 cubic feet of precut frame components and ten full

Brown, 1846), 321. The word "increase" was used in 1816 and the word "improvement" was used in 1827 and 1833. "Increase" returns in 1840 and later. For background on the Gradual Increase law, see Robert G. Albion, *Makers of Naval Policy, 1798-1947* (Annapolis: Naval Institute Press, 1980), 187-189; Charles O. Paullin, *Paullin's History of Naval Administration, 1775-1911* (Annapolis: Naval Institute Press, 1968), 177; William S. Dudley, ed., *The Naval War of 1812: A Documentary History*, vol. 1 (Washington: GPO, 1985). For background in the use of the Gradual Increase Appropriation, see Edwin C. Bearss, *Historic Resource Study, Charlestown Navy Yard, 1800-1842*, vol. 1 (Washington: National Park Service, 1984), 254, 281, 319-321, 345-346. For an excellent history of Gradual Increase legislation see *Gales and Seaton's Register of Debates in Congress*, 19th Cong., 2d sess., 348-376. The legislative history following 1827 can be tracked through progressive volumes of *Public Statutes at Large*.

5. On live oak, see Virginia Steele Wood, *Live Oaking: Southern Timber for Tall Ships* (Boston: Northeastern University Press, 1981); Alice Strickland, *Ormond-on-the-Halifax* (Holly Hill, FL: Southeast Printing, 1980), 27-31; Bearss, *Charlestown Navy Yard* 1: 61-62, 267, 269, 368; Bess Glenn, "Cathcart's Journal and the Search for Naval Timbers," *The American Neptune* 3, no. 3 (July 1943): 239-249.

sets of beams just for ships-of-the-line, as well as 15,172 cubic feet of precut framing timber for sloops and seven complete sets of keelsons for sloops. Building a new ship from stockpiled pieces, especially obsolete pieces, would have been an ideal method of drawing down the lesser-needed supplies to a more economical level — a trend which had been in evidence for several years prior to 1853.⁶

The Navy was free to utilize the stockpile of live oak and could cover its labor costs from the Gradual Increase annual appropriation. The Act of 3 March 1827 clearly permitted it. However, both Congress and the Navy Department were sensitive to the long-term costs of maintaining and manning ships. There was little interest in vastly increasing the size of the fleet. Aware of progress by other nations, the Navy wanted instead to improve the quality of its vessels. With no apparent pretense of secrecy, the Navy eventually chose to substitute a new sailing sloop-of-war named *Constellation* for an old frigate with the same venerable name. The old ship had been in ordinary at Gosport since 1845, and the timber stockpile at that yard was more than ample. All charges to the Gradual Increase appropriation were meticulously tabulated by Navy agents and pursers, reported to the fourth auditor of the U.S. Treasury (known as "the Navy Accountant") and then to the Second Comptroller of the U.S. Treasury. The annual costs, by law, were reported directly to Congress by the Secretary of the Navy. A fresh sailing ship with auxiliary steam propulsion was probably preferred, but purchasing boilers and engines for a steamer required Congressional funding, and several new steamers were already under construction supported by specific appropriations. The new *Constellation* would therefore represent the best sail-only design available. Mounting modern eight-inch shell guns, she would be a sloop-of-war

capable of good speed and tremendous range, and would be the equal of any sailing warship of her type. The Navy had no real strategic plans, but it was clear that for distant cruising, reliable and inexpensive sail was still competitive with coal-gobbling steamers.⁷

From mid-November until early December of 1852, tons of iron ballast were hoisted from the old *Constellation*'s hold onto a dock and moved into the Gosport yard. With several jobs to do, work crews were frequently diverted to different tasks, leaving idle other projects already in progress. In preparation for hauling the ship out of the water, dimensions were taken from the keel. The original building plans of 1795 could only be used to a limited extent because the bow and stern of the hull of the old ship had drooped, or "hogged," and had twisted in shape over the years. On 22 February 1853 the old frigate was moved from the dock to the North Slip, and the following day at 1:00 P.M. she was hauled out of the water and up the masonry-faced incline into the weather. Some evidence suggests that the decision either to reconfigure the old frigate or to build a new sloop had not been made by this time. A drawing was made of the shape of the ship's hull to aid in placing shoring required to hold the vessel upright. The demolition progressed, and on 16 May crews began cutting up the timbers of the old frigate. Hundreds of pounds of copper, brass, and iron pieces which could be melted for scrap and 22,940 pounds of wrought iron ballast were accumulated and turned in to the storekeeper. On 12 September 1853 the Commandant of the yard wrote to the Secretary of the Navy and asked for

6. On cutting and stockpiling moulded timber, see Bearss, *Charlestown Navy Yard* 1: 298-299, 308, 545-546, 538-539, 588 and 2: 650-651, 797, 905-906. The Gosport stockpile is detailed in "Returns of Stores at Navy Yards and Naval Stations," vol. 175, Gosport Store Returns, July 1, 1853 - July 1, 1854, 17, 19, Entry 320, NA, RG 19. Building an earlier ship from the stockpile is in Bearss, *Charlestown Navy Yard* 2: 804. The trend to draw down the stockpile is evidenced in the statements of cost, or estimated value of stores on hand, for each yard regularly listed in the *Annual Report of the Secretary of the Navy*. See that report for 1850 (240); 1851 (86); 1852 (363); 1853 (422); 1854 (485). For storing live oak submerged, see blueprint, "Location of Live Oak," Navy Yard Portsmouth, NH approved 20 June 1931, Leon D. Pollard Papers, privately held (hereafter these papers will be cited as Pollard Papers). A Civil War era photograph of a timber shed at the Washington Navy Yard can be seen in James Barnes, ed, *The Photographic History of the Civil War in Ten Volumes*, vol. 6 (New York: Thomas Yoseloff, 1957), 167.

7. On shipbuilding programs at the time, see K. Jack Bauer, "Naval Shipbuilding Programs, 1794-1860," *Military Affairs* 29, no. 1 (Spring 1965): 29-41; Kenneth J. Hagan, *This People's Navy: The Making of American Seapower* (New York: Free Press, 1991), 138-140; John H. Schroeder, *Shaping a Maritime Empire* (Westport, CT: Greenwood Press, 1985), 1-18, 79-99, 187-190; C. Joseph Bernardo and Eugene H. Bacon, *American Military Policy: Its Development Since 1775* (Westport, CT: Greenwood Press, 1974), 180-184; Leonard D. White, *The Jacksonians: A Study in Administrative History, 1829-1861* (New York: The Macmillan Company, 1954), 213-231. Part of the accounting trail for Gradual Increase expenditures during the period can be found in "Office of the Fourth Auditor, Letters Sent to Government Officials, 1820-1868," Records of Accounting Officers of the Treasury Department, vol. 7, Entry 809, Record Group 217, National Archives (hereafter NA, RG 217). For amounts charged against Gradual Increase funds by various yards, see "General Ledgers, 1798-1900," Navy Ledgers vol. "S", 32, 34, 35, 44, 47, 57-58, 75, 91, 118, 120, 124, 172, 175, 185, Entry 765, NA, RG 217. Some advocated building more sail-only sloops similar to *Constellation*; see letter to editor, *The Monthly Nautical Magazine and Quarterly Review* 1 (October 1854 to March 1855): 396-397. On reusing the name, see J. F. Ayers Memorandum for OP-29B and OP-29, 28 December 1953 with attachments, ship's history file "Constellation," Ships History Branch, Naval Historical Center.

permission to auction off the old timbers.⁸ The frigate *Constellation*, clearly, was no more.

With the help of Edward H. Delano, the naval constructor assigned to Gosport, leading Naval Constructor John Lenthall decided, probably by early May 1853, to scrap all of the structure of the old frigate. In Washington, he began his new sloop design. Probably designing within the size and shape limits of the live oak stockpile, Lenthall executed a preliminary drawing in May 1853, then a pine half-hull model in three feet to one-inch scale. The half model was sent to the Gosport mould loft where loftsmen would have disassembled the model, traced its components, and used the tracings to scale-up and develop the graceful curve of each frame full-size on the huge mould loft floor. As each frame was developed on the floor, measurements as accurate as .125 inches were recorded in tabular form which produced "offset tables" that recorded the size and shape of every frame that comprised the hull of the new ship. Outside, the old *Constellation* was being broken up. Later, in 1855, when details had been completed at the yard and the new ship was done, a final drawing would be executed giving a visual representation to the hundreds of measurements recorded in the offset tables. After designing the *Constellation*, Lenthall would soon begin his designs for the screw frigate *Franklin* (like the *Constellation*, a "substitute" ship), and five screw frigates of the *Merrimack* class, also to be built from timber stockpiles.⁹

8. Gosport log, 3, 18, 22, 23, 25, 26, 29 November 1852; 4, 6 December 1852; 1, 19, 20, 28 January 1853; 22, 23 February 1853; 16, 24, 25, 26, 27, 30 May 1853; 14, 25 June 1853, in "Journal of Daily Transactions at Navy Yards," Records of the Bureau of Yards and Docks, Entry 91, Record Group 71, National Archives, Washington, D.C. (hereafter this record will be cited as "Gosport Log" and this record group as NA, RG 71); Drawing, "For taking the shape of ship before docking," by Charles S. Bruff, undated (ca. 1817-65), "Grice Collection," no. 87, Entry 405-A, NA, RG 45; Robert Beebe, "The Art of Taking Off Lines," *Rudder* (November 1966): 42-47. Virginia Steele Wood, *Live Oaking*, 88-91, offers a good illustrated description of the design and lofting process. A good view of the workings in a commercial shipyard about this time is "The Building of the Ship," *Harper's New Monthly Magazine* 24, no. 143 (April 1862): 608-620. The destruction of the old *Constellation* is specifically mentioned in E. H. Delano to Samuel L. Breese, 11 June 1853, "Letters Received from Commandant Gosport Navy Yard, 1853-1854," Entry 5, NA, RG 71; Commandant, Gosport Navy Yard to Bureau of Construction and Equipment, 26 January 1854, entered 28 January 1854 in "Minutebook of the Bureau of Construction and Equipment," Entry 60-A, NA, RG 19 (hereafter this record will be cited as "Minutebook"); and Gosport Log, 16 May 1853. The request to auction the old timber is synopsized in Commandant, Gosport Navy Yard to Chief, Bureau of Construction and Equipment, 12 September 1853, and entry for 14 September 1853, Minutebook.

9. On Edward H. Delano's contributions, see W. B. Shubrick to J. C. Dobbin, 28 May 1852, "Letters from Bureaus of the Navy

As the new *Constellation* was being planned, in late May 1853 workers began to search out and collect timbers for the new ship from the sheds and timber pond within the yard. Some of the framing timbers had been in storage for more than twenty years. On 25 June 1853 the new timbers for the keel were carefully laid out, or placed, in Shiphouse B — a large enclosed building some six hundred feet away from the North Slip where the old ship was being destroyed. On 27 August the sternpost was raised and a few weeks later, the stem. Nine pieces of new white oak keel timber were used: five pieces selected from the old ship-of-the-line stockpile, three pieces from the frigate stockpile, and a single piece of more precious sloop material. The keel timbers had been in storage at the yard perhaps as long as eighteen years. Totalling 1,277 cubic

Department," Entry 32, NA, RG 45. On the ship design process at the time, see John W. Griffiths, *Treatise on Marine and Naval Architecture, or Theory and Practice Blended in Ship Building* (New York: D. Appleton and Company, 1854); Richard W. Meade, *A Treatise on Naval Architecture and Ship-Building* (Philadelphia: J. B. Lippincott and Company, 1869); Theodore D. Wilson, *An Outline of Shipbuilding, Theoretical and Practical* (New York: John Wiley and Sons, 1878). The Griffiths volume is particularly important. The Lenthall half model is in the collections of the U.S. Naval Academy Museum. A plan dated May 1853 is in the Lenthall Collection, Franklin Institute. The dimensions taken from the old ship prior to and after hauling out are 107-13-4A and B; a June 1853 plan is drawing 28-3-5; the offsets are 142-1-7; and the record drawings, 128547 and 128584, are dated November 1855, all in "Plans of Ships and Shore Establishments," Entry 126 (hereafter E 126), NA, RG 19. A copy of the offsets was mailed to the Bureau in Washington on 10 October 1853; see entry for 12 October 1853 in Minutebook. Later plans were sent to Washington on 22 March 1854; see entry for 24 March 1854, Minutebook. Actual letters between Gosport and the Bureau at this time have been lost, but the Minutebook synthesizes each incoming letter and lists dates and enclosures. On designing the *Franklin* in 1854 as a substitute ship, see Donald L. Canney, *The Old Steam Navy*, vol. 1 (Annapolis: Naval Institute Press, 1990), 46. On designing and building the *Merrimack* class in 1853-54 using the timber stockpile, see Canney, *Old Steam Navy* 1: 45-46; Benjamin Isherwood, *Experimental Researches in Steam Engineering*, vol. 1 (Philadelphia: William Hamilton, 1863), 157; J. C. Dobbin to Lenthall, 10 June 1854, "Letters Sent by the Secretary of the Navy to Chiefs of Bureaus, 1842-1886," microcopy M-480, NA. W. M. P. Dunne, "An Inquiry into H. I. Chapelle's Naval Research," *The American Neptune* 49, no. 1 (Winter 1989): 39-55, here 53, endnote 30, states that in 1854, the original *Franklin* (1815) was lengthened by seventy-five feet. No source for this conclusion is given. Navy Department, Chief of Naval Operations, Naval History Division, *Dictionary of American Naval Fighting Ships*, vol. 2 (Washington, D.C.: GPO, 1959-81), 443 and Donald L. Canney, *Old Steam Navy* 1:46 indicate that the old *Franklin* was broken up about 1852 and a new, longer screw frigate of the same name was designed in 1854 and launched in 1864; several half models still in the Navy collection support this view.

feet, the quantity of timber withdrawn was over 150 percent of the amount necessary to build a finished keel, stem, and sternpost for the sloop.¹⁰

Following suit, timber was withdrawn from various storage areas for frames and beams. Upon completion, some 16,387 cubic feet of live oak framing timber was withdrawn from the stockpiles, about 78 percent of which was promiscuous. This was, again, perhaps 150 percent of the net quantity required to build an entirely new sloop. Planking was not stockpiled but was withdrawn according to thickness from regular stores. As each material was used, the quantity was reported to the storekeeper, who sent monthly reports to the Bureau of Construction, Equipment, and Repair. The storekeeper kept an accurate account of the type and quantity of material dispensed, as well as its Gradual Increase appropriation costs which would be reported monthly to the Department of the Treasury. By regulation, he distinguished between stockpiled framing timbers, spars, and keel members as well as pre-used and new material. The storekeeper was also responsible for inventorying any reusable material salvaged from ships. The only pre-used material dispensed to the sloop were 204 white oak knees drawn from stock. There was no evidence that any material was transferred directly from the old ship to the new one.¹¹

On 26 August 1854 at 11:45 A.M., according to the yard log, the "new sloop of war" *Constellation* was launched from Shiphouse B. Arming, masting, and rigging followed. Like framing timbers, the masting was built up from assorted spars retained for ships-of-the-line, frigates, and sloops. In the end, she was twelve feet longer and the same extreme beam as the previous *Constellation*. The

new ship was commissioned on 28 July 1855. She would be the last warship powered only by sails designed and built by the U.S. Navy.¹²

THE EVIDENCE REEXAMINED

Gosport Yard Records

In preparing the report *Fouled Anchors*, the author found a considerable amount of evidence describing the work done on the two *Constellations* at the Gosport Navy Yard between 1853 and 1855. The log of the yard, well-known since 1954, described the changing duties of the work force and, on 16 May 1853, mentioned workers employed in cutting up the old frigate. The log recorded the withdrawal of timbers from the stockpile and the placing of the keel pieces and indicated that on 24 May 1853 laborers were employed splitting, piling, and burning her timber. Other independent records confirmed the breakers' task: a letter from Naval Constructor Edward H. Delano to Samuel L. Breese on 11 June 1853 told how many workers were employed on the "old *Constellation*" and how many were working on the "new *Constellation*." The cost of breaking up the *Constellation* was the subject of a letter from the Commandant of the Gosport yard to the Chief of the Bureau of Construction, Equipment, and Repair dated 26 January 1854. Finally, a letter sent by the Commandant of the Yard to the Secretary of the Navy, dated 12 September 1853, requested permission to auction the old timbers of the ship.¹³

But were some of the old timbers reused in the new ship? The Navy yard storekeeper was required to keep meticulous records regarding the movement and costs of both incoming and outgoing materials transferred by naval constructors into, or out of, his stock. Store records for the Gosport yard during the period were extant, and over four hundred entries described all of the materials withdrawn from stock for the new *Constellation*. The store records,

10. Gosport Log, 25 June, 27 August, 6 September 1853; "Plan of Navy Yard at Gosport, VA," January 1843, "Plans, 1876-1941" drawing 55-3-15, Entry 71, NA, RG 71; "Plan of Part of Gosport Navy Yard showing Proposed in change in Quay Wall Location & method of Construction," June 25, 1853 (Y&D No. 3987), Public Affairs Office, Norfolk Naval Shipyard, Portsmouth, VA; *The (Norfolk, VA) Southern Argus*, 11 July 1853; the keel pieces are documented in "Returns of Stores at Navy Yards and Naval Stations," Gosport Store Returns, August, September, October, November 1853, January, March, April, May 1854, Entry 320, NA, RG 19; Gosport Log, 25, 26, 27 May 1853. Evidently much material was lost converting bulky ship-of-the-line timbers to smaller-dimensioned sloop requirements.

11. On the storage and retrieval of plank stock, see Bearss, *Charlestown Navy Yard* 1: 427. On the storekeeper's duties, see Secretary of the Navy, *Instructions for Navy-Yards* (Washington, D. C.: William A. Harris, 1859), 20-24. An excellent photographic account of ship framing is Dana Story, *Building the Blackfish* (Gloucester, MA: Ten Pound Island Book Company, 1988). See also Wood, *Live Oaking*, 55, table 2.

12. Gosport Log, 26 August 1854. "New sloop of war" is quoted from the log entry of that day. Naval History Division, *Dictionary of Fighting Ships* 2: 171-172. Historian Admiral George Preble was active in the Navy in 1855, and in 1872 he wrote that the *Constellation* was "... now represented by a new ship bearing the same name." George H. Preble, *Our Flag: Origin and Progress of the Flag of the United States of America* (Albany, NY: Joel Munsell, 1872), 232.

13. Material has been previously cited, but is repeated here for clarity: Gosport Log, 16, 24, 25, 26, 27, 30 May; 14, 25 June 1853. E. H. Delano to Samuel L. Breese, 11 June 1853, "Letters Received from Commandant Gosport Yard, 1853-54," Entry 5, NA, RG 71. Commandant, Gosport Navy Yard to Chief, Bureau of Construction and Repair, 12 September 1853, entered 14 September 1853, and 26 January 1854, entered 28 January 1854, Minutebook.

companion documents to the log books, clearly recorded that nine pieces of keel timber were withdrawn from the stockpile for the sloop. The Navy research team used a simple computer program to track the materials used in constructing the ship.

The storekeeper's records tabulated both new and used materials entered into his inventory and, indeed, many tons of ballast and scrap metal were turned in from the old frigate. The only pre-used materials dispensed to the *Constellation* were 204 white oak knees. Since store records did not indicate that any reusable old knees were salvaged from the frigate, it was not likely that the 204 knees came from it. Records indicated that more than enough new timber was withdrawn from the stockpile to build the complete new sloop-of-war, but the possibility that some insignificant materials were transferred for nostalgic purposes could not be eliminated.¹⁴

Newspaper Accounts

One popular news account from *The Daily Southern Argus* published on 11 July 1853 at Norfolk had been used by both sides of the argument:

The Old Constellation — This old time-honored and time-worn frigate of historical memory has been literally torn to pieces preparatory to the building of a new *Constellation*. Hundreds of men are employed directly or indirectly, upon her massive keel, which has been placed in one of the ship houses. . . . Her timbers are to be of live oak, . . .

The passage was ambiguous because it was not clear whether the "her" in the second sentence referred to "the old *Constellation*" in the introductory statement or "a new *Constellation*" in the first sentence. At least one other early news account reflected initial uncertainty whether, in the future, the frigate would be converted to a sloop or whether a new design would prevail.¹⁵

There are, however, two unambiguous newspaper accounts from the period. The Washington, D. C. *Daily National Intelligencer* of 7 September 1854 said:

14. The 204 pre-used knees are recorded in the January and May 1854 returns in "Returns of Stores at Navy Yards and Navy Stations," Gosport Store Returns, 1853-1854, Entry 320, NA, RG 19.

15. The 11 July 1853 newspaper snippet is quoted in Howard Chapelle and Leon Pollard, *The "Constellation" Question* (Washington, D.C.: Smithsonian Institution Press, 1970), 37 (hereafter this book will be cited as *CQ*), and in Evan Randolph, "USS *Constellation*, 1797 to 1979," *The American Neptune* 39, no. 4 (October 1979): 235-255, here 246. A photocopy is also in Pollard Papers. There are very minor errors

Neither the *Macedonian* nor the *Constellation* have been cut down from frigates to sloops-of-war, as both of those vessels have been condemned and broken up, and two new vessels have been built to which those names have been given in order to perpetuate them in our navy. Though the two new vessels have a light spar-deck thrown over their guns for the purpose of working ship clear of the armament, as well as to protect the latter from falling spars and rigging in time of action, they still, it is true, are only what may be called sloops-of-war or single-deck vessels, as their spar deck is without armament, except one heavy pivot-shell gun forward and another aft. But still the ghosts of the old frigates need in no way be ashamed of them, for they are the two finest ships of their class that float the ocean, and, though designated as sloops-of-war, they each exceed in tonnage their former namesakes; and, fitted and armed as they are with shell-guns and all the modern naval improvements, either of whom could capture or destroy in ten minutes a frigate such as was the *Constellation* when commanded by TRUXTEN (*sic*) or the *Macedonian* when captured by DECATUR . . .

The same basic article was reprinted in *The* (Norfolk, Virginia) *Daily Southern Argus* a week later and was unchallenged by the local readership, which was probably made up of many Gosport shipyard employees.¹⁶

Important to the question of the origin of the sloop's timbers was this first-person account of a tour of the Gosport yard given to a *Daily Southern Argus* reporter on 23 July 1853, a rainy Friday afternoon:

As you enter the main gateway, on your left, at the north building slip, is seen the breaking up of the U.S. ship *Constellation*. This noble ship, commanded by the gallant Truxton (*sic*), that captured the French frigate *Le Insurgent* off the Island of Nevis about the year '99 or 1800. This once famous ship is now rebuilding under cover of ship-house B. The keel, of the very best white oak, is in its place, and is

in both Chapelle's and Randolph's transcriptions, and the original has been quoted here. A news article showing initial uncertainty is quoted in "USS *Constellation*," 244. A newspaper article supporting the 1797 origin of the ship is quoted in Dunne, "Inquiry into Chapelle's Naval Research," 43. Endnote 45 on page 53 cites the news article as from the "Southern Argus" of 25 July 1853, held by the Library of Congress. The Library of Congress does not maintain *The* (Norfolk, VA) *Daily Southern Argus* for that date. When the newspaper was located elsewhere, the article could not be found on, or near, the specified date.

16. Washington, D. C. *Daily National Intelligencer*, 7 September 1854; *The* (Norfolk, VA) *Daily Southern Argus*, 14 September 1854.

composed of nine pieces, all making about 176 feet in length, say 30 inches deep, the siding size about 18 inches.

The ship carpenters are employed under cover (God bless Uncle Sam for protecting these valuable men from the intense hot sun!) otherwise they would be much exposed in getting out the live oak frame, for hard work it is to prepare such timber — it is hard as iron, and as curly and twisting as a bull's forehead. Well it may be hard for 'tis said that it has been seasoning more than twenty years. The pieces of white oak the keel is made of, we are told, have been on hand about eighteen years. The workmen say that the pieces are as fresh and as sound as they were when first received in the Yard — such care has been taken to preserve them for the builder's use. . . .

Interestingly, a map used to trace the reporter's route through the yard attests to the article's accuracy.¹⁷

Designer's Half Model

In March 1989 the author became aware that there existed in the Navy's large collection of technical models a mislabeled half-hull model of the *Constellation*. If this proved to be John Lenthall's designer model it would add significant and tangible evidence that the sloop-of-war *Constellation* commissioned in 1855 was a fresh design. The half model, in three feet to one-inch scale, was carefully studied at the David Taylor Research Center and the Smithsonian Institution, and it was positively identified as the designer model for the sloop-of-war *Constellation*.¹⁸

Lenthall's use of a half model was substantial evidence that no part of the hull form, or moulded hull lines, of the frigate of 1797 was carried over to the sloop of 1855. Studies showed that if an older frigate hull form, and old timbers representing that form, had been reapplied to the new sloop, the lofting process would necessarily have been derived from a drawn plan which would have recorded at least some of the previous form. The scale half model could not have been made sufficiently precise to record, in miniature, an existing vessel and then be scaled up by a factor of thirty-six on the mould loft floor in order to duplicate accurately full-sized portions of an

existing ship. With surprising accuracy, the model reflected the record plans of the sloop-of-war *Constellation* of 1855.¹⁹

Ship's Plans — Tables of Offsets

An abundance of plans existed which depicted the normal design process for the sloop in 1853. As would be expected, there were preliminary plans drawn by Lenthall in the spring of 1853, a half model, a second set of plans, the tables of offsets developed during the lofting process, and finally a set of record plans drawn after the ship was complete in 1855. None of these documents indicated any reused portions of the old frigate. They were normal records representing a new design. Moreover, plans were located at the National Archives for two ships, the *Sabine* and *Santee* (both 1854), which were alterations of existing hulls, and both of these plans depicted both the existing structure and the newly designed areas.²⁰

The ordinary set of dual offset tables was especially revealing as it recorded, with .125-inch accuracy, the shape of all of the structural timbers of the sloop *Constellation*. Lenthall's half model was disassembled in the Gosport mould loft, indexed, traced, and then enlarged by a factor of thirty-six and drawn upon the mould loft floor. On the floor, some adjustments had to be made in the frame shapes during the smoothing or "fairing" process, and then each frame was plotted, measured, and recorded as measurements in tabular format to create the table of offsets. Had any portions of the old ship's frames or hull form been reused intact, those portions would have been delineated in the tables. They were not.²¹

19. Material has been previously cited, but is repeated for clarity. The May 1853 design plan for the new ship is in the John Lenthall Papers, Franklin Institute. Dimensions of the old frigate taken in January and February 1853 are 107-13-4A and B; the June 1853 plan for the new ship is 28-3-5; the offsets to the new sloop are 142-1-7, and the November 1855 record drawings are 128547 and 128584, all in E 126, NA, RG 19. See also, "Lines to U.S. Frigates *Constellation* and *Congress*," "Lines Taken from Builder's Half Model of Sloop-of-War *Constellation*," "Lines to U.S. Frigate *Macedonian*," and "Lines Comparison for Ships *Constellation* (I&II), *Pennsylvania*, and *Macedonian*," all by Colan Ratliff, 1990, Office of the Curator of Ship Models, David Taylor Model Basin, Carderock Headquarters, Bethesda, MD.

20. Compare the *Constellation* plan of June 1853, 28-3-5, with conversion drawings 79-10-7A and B, 138-13-12, 107-10-9M (*Sabine*, 1854), and 107-11-14E (*Santee*, 1854), all from E 126, NA, RG 19. Both ships were altered while still on the stocks: Naval History Division, *Dictionary of American Naval Fighting Ships* 6: 215, 325.

21. Sloop-of-war *Constellation* offsets, plan 142-1-7, E 126, NA, RG 19.

17. *The (Norfolk, Virginia) Daily Southern Argus*, 23 July 1853. Compare with the contemporary "Plan of Part of Gosport Navy Yard showing Proposed change in Quay Wall Location," 25 June 1853 (Y&D No. 3987), Public Affairs Office, Norfolk Naval Shipyard, Portsmouth, VA.

18. Scientific analytical testing and documentary correlations regarding the model are described in *Fouled Anchors*, 62-64, 135-137.

The offset dimensions for the new ship were then adjusted to allow a midships sag, or "hang," of 3.125 inches in the keel. After launching, variations of buoyancy along the hull would flex and flatten the hang, and the keel would then be horizontal and straight. With age, the keel was expected to hog, or droop at the bow and stern ends.²²

Existence of the sloop-of-war *Constellation* offsets, demonstrating the 3.125-inch hang of the new keel, supported the drawings and the half model by showing that the sloop was structurally fresh. The offset tables for the sloop of 1853, the Gosport store records, and a newspaper account laid to rest the notion that the aged, perforated, and hogged keel of the frigate was somehow reverse-bent perhaps twenty-three inches (hog plus hang) and reused in the new ship.²³

Ship's Plans — 1853 Docking Plans

Many ship's plans were found detailing both the *Constellation* of 1797 and of 1855. Except for three that had been previously tampered with, the plans were accurately labeled. Among the most important were the dry docking survey plans of 1853. One drawing on paper received from Norfolk in January 1853 accurately recorded in ink the shape of the very hogged keel of a vessel named *Constellation*. The *Constellation* was hauled out of the water on 23 February 1853, and this plan had probably been made using a common pantographic device while the ship was afloat. Information on the drawing would have helped the docking master place blocks under the ship's keel when she was brought up on to the North Slip.²⁴

A related drawing on linen dated Norfolk, February 1853 was prepared ("taken from work") after the old ship was in the slip. Computer analysis showed that the hog

and twist exhibited in this plan matched the January drawing. In the plan, nine hull cross sections were each located on the skin of the ship and measured by dimensions based from the exterior and the gunports. Measurements could have been gathered by cutting out the plank in selected areas or by measuring to the outside of the plank and subtracting the plank thickness. These sections and dimensions, forming a typical ship's docking plan, were useful in 1853 for building the shoring necessary to hold the ship permanently upright while it was broken up. Today the nine cross sections offer an excellent record of the actual shape of the old *Constellation* of 1797 on the eve of her demise in 1853.²⁵

Computer Architectural Study

Kevin Lynaugh, a supervisory naval architect at the David Taylor Naval Research Center, volunteered to prepare a study of the interrelationship of Joshua Humphreys' design for the frigate *Constellation* drawn by William Doughty on 15 January 1795, the key 1853 two-part docking plans, and John Lenthall's 1853 sloop-of-war design. Using several sophisticated naval architectural software programs on a VAX II computer, Lynaugh entered the 1795 design, the 1853 design, and the 1853 docking plans digitally into his system. Unlike the manual drafting techniques used years before, which left substantial areas of hull surface specifically undefined and therefore subject to the draftsman's interpretation, Lynaugh's computer program was able to analyze at will and compare in extreme detail and accuracy the three hull shapes. The computer study indicated that essentially no portion of the hull of the 1797 ship matched the 1853 (or present-day) ship.²⁶

Computer analysis indicated that the 1853 docking plans did, with considerable precision, match the 1795 Humphreys design. The study confirmed that the hull of the old *Constellation* was accurately recorded by the docking plans of January and February 1853, including any alterations of hull form that may have occurred

22. Keel hang is described in Griffiths, *Treatise on Marine and Naval Architecture*, 118; CQ, 44.

23. Computer analysis of drawings 107-13-4A and B (E 126, NA, RG 19) showed that the keel of the *Constellation* was hogged 19-20 inches in January 1853. This agrees favorably with the hog measured in the ship shortly before 1 May 1846: "Report of the examination of vessels on the stocks & in Ordinary, to ascertain their positions, stability, etc., in accordance with the Circular Order of 26th January 1833," 1 May 1846, Subject File AL, "Ships in Ordinary and Reserve, Gosport Navy Yard, 0-1859," NA, RG 45.

24. Material has been previously cited, but is repeated for clarity. The keel drawing is 107-13-4A, E 126, NA, RG 19. A pantographic device for measuring keels is "For taking the shape of ship before docking," by Charles S. Bruff, undated (ca. 1817-65), "Grice Collection," no. 87, Entry 405A, NA, RG 45.

25. The cross-section drawing is 107-13-4B, E 126, NA, RG 19. Both the keel and the section drawings have been reproduced in CQ, 27-28. For comparison, other docking plans are "U.S. Torpedo Boat *McKee*. Docking Plan. Taken from Work . . .," 27 May 1898, 19-1-1 and "*Amphitrite*. Docking Plan. Taken from work . . .," May 1902, 74-12-13, both in E 126, NA, RG 19.

26. Drawing, "Frigate Congress and *Constellation* of 36 Guns," 15 January 1795, U.S. Naval Academy Museum collections. Plans 128547, 128584, 142-1-7, 107-13-4A and B, E 126, NA, RG 19. Lynaugh's description of his methodology, hardware, software, and conclusions is in *Fouled Anchors*, 155-161.

between 1795 and February 1853. Therefore, the old *Constellation* was built essentially as designed by Humphreys and the hull form was not substantially or permanently altered before her demise.

The two docking plans were positively related and both showed the same degree of hog and twist. They clearly depicted an eighteenth-century frigate hull with considerably inward curving bulwarks, or "tumble-home"; a fact that disagreed with claims that the *Constellation*'s hull had been extensively modernized and the tumble-home removed during repairs prior to 1853.²⁷ Lynaugh's illustrated study, Appendix B of *Fouled Anchors*, found that the hull of the *Constellation* of today conformed fully to John Lenthall's 1853 design and not at all to Joshua Humphreys' 1795 design.

Naval Architectural Study

To supplement Lynaugh's advanced computer study, Colan Ratliff, a specialist in nineteenth-century ship design on the David Taylor staff, investigated design differences between ship types. He found that the midships cross-sections of nineteenth-century American frigates, sloops-

of-war, and even ships-of-the-line, despite differences in size, were all relatively similar in shape. This similarity had contributed to the popular misconception that the midship cross-section of the present *Constellation* was similar to that of the old *Constellation* and, therefore, it was the same vessel.²⁸

In a section of *Fouled Anchors* describing the construction of the frigate *Constellation* in Baltimore, 1795-97, Ratliff outlined the strict process of designing and building warships during that period. Mindful of the different skills and responsibilities of constructors, or builders, and designers, he found that the ship of 1797 had to be built as designed. The basic hull form could not have been altered locally in Baltimore without consulting the designer and without creating new plans and moulds which would have left a considerable "paper trail." Lack of a trail supported Lynaugh's finding that the frigate of early 1853 matched the Humphreys plan of January 1795 and reaffirmed the author's findings that documentation indicating that the ship had been secretly redesigned in 1795, reflecting a sloop-like hull, was likely forged.²⁹

The *Constellation* of 1855 was not created in a vacuum. She was not an isolated design, but part of a progression of technology. Study of American naval architectural trends also traced the introduction of the speedy "clipper" hull form evidenced in the present vessel. The sloop's hull exhibits an advanced degree of sophistication in the computation of speed, stability, and displacement probably influenced by commercial clipper ships popular at the time of her design in 1853. The clipper hull form of the ship, as she left the Gosport yard in 1855, could not have safely supported the weight of the guns and extra gun deck present in the ship that was brought into the yard in 1853. While the topsides of a frigate might be cut down to a successful sloop-of-war, a sloop-of-war hull could not be made into a successful frigate. Based upon his study, Ratliff found that it was not likely that the hull form of the sloop could have been designed and built decades before 1853 and perhaps only lengthened at Gosport.³⁰

27. Howard Chapelle and Leon Polland argued a lot about the rounded stern of the *Constellation*. It was not apparent how the stern configuration really mattered much in determining the age of the present ship. It suffices to say that the vessel commissioned in 1855 had a rounded stern. This was agreed upon by both Chapelle and Polland. *Fouled Anchors* also chose to discount a so-called "Mizzen Mast Survey" drawing alleged to represent *Constellation* in either 1829 or 1840, copies of which are in Polland Papers. Polland made much of this drawing in *CQ*, 95-96, but he admitted that the original could not be relocated at the National Archives. The purpose of a "Mizzen Mast Survey" could not be determined because the subject of the drawing was the ship's stern, not the mizzen mast. The mast drawing was hauntingly similar to a stern design drawing, undated, "U.S. Sloop Vandalia," 40-7-84, E 126, NA, RG 19. Peculiar, bearing many similarities to known forgeries, with no locatable original, the "mizzen mast survey" drawing was likely spurious. Polland believed the *Constellation*'s tumble-home was largely eliminated during repairs in 1812; *CQ*, 118-120. This supported his convoluted view that the 1853 docking plan, 107-13-4B, which showed a ship with an eighteenth-century-style tumble-home, was mistakenly derived in 1853 from an obsolete 1795 plan that the Navy failed to discard. However, Enoch Wines described the *Constellation* in 1829: "In the beauty of her hull, she is unequalled by any thing I have ever seen afloat. The easy swell and curvature of the sides, and the general harmony of the proportions are inimitable. The new frigates may present a more war-like appearance, but the monotony of their sides, rising as they do almost perpendicularly from the water to the hammock-nettings, is any thing but graceful or agreeable." E. C. Wines, *Two Years and a Half in the Navy*, vol. 1, (Philadelphia: Carey and Lea, 1832), 20. Although he was aware of the Wines book, Polland's view on the tumble-home was based on a series of documents now believed to be spurious. Polland's erroneous view is repeated in Dunne, "Inquiry into Chapelle's Naval Research," 43.

28. Evan Randolph, "USS *Constellation*," 249-251. Mr. Ratliff's full report, including a table of the forty-seven drawings consulted, is in *Fouled Anchors*, 131-153.

29. Griffiths, *Treatise on Marine and Naval Architecture*; Meade, *Treatise on Naval Architecture and Ship-Building*; Lachlen McKay, *The Practical Ship-Building* (New York: Collins, Keese and Company, 1839), introduction and 8; Wilson, *Outline of Shipbuilding*.

30. The theory that the frigate *Constellation* bore a sloop-like hull since 1797 was proposed by Polland as early as 1959 and appears in all of his publications, culminating with *CQ* (1970). A variation on the same

THE QUESTION OF CONTINUOUS IDENTITY

In preparing *Fouled Anchors*, the team also studied how the new findings correlated with the views of those who believed the ship had a continuous identity since 1797. Those motivated to link the *Constellation* of today to a 1797 origin were faced with several physical discrepancies. One was that the frigate was 164 feet long and the sloop is 176 feet long. The second discrepancy was that the frigate had twenty-six-inch spaces between her frames and the ship today has thirty-two-inch frame spacing. Added to these incongruities was the need to identify a substantial amount of timber, usually the keel and first (or lower) futtocks, as being transferred from the frigate to the sloop during the 1853-55 work effort at Gosport.³¹

Generally, and much simplified, this is how the framing of wooden warships worked before 1811. The frame, or rib, was begun at the bottom with two companion floor timbers, which when incorporated into the completed frame, would eventually be bolted perpendicularly to the top of the keel. Many frames bolted close together formed the framing structure of the ship. The port and starboard arms of each frame were each composed of four or more curving timbers called "futtocks" which were attached head-to-foot to form the generally concave shape of each arm of the frame. For each arm, the foot of the first futtock was attached to the head of one floor timber. The foot of the second futtock was attached to the head of

the companion floor timber and aligned cheek-to-cheek with the first futtock, but extending further upwards along the projected frame. The third futtock was installed foot-to-head with the first, and cheek-to-cheek with the second. The fourth futtock was installed foot-to-head with the second and cheek-to-cheek with the third. Other futtocks and top timbers were similarly added until the frame reached the projected rails of the ship. The other arm of the frame was composed the same way. The finished U-shaped frame therefore included two arms, each composed of parallel runs of futtocks with staggered joints, fixed together at the bottom with two floor timbers. The staggered joints and overlapping nature of the parallel futtock runs not only produced great structural strength, but allowed decayed floor timbers and futtocks to be sequentially, alternately, replaced from the inside of the ship without disturbing hull form or hull planking. If necessary, such repairs could be effected with the vessel afloat.³²

To rationalize the dimensional incongruities and how the keel and lower futtocks found their way to the new ship, proponents of the 1797 origin had a single basic recourse — that the frigate brought into Gosport in February 1853 already embodied at least some of the sloop's hull form and frame spacing, that the keel was severed amidships and lengthened about twelve feet and, along with the existing lower futtocks and floors, formed the basic structure of the new sloop.³³

Precognitive Designs

In 1961 a scholarly article appeared in the *Maryland Historical Magazine* which gave evidence showing that the *Constellation* was secretly redesigned in 1795 before she

theory is proposed by Evan Randolph in "USS *Constellation*" (1979). Dunne selects parts of both Polland's and Randolph's sometimes conflicting views in "Inquiry into Chapelle's Naval Research" (1989).

31. CQ, 85, 116-119. It is interesting to note that National Maritime Initiative, *The Secretary of the Interior's Standards for Historic Vessel Preservation Projects with Guidelines for Applying the Standards* (Washington, D.C.: Department of the Interior, National Park Service, May, 1990) does not directly require a ship to have any original historic fabric in order to qualify as a historic vessel. Recent renditions of the *Constellation* story include Brother C. Edward, "The USS *Constellation*," *American History Illustrated* 9, no. 1 (April 1974): 12-25; Gilbert A. Crandall, "Yankee Race Horse," *Sea Classics* 5, no. 2 (March 1972): 48-58; Dunne, "Inquiry into Chapelle's Naval Research"; Sanford Sternlicht and Edwin M. Jameson, *USF Constellation: "Yankee Racehorse"* (Cockeysville, MD: Liberty Publishing Company, 1981); P. M. Callaghan, "Preserving America's Oldest Warship," *All Hands* (December 1980), 31-38; Edward L. Beach, *The United States Navy: 200 Years* (New York: Henry Holt and Company, 1986), 233, and Gilbert C. McArdle, *Modelling the USF Constellation* (Centerville, MD: Cornell Maritime Press, 1985). Most of these repeat either Chapelle's or Polland's perspectives on the ship. For different views, see Evan Randolph, "USS *Constellation*," or the masterful John Lyman, "The *Constellation* and Her Rebuilding," *Sea History* 3 (July 1975): 23-28.

32. Installed cheek to cheek, the second futtock overlapped the first and third, and the fourth futtock overlapped the third. The ability to replace major timbers afloat was important to a Navy which did not have a usable drydock until June 1833. See Paullin, *Paullin's History of Naval Administration*, 183. Without drydocks, American warships were repaired afloat, careened, or hove up on ways — an expensive, time-consuming, and hazardous job. See Charles Stewart to Paul Hamilton, 12 November 1812, published in the Washington, D.C. *National Intelligencer*, 19 December 1812; Thomas Tingey to Hamilton, 15 June 1812, "Letters Received by the Secretary of the Navy from Captains, 1805-51 and 1866-85," microcopy M-125, NA. Peter Goodwin, *The Construction and Fitting of the English Man-of-War, 1650-1850* (Annapolis: Naval Institute Press, 1987), 16-18; Meade, *Treatise on Naval Architecture*, 323-330.

33. Polland, CQ, 107-116; Dunne, "Inquiry into Chapelle's Naval Research," 43; Randolph, "USS *Constellation*," 235-255. Randolph does not directly account for the length or the frame space dimensional differences. The floors and first futtocks would constitute approximately the bottom twelve feet of the hull.

was built and that the resultant frigate had an advanced sloop-like hull form which was lengthened and carried over to the sloop-of-war in 1853. *Fouled Anchors* found that, probably unknown to the majority of the authors, most of the documentation supporting this article had been forged. In 1979 an article appeared in *The American Neptune* which offered an alternative theory that, as early as 1839, the *Constellation* was actually redesigned as a frigate with a sloop-like hull form, and that she was modified and cut down to a sloop in 1853. According to the article, about 34 percent of the sloop-of-war leaving Gosport in 1855 was made from the timbers of the old frigate. *Fouled Anchors* found that the theory was based upon several faulty assumptions, imprecise drafting, a misunderstanding of the Gosport store records and, unknown to the article's author, one proven forged document and one likely forged document. Another article appeared in *The American Neptune* in 1989 which, in part, provided a synthesis of selected points from the 1979 article and previous writings.³⁴

Computer analysis of plans showed that the characteristic advanced sloop hull form would have been manifested in all the frames of the hull, beginning below the first futtocks and proceeding upwards. Acceptance of the complicated notion that an earlier precognitive hull form was carried over to the sloop from the frigate would require belief that the pre-1845 frigate hull form was much advanced, was never duplicated despite its superior qualities, was never mentioned in published or unpublished official records, could successfully support a frigate's guns and decks, and that appropriate design drawings were never made or have not survived.

Alterations During Repair

If the *Constellation* had been built as designed by Humphreys in 1795, then any subsequent redesign had to have been effected as an alteration performed during a repair period before 1845. The *Constellation* had been repaired in 1801-02, 1812, 1825, 1826, 1828-29, 1832, 1834-35, and 1838-40. Records of repairs performed on the frigate show that in 1825 some timbers were renewed and in 1828-29 twenty-four first, fifty-three second, and sixty-eight third futtocks were replaced. Between 1838 and 1840 one-third of her first, second, and third futtocks were

replaced. In at least the latter two cases, only scattered futtocks, not frames, were replaced. All work done between 1801 and 1840 was listed as "repairs." She was placed in ordinary at Gosport in 1845 and was not withdrawn until 1853.³⁵

Primary records are scant, but several published sources indicate that the *Constellation* was increased by "14 inches more beam at the main breadth" during repairs at the Washington Navy Yard in 1812. It was probable that her internal planking was stripped down, her first futtocks and floors were replaced, and her seven-inch thick main wales were doubled at this time with an additional layer of seven-inch thick plank in order to strengthen her before careening, to help straighten the ship's shell, and to supplement repairs made after she was accidentally grounded, laid over on her beam ends, and inundated in Delaware Bay on 10 August 1801. She was not hauled up on the ways in 1812 and the work was considered an "immediate repair." The work done at the Washington Navy Yard used timber at hand and was performed while afloat at the yard's wharf and by careening. Evidence did not indicate that in 1812 her hull form had been permanently altered.³⁶

35. Repair records have been cited previously, but are repeated here for clarity. "Constellation. Commenced Repairing at Gosport in the Month of Jany - Completed July 1829"; "At Gosport repaired in Feby - March 1832,"; "Commenced repairing at Gosport 16th Decem 1834 and was finished October 1835," all from "Returns of Repairs to Vessels, 1820-1849," Entry 5, NA, RG 45. Returns for repairs on U.S. Frigate *Constellation*, April, June, September, October, November, December 1825; "Returns . . . of Materials used in Repairing U.S. Ship Constellation . . .," March, April, May, June, July, September, October-November, December 1828 and January - April, May, June, July, August 1829; "Constellation Repairing. Report of the State and Condition and of the Work done . . .," 15-30 November, 1-15 December, 16-31 December 1838, 16-28 February, 1-15 March, 15-31 March, 1-15 April, 16-30 April, 16-31 May, 1-15 June, 16-30 June, 1-15 July, 16-31 July, 1-15 August, 10-31 August 1839, and 16-31 March, 1-15 April, 15-30 April, 1-15 May 1840, all in Subject File AR, "Repairs to U.S. Ships, 0-1859," NA, RG 45.

36. 51st Cong., 1st sess., Ex. Doc. No. 22, *Navy-Yard Washington. History from Organization, 1799 to Present Date*, by Henry B. Hibben, Chaplain, USN (Washington, D.C.: GPO, 1890), 44-46 presents a summary of work done at the yard, 1811-12, which must be read in its entirety to understand what perhaps was, and was not, done to *Constellation*. The booklet is not entirely reliable, but other more recent secondary works appear to repeat Hibben's information. See, for example, Taylor Peck, *Round-Shot to Rockets: A History of the Washington Navy Yard and U.S. Naval Gun Factory* (Annapolis: Naval Institute Press, 1949), 46, and Naval History Division, *Dictionary of American Naval Fighting Ships* 2: 170. Hibben does not say that her beam was increased overall, but only ". . . an extension of 14 inches more beam at the main breadth," supporting the probability that her wales were doubled. George F. Emmons, *The Navy of the United States*

34. Charles Scarlett, Leon Polland, John Schneid, and Donald Stewart, "Yankee Race Horse: The USS *Constellation*," *Maryland Historical Magazine* 56, no. 1 (March 1961): 15-38; Randolph, "USS *Constellation*," Dunne, "Inquiry into Chapelle's Naval Research," 43 repeats the 1795 redesign theory.

Speculation about alterations to the frigate *Constellation*'s hull form seemed moot. As previously stated, the docking survey performed at Gosport in January and February 1853, at the time the frigate was hauled from the water, had been found by computer analysis to reflect the original moulded beam and design for the 1797 vessel accurately. The sloop hull form could not successfully carry the structure and armament of a frigate, nor was it likely the sloop's refined hull form could have been designed before she was placed in ordinary in 1845. Coupled with detailed records concerning most of the repair periods, it was apparent that the *Constellation*'s hull form had not been significantly altered between 1797 and 1853.

Keel Extension

The frigate built in 1797 was 164 feet long and the sloop that left Gosport, displayed today, is 176 feet long.

from the *Commencement, 1776-1853* (Washington, D.C.: Gideon and Company, 1853), 92, confirms her beam was increased but does not indicate any increase in tonnage, 24. "Dimensions and Sizes of Materials for building a Frigate of 36 Guns," Josiah Fox Papers, Peabody Museum. Both Chapelle and Polland, amazingly, agreed that *Constellation*'s beam may have been increased by doubling her planks or wales. See *CQ*, 118 and Howard Chapelle, *The History of the American Sailing Navy* (New York: W. W. Norton, 1949), 234. James McKnight to ?, 17 April 1801; J. Thompson to Colonel Burrows, 28 April 1801, Subject File HG, "Groundings, Strandings, Foundering, and Sinkings," NA, RG 45. James Fenimore Cooper, *Naval History of the United States* (Philadelphia: Thomas Cowperthwait and Company, 1847), 301. By the Act of March 30, 1812, Congress appropriated \$300,000 for the "immediate" repairing and equipping of the frigates *Chesapeake*, *Constellation*, and *Adams*. Tingey to Hamilton, 7 February, 20 April, 9 May, 15 and 20 June, 10 September, 29 December 1812, "Letters Received by the Secretary of the Navy from Captains, 1805-61 and 1866-85," microcopy M-125, NA; Hamilton to Tingey, 6 February, 3 April, 22 October 1812, "Letters Sent by the Secretary of the Navy to Commandants and Navy Agents, 1808-65," microcopy M-441, NA. In order to alter the hull form of the bottom twelve feet of *Constellation*, the floors, both the first and second futtocks, and the hull plank would have had to have been altered and replaced while the ship was hauled out of the water. Both Hibben and the Washington, D. C. *National Intelligencer* recorded ships hauled up on the ways and launched. Neither source indicates *Constellation* was hauled up. *Constellation* was repaired between April and October 1812, and the only building way large enough for her was occupied by a back-to-back series of other ships, including *Adams*, throughout that year. Washington, D. C. *National Intelligencer*, 9 April, 10 September, 31 October, 28 November, 1812; William Doughty, "Rough Plan of the Navy Yard Washington," 9 May 1815, Subject File, 1776-1910, PS-48, NA, RG 45. Dunne, "Inquiry into Chapelle's Naval Research," 43, erroneously states that the extreme and the moulded beam of the ship today is much the same as it was after 1812. The extreme beam today is the same as her extreme beam after 1812. Her moulded beam is not the same; see *Fouled Anchors*, 173, fig.18; docking plan 107-13-4B and offsets 142-1-7, E 126, NA, RG 19.

Leon Polland (1917-1987) was a marine draftsman and volunteer naval architect in charge of restoring the *Constellation* from 1959 until 1975. Though he had no training as a historian and little prior experience in wooden ship design, he was primarily concerned with defending the 1797 origin of the vessel and transforming the sloop into the resemblance of a frigate of the 1812-1815 period. Beginning in 1959, Polland concluded that in 1853 the frigate *Constellation* was cut down to the load waterline (about the twenty-two-foot waterline) and had twelve feet of new keel and hull added approximately amidships, retaining the bow and stern hull form of an earlier date. His conclusion was based partly upon his observations and partly upon a likely forged document (that he did not recognize as spurious), allegedly written by Franklin Roosevelt. Polland, and others more recently, have believed that the keel and the lower futtocks of the frigate are probably present in the sloop today. In later years, Polland revised his conclusion and believed that the ship was mostly torn down to the floors (about the three-foot waterline, well below the first futtocks) and had twelve feet added amidships.³⁷

Some had claimed that, while retaining the keel and lower futtocks, length was added to the frigate *Constellation* by inserting a twelve-foot-long piece of keel and a number of new frames at the dead flat, the point at

37. *Who's Who in the East*, twelfth ed. (Chicago: Marquis - Who's Who, 1972), 888. Polland to Arnold Korab, 22 January 1965, Polland Papers; *CQ*, 107, 116. Prior to publishing *CQ* with Chapelle in 1970, Polland had written *Frigate E - Constellation*, mimeographed in 1962, and *The Frigate "Constellation": An Outline of the Present Restoration*, printed in limited quantities in 1966 and again in 1968. The relatively easier to find *CQ* is referenced in this article. Many of Polland's views have become part of the oral tradition used to define the present ship. Polland to "To Whom it May Concern" on USS *Constitution*, 18 October 1959 and Polland draft, "A *Constellation* Treatise," March 1969, both in Polland Papers. The drastic reduction of the amount believed to be original material is in Polland to Edwin Auerbach, Jr., 19 December 1968 and again revealed in handwritten added pages 13-14 to speech entitled "Restoration of the Frigate *Constellation*" prepared by Polland for presentation to the Baltimore Chapter of the Nautical Research Guild, 29 April 1968, both in Polland Papers. Polland quietly admitted his change of opinion in *CQ*, 116, with the statement that in 1853 the ship was "razed" and "... in many areas cut down to the floorboards." Dunne, "Inquiry into Chapelle's Naval Research," 43-44 repeats the keel extension theory. Attesting to the likely condition of the *Constellation*'s timbers, it is interesting to note that in 1834, *Constellation*'s sister ship, *Congress*, was judged unsuitable for repair and subject to be condemned. Only twenty-one of sixty-two floor timbers and only twenty-six of 142 first futtocks were found to be sound. Samuel Humphreys to ?, 4 April 1834, Subject File AL, "Ships in Ordinary or Reserve, Gosport Yard, 0-1859," NA, RG 45. Repair and in-ordinary records offer ample evidence that, while it was hardy, live oak was far from eternal.

which the ship was the widest.³⁸ Had frames been added anywhere in the structure of the ship, they would have had to have been carefully faired into the ship's general shape, and a considerable number of existing adjoining frames would also have required refairing. A complicated and critical process, it would not have been considered a casually planned, unrecorded, carpenter's job. It is likely that such a project would necessarily have required new displacement and stability computations, measuring, re-drawing, and relifting nearly the entire ship. Records did not indicate that any such work was ever done.

The concept of adding length to a ship by cutting amidships near the dead flat seemed to be a modern notion applied primarily to "jumboized" steel ships which could be easily cut and welded. It was found that adding keel pieces inserted amidships, connected by long wood joints called "scarphs," was an avoided practice in American naval ships. Cutting amidships would weaken the vessel longitudinally and would increase the number of scarph joints in the middle of the keel, an area of critical structural stress. Evidence was found that on most, perhaps all, of the few occasions it was really done, American warships had length added by redesigning and rebuilding bows and sterns. A midship extension provided only additional deck and hold length while disturbing the stability of the ship. However, a successfully redesigned bow or stern could accomplish the same dimensional increase plus offer an opportunity to modernize and improve the hydrodynamic qualities and stability of the vessel while preserving the integrity of the midship keel structure.³⁹

38. *CQ*, 111-112. Dunne, "Inquiry into Chapelle's Naval Research," 43-44 and 53, endnote 30. This article also states on page 41 that in 1820-23 the *Erie* (1813) "Typically, . . . was stripped down to its live oak structural members, a keel scarph released, presumably at the dead flat, . . ." and was lengthened four feet. Then, in the 1840s, she was shortened four feet. Regarding the 1840s work, the two sources cited in the article disagree with each other and one of the sources contradicts the article. Neither source cited postulates *Erie* was split and lengthened at the dead flat in 1820-23 or 1840-43. George F. Emmons, *Navy of the United States*, 10, reports that the original *Erie* was broken up in 1841 and that a new store ship named *Erie* was launched in 1842 (26-27). See Merritt A. Edson, Jr., "Ramblings in American Naval History," a draft article commencing in *Seaways* 3, no. 2 (March/April 1992): 17.

39. On the reluctance to scarph keels in the midship area, see "Dimensions and Sizes of Materials for building a Frigate of 36 Guns," Josiah Fox Papers, Peabody Museum. Some evidence indicates that ships which were "rebuilt" and lengthened did not normally have their keels augmented, but perhaps received new keels: section 2 of the Act of 30 March 1812 and advertisement for timbers wanted at navy yards, Washington, D. C. *National Intelligencer*, 9 April, 28 and 30 May 1812. In addressing the *Constellation* question, undue attachment to the usage

A possible example of a wooden American naval vessel which had been split amidships and lengthened was the frigate *Adams*. In mid-June 1812, the *Adams* (1799) was hauled from the water and repaired at the Washington Navy Yard. Some publications indicated that, in December, she left the shipyard fifteen feet longer and that the lengthening was accomplished by splitting the hull at the dead flat and extending the keel. One account suggested that the results were less than successful. No drawings or archival documents were located which confirmed that the *Adams* was split asunder, or which described the process, and there was no evidence found that this technique was employed on other ships.⁴⁰

and perceived definitions of individual words was avoided. For instance, it was found that contemporaries applied the words "razee" and "rebuilt" in a variety of ways. For bow and stern alterations and lengthening, see drawings 79-10-7A and B, 138-13-12, 107-10-9M (*Sabine*, 1854), and 107-11-14E (*Santee*, 1854), all from E 126, NA, RG 19. Dunne, "Inquiry into Chapelle's Naval Research," 53, endnote 30, indicates that the originally 127-foot sailing sloop-of-war *Vandalia* (1825) had been lengthened eighty-nine feet by 1872. No source is given. Naval History Division, *Dictionary of American Naval Fighting Ships* 7: 461 and K. Jack Bauer, *Ships of the Navy, 1775-1969* vol. 1, (Troy, NY: Rensselaer Polytechnic Institute, 1969), 71 contradict the statement. The 1825 sailing sloop was broken up at Portsmouth, NH and a new 216-foot steam sloop was designed and then built at Boston in 1872-74. Referring to *Vandalia* (1872-74) and her sisters, Donald Canney quips, "Any resemblance between these vessels and their predecessors of the same names is entirely accidental." Donald L. Canney, *Old Steam Navy* 1: 150-154. Several design models in the Navy collection give ample evidence of the very great difference between the two *Vandalias*.

40. In June 1812 it was reported that *Adams* was in need of hauling up on the ways. But due to the extreme state of her decay, the Commandant of the Washington Navy Yard was afraid she might collapse while being hove up. The Secretary of the Navy ordered her hauled up, observing that should she collapse, she had not been worthy of repair in the first place: Tingey to Hamilton, 15 June 1812, "Letters Received by the Secretary of the Navy from Captains, 1805-61 and 1866-85," microcopy M-125, NA, and Hamilton to Tingey, 16 June 1812, "Letters Sent by the Secretary of the Navy to Commandants and Navy Agents, 1808-65," microcopy M-441, NA. Theodore Roosevelt, *The Naval War of 1812* (New York: G. Putnam's Sons, 1882), 336 mentions an oral tradition that *Adams* sailed peculiarly after the 1812 modifications. Emmons, *Navy of the United States*, 9. 51st Cong., 1st sess., Ex. Doc. No. 22, *Navy-Yard Washington*, (1890), 46 confirms that *Adams* was hauled out, but adds that she was split and lengthened amidships. It is apparent that, because of extreme decay, *Adams* was not strong enough to simply chop and lengthen. The Washington, D. C. *National Intelligencer*, 31 October and 29 December 1812 confirms that she was split and lengthened but adds that her beam was increased, probably during disassembly, and reassembly in the rebuilding process. Both sources confirm that *Constellation* was not treated similarly at the time. Dunne, "Inquiry into Chapelle's Naval Research," 53, endnote 30 states that, at the Washington Navy Yard in 1813 (1812), the frigate *Adams* became the first U.S. Navy ship to be split at the dead flat and lengthened. The source for this statement is not revealed.

The twenty-six-inch versus thirty-two-inch frame space discrepancy was difficult to explain if the present ship has had a continuous identity since 1797. Plans to the frigate of 1797 indicated that she was built with twenty-six-inch frame spacing. The ship of today has thirty-two-inch frame spacing, which agrees with Lenthall's plans of 1853. Altering frame spacing would have been difficult, perhaps impossible, to do on a large warship, and there was no evidence that the keel today had been rebored in the past for new bolt holes in order to shuffle floors and frames.⁴¹

Computer analysis indicated that the floors and lower futtocks of the sloop-of-war did not resemble those in the frigate. Store records, a newspaper account, and several ships plans confirmed that the sloop was built using nine unused keel timbers taken from the Gosport stockpile in 1853.

New Frames from Old

Although it was highly unlikely the old, decayed, and obsolete lower timbers of the *Constellation* would have been considered for reuse, for the sake of thoroughness *Fouled Anchors* examined the possibility that at least some of the frames, including the first futtocks, of the old frigate might have been refashioned into the frames of the new sloop. David Taylor computers were applied to designing a sample midship frame for the sloop using a midship frame shape from the old frigate. The midship frames were chosen because in this area the cross-sectional shapes of both ships were the most similar. Frames or futtocks from other areas of the ships would be more radically dissimilar. Although the midship sections may have appeared similar to the eye, the Navy's design computers told a different story. The computers showed that, in the best circumstances, a midship frame for the sloop of 1855 derived from a midship frame of the frigate of 1797 was theoretically possible, but it would be composed of many oddly shaped and abnormally thin futtocks which would offer little strength and require many fastenings to assemble.⁴² It was unrealistic.

41. Drawing, "Frigate Congress and Constellation of 36 Guns," 15 January 1795, U.S. Naval Academy collections. Leon Polland admitted, "It would be quite impossible to alter the spacing of the frames without completely destroying the identity of the ship (*Constellation*)."*CQ*, 114, 112. By 1970, several experts could not account for how a ship with 32-inch frame spacing could be extended exactly twelve feet and still retain consistent frame spacing. Lyman, "Constellation and Her Rebuilding," 23-28; Dick Bloom to Polland, 29 December 1970, Polland Papers; Edson, "Ramblings on American Naval History."

42. The computer reconstruction is illustrated in figure 26, *Fouled Anchors*, 181. Dunne, "Inquiry into Chapelle's Naval Research," 42 states that the original hull form, apparently from the load waterline to the keel, of the frigate *John Adams* (1799) was still present in the sloop *John*

Findings About Continuous Identity

Given the documented ample size of the Gosport timber stockpile, the generosity of the Gradual Increase Act, two clear newspaper accounts, advanced computer analyses, study of the Navy's wooden shipbuilding and design process, the existence of the builder's design model and matching fresh design plans, a set of new offsets with keel hang, repair records of the *Constellation* and contemporary ships, a complete record of all the materials dispensed to the sloop's constructors, and a record of the frigate's hull in February 1853, *Fouled Anchors* concluded that no original hull form or significant structural timbers were transferred from the twisted and hogged fifty-six-year-old frigate to the new sloop-of-war. The *Constellation* displayed today has not had a continuous identity since 1797.

THE SHIP AS ARTIFACT

Since the earliest publications defending the 1797 origins of the *Constellation*, some have held that the ship itself held the ultimate evidence of lineage. Consideration of the ship as an artifact would have begun with thorough architectural documentation. But the ship's structure apparently had never been systematically and scientifically recorded and identified. Personal observations, interpretations, and opinions about features and characteristics which may or may not be visible have little validity without a complete, accurate, and open architectural record of the artifact.⁴³

Adams in 1867. The sources for the statement are an undescribed Navy drawing #85740 in National Archives Record Group 19 and Dunne, "The South Carolina Frigate: A History of the U.S. Ship *John Adams*," *The American Neptune* 47, no. 1 (Winter 1987): 22-32 also citing drawing #85740, but in Record Group 45. Navy researchers were not able to review the drawing because National Archives staff were unable to locate it or an index entry for it in the plan files. The statements that the hull form and main timbers of the sloop *John Adams* dated from 1799 seem contrary to a number of documents. Clearly, a second ship was designed and built. "Returns of Repairs to Vessels, 1820-1849," Entry 5, NA, RG 45 states: "John Adams. This ship was entirely Rebuilt at Gosport and went to Sea 7th May 1831 . . .," 239. Reuse of old hull timbers is not specified in the following: "General directions for rebuilding Sloop of War John Adams, February 1829 - Humphreys," 142-8-19; untitled working sheer and body plan, *John Adams*, 40-7-8K; untitled sheer plan showing displacement computations for sloop *John Adams*, 40-7-8G; "Draft of a Sloop of War by Samuel Humphreys - 1825. Boston, Vincennes, Fairfield, Concord, Vandalia, St. Louis, New John Adams," 108-10-11; "Draft of a Sloop of War by Samuel Humphreys - 1825. Boston, Vincennes, Fairfield, Concord, Vandalia, St. Louis, John Adams as Rebuilt in 1830," 40-12-7, all from E 126, NA, RG 19.

43. See, for example: Richard K. Anderson, Jr., *Guidelines for Recording Historic Ships*, Historic American Buildings Survey, Historic American Engineering Record, (Washington, D. C.: U.S. Department of the Interior, National Park Service, September 1988).

Adz Marks and Saw Marks

During a drydock period in 1959-60, Leon Polland noticed that the timbers of the *Constellation* appeared to show signs of having been sawed and chipped with an adz. He concluded that the timbers bearing saw marks were part of the 1853 work and the adzed timbers reflected original 1797 structure. Privately, however, he noticed that adz marks also seemed to appear in areas of the ship he was sure were rebuilt at Gosport in 1853.⁴⁴ Polland's extensive collection of photographs taken of the timbers when the planking was removed in drydock were studied. It appeared that the textures were manifested almost randomly throughout the structure.

The research team's visit to the ship, including a look at the midships bilge area, on 13 June 1990 confirmed a seemingly haphazard display of cutting marks and wood textures. It was believed that the primary explanation was that much of the *Constellation*'s 1853 framing was built up of pieces of timber already shaped, or moulded, for other types of ships. Some of the material had been hewn with broadax or adz, or sawn before it was stored at Gosport, perhaps as early as thirty-five years before. Doubtless, upon withdrawal from yard storage in 1853, some pieces were judged to fit the moulds for the new ship closely and were left largely as found. Other pieces needed to be down-sized or reshaped and were rehewn, resawn, or dubbed by adz again in 1853.⁴⁵

Whether the timbers dated from 1795, or any subsequent alteration, embracing Polland's general theory required acceptance that something made with an adz was always older than something sawn. To be sure, hewing was not superseded by sawing at any time. Adzes are still used in woodworking and were employed throughout the nineteenth century as a very precise way of shaping wood on the job. The use of broadaxes, adzes, rotating saws, and reciprocating saws would be expected on a vessel built in 1853. Each cutting tool was employed selectively, depending on the type and precision of the required cut and the amount of material to be cleaved. It was clear that no reasonable conclusions about age could be drawn from the cut textures of the aged and corroded timbers seen.⁴⁶

44. CQ, 117-118. Construction Notes, 4 and 12 December 1959, 7 and 19 May, 9 August 1960, Polland Papers.

45. Comparing ships plans, it was apparent that the nearly repetitive midship frames probably required the least amount of hewing to conform to the moulds. This probably has led to the misconception that the frames at the midship area are newer than others because they bear fewer adz marks. The original mixed cutting textures of the 1853 frames have been further confused by the repairs performed between 1855 and 1955.

46. On conclusions drawn misleadingly from timber and cutting marks, see Joseph Hill Torras, Jr. to Polland, 10 February 1975, Polland

Dated Fastenings

In the 1960s several isolated examples of dated bolts were discovered in the keel and frames of the *Constellation*. It was noted that the employee believed to have introduced forged documents into archives was always present and sometimes assisting when these fastenings were discovered. Several of the alleged dated bolts were examined and it was found that the markings were stamped in and resembled impressions made by commonly available modern metal-stamping dies. Dated fastenings had yet to be found on *Constitution* (1797) or *Charles W. Morgan* (1841). The few marked fastenings were probably stamped in advance by the alleged forger, who was on hand to make sure the innocent workman "discovered" the right ones.⁴⁷

Dendrochronology

This archaeological tool was discussed in *Fouled Anchors* but perhaps deserves amplification. Dendrochronology is a technique used by archaeologists which employs tree-ring growth measurements to determine the last year of growth of some types of wood. The technique, under good conditions, can determine the date of harvest as close as a single year or less. At present, it appears that dendrochronology is the only scientific dating technique which might discern the fifty-eight-year difference separating the two *Constellations*. Until recently, the technique had been applied within the United States only to a few types of trees growing in the Southwest and Alaska. Recently, data bases have been developed for a few types of East Coast trees. A data base for white oak has been developed, but none yet exists for live oak.⁴⁸

Papers; untitled speech delivered by W. M. P. Dunne at the Ninth Annual Symposium on Southern New England Maritime History, Mystic Seaport Museum, 10-11 November 1989, courtesy of the speaker, and Dunne, "Inquiry into Chapelle's Naval Research," 44.

47. Statement of Thomas Taormina, 18 June 1964; Construction Notes 19 May 1960, 18 June 1964, Wallace Emerick to "To Whom it May Concern," 19 May 1960, "U.S.F. 'Constellation' - Star - bd - Hull, timber, hull & Spike Research - 1960" 16 May 1961 (1960), frames 21 and S-21, all in Polland Papers; telephone conversations, author to Anne Grimes, USS *Constitution* Museum, to Donald Turner, USS *Constitution*, 1 February 1990; to Tyrone Martin, February 1990; conversation in Philadelphia, PA with Benjamin Fuller, Mystic Seaport Museum, 18 April 1990. For commonly available character die stamps, see, for example, McMaster-Carr Supply Company, *Catalog 84* (Chicago: McMaster-Carr, 1978), 186-187. Bolts were made substantially from a mixture of scrap copper and would therefore be inappropriate for metallurgical study.

48. Joseph W. Michaels, *Dating Methods in Archaeology* (New York: Seminar Press, 1973); Herman J. Heikkinen, "Tree-Ring Patterns:

There was little doubt that the planking and beams on the present vessel had been replaced since 1795 or 1853, and it appeared that the ship's keel offered the most reliable subject. Dendrochronological study of the present *Constellation*'s white oak keel would require that some, if not every one, of the examined timbers have evidence of the last tree-rings to grow before harvest. Whether these rings are present is not known, but it is unlikely because keel timbers were usually selected from heart wood near the center of the tree.⁴⁹ The study would also have to consider that the keel, stem, and sternpost present today are documented to have been made from nine pieces of stockpiled timber originally intended for several other types of ships. Mismatched pieces could handicap the accuracy of testing by most likely demonstrating unidentifiable geographical growth regions and various harvest dates, perhaps ranging between 1816 and 1853.

A consistent harvest date of 1795 for all keel pieces, except perhaps one or two, would offer good proof of the continuous existence of much of the *Constellation*'s keel. However, such a study, if feasible at all, would more likely show variations and might seem less conclusive than expected. It would not be, as one authority believed, the "silver bullet." The decision to apply dendrochronology to the *Constellation* today rests with those who display her. Regardless of the outcome, the study would add to the body of knowledge surrounding the ship. Maritime scholars should welcome a published dendrochronological study performed by experts competent in examining historic structures, offering access to samples and computations, and supported by a guarantee of statistical accuracy.⁵⁰

A Key Year Technique for Crossdating," *Journal of Forestry* 82, no. 5 (May 1984): 302-305; Herman J. Heikkinen and Mark R. Edwards, "The Key-year Dendrochronology Technique and its Application in Dating Historic Structures in Maryland," *Association for Preservation Technology Bulletin* 15, no. 3 (1983): 3-25.

49. Meade, *Treatise on Naval Architecture*, 289-293.

50. The somewhat pessimistic view of the potential success of dendrochronology in this case is based on a telephone conversation between the author and Dr. Herman Heikkinen, 16 January 1992.

CONCLUSIONS

Using multiple, mutually confirming sources of documentary, artifactual, and architectural evidence, the authors of *Fouled Anchors* found that neither the hull form nor any significant quantity of timber was transposed from the frigate that entered the Gosport Navy Yard in 1853 to the sloop-of-war that left the yard in 1855. The story of the two *Constellations*, each as different as an apple and an orange, was deceptively simple. However, the needful drive to prove the 1797 origin of the present ship, regardless of substantial evidence to the contrary, had caused some supporters to construct complicated theories based on poorly founded assumptions to explain away the obvious.

The *Constellation* of today is an important artifact that records a significant example of mid-nineteenth-century American warship design. It deserves to continue to be preserved and displayed. After sifting out presumptions and forgeries, a wealth of remaining evidence indicates that the present *Constellation* was built using essentially new materials to a totally new design at the Gosport Navy Yard near Norfolk, Virginia in 1853-55.



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