

PUBLIC GOODS AND PRIVATE SOLUTIONS IN MARITIME HISTORY

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Among all those goods which have been offered as examples of public goods, national defense and lighthouses have been among the most frequently cited. In both cases, it is typically claimed that *only* a government can effectively provide the good. This paper will present historical evidence which demonstrates that such a claim is false. For instance, the 700-year history of privateering—the use of private armed ships during time of war—will show that national defense in the form of warfare on the seas was not, and need not, be monopolized by government. It will also be shown that lighthouses were frequently built and operated by private entrepreneurs, rather than by governments.

Indeed, maritime history, especially that concerning the age of sail, is rich with examples of privately supplied goods that today are often thought of as being “public.” Some additional ones which will be examined herein include: the positive information externalities provided by Lloyd’s of London and the American Shipmasters’ Association with regard to ship construction, movements, and quality; the voluntary carriage of mail by shipmasters; the “speaking” of vessels and the subsequent reporting of a vessel’s geographical position; the assistance given to vessels in need of supplies; the spontaneous lifesaving and salvage actions of pilot boats and their crews; the private publication of navigation manuals; the development of private systems of signal flags; and the dispersal of nautical information by private organizations and individuals. Although the present paper will focus on history rather than theory, there have been challenges to the mainstream view of public goods on theoretical grounds as well.¹

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¹See, for example, Block (1983, 2003), Rothbard (1970, p. 888), Hoppe (1993, 1998, 2003), Klein (1990), Hummel (1990), and Holcombe (1997).

THE SEA AS A FRONTIER

Life at sea, especially in the days before steamships, radio, and radar, was remarkably similar in certain respects to life on the various land “frontiers.”² In both cases, many of the common activities were unfamiliar to the average citizen, and their very remoteness gave them an exotic flavor. In addition, governmental decrees often went unheeded, a high degree of self-reliance was taken for granted, eccentric behavior was not necessarily treated as a criminal offense, one’s daily work frequently involved hardship and danger, reciprocal relations regarding benefits and responsibilities were the norm, and voluntary cooperation was very common. Perhaps above all, traditions provided a framework for solving problems and resolving disputes. Customary law, not authoritarian (or state-created) law,³ was normally the basis for conflict resolution. Seafaring men functioned, to a high degree, in a world apart. And this was a world in which, for centuries, governmentally provided goods played a rather small role.

PRIVATEERING

One of the most instructive of all examples from maritime history is that of privateering, that is, the employment of profit-seeking, private armed ships during wartime.⁴ This practice persisted for roughly 700 years and was a widely recognized part of international maritime law. In the context of the present paper, its significance is that it demonstrates that national defense need not be monopolized by the state. Scholars in many disciplines have largely ignored the history of privateers. But this is a part of history which is too rich and well documented just to be erased. Those who assume that only governments can provide for the “common defense” must then criticize privateering along one or more of several lines. If privateers were merely pirates by a different name, then they could hardly be relied upon to aggress only against a nation’s enemies. If privateers were ineffective fighters whose actions did nothing to further the war effort, then their employment was pointless from a public interest standpoint. If privateering was unprofitable, then it could not be relied upon to arise spontaneously when needed. If, on the other hand, privateers followed civilized rules of conduct, imposed significant losses on the enemy, and were sufficiently profitable to appear whenever needed, then the case against privateering must be dismissed.

Privateering as a kind of naval warfare evolved out of restitution for a loss on the seas imposed on the citizen of one nation by a citizen of another

²See Anderson and Hill (1979) for some parallel characteristics of the American West.

³Benson (1990, pp. 11-36) carefully explains the differences between customary law and authoritarian law.

⁴Sechrest (2003) has further details about privateers.

(Petrie 1999, pp. 2-3). The offended party sought a permit—called a “letter of marque and reprisal”—from his government to seek out ships flying the flag of the other nation. If he was able to capture such a vessel, he was empowered to sell the vessel and her cargo at auction, thereby recouping at least part of his earlier loss.⁵ The first letter of marque and reprisal was issued in Tuscany in the twelfth century; while the first English example dates from 1243 (Garitee 1977, pp. 3-4). By the fourteenth century, letters of marque and reprisal were common throughout the Mediterranean. “Once such licenses were popularized, any reprisal without a permit became piracy in the eyes of the courts” (Garitee 1977, p. 3). Early on, there were occasional problems with holders of letters of marque and reprisal who violated their licenses by committing criminal acts. However, this steadily diminished as privateers became bonded and maritime courts more consistently enforced the relevant statutes. By the sixteenth and seventeenth centuries, privateering had changed into a well-regulated instrument of war for maritime nations (Starkey 1990, pp. 22-31). By the nineteenth century, letters of marque “were issued only in time of war to supplement the public vessels of the respective navies” (Petrie 1999, p. 3).

Although the practice has been looked on with disfavor by many, it is undeniable that privateering was frequently undertaken on a large scale. The American colonies of Britain commissioned 113 privateering ships during King George’s War of 1744-48, and four or five hundred during the Seven Years’ War of 1756-63 (Garitee 1977, pp. 7-8). During the American Revolutionary War, the British commissioned at least 700 such vessels—94 from Liverpool alone (Williams 1966, pp. 257, 667-69). The American secessionists who opposed them sent about 800 to sea (Stivers 1975, p. 29). “The great number of ships employed in this venture testifies to its widespread popularity and profit” (McFee 1950, p. 120). Some 526 American vessels were commissioned as privateers in the War of 1812, although only about half that many ever actually got to sea (Kert 1997, pp. 78, 89). Even the sparsely-populated Canadian maritime provinces of New Brunswick and Nova Scotia joined the war by sending 47 privateers to sea against their American neighbors (Kert 1997, p. 78). It seems fair to say that the Anglo-American peoples were particularly fond of and suited for privateering. Elizabethan England, for instance, was “almost totally dependent upon the private initiative and individual enterprise of its privateering establishment. Private armed vessels became the characteristic style of maritime warfare rather than a nuisance factor or a mere supplement to the navy” (Garitee 1977, p. 5).

⁵Originally, the amount that could be recovered was limited, and the individuals whose property could be taken were specified (Garitee 1977, p. 3). Once privateers had become a common part of warfare, such limitations disappeared.

On the continent of Europe privateering was also undertaken with enthusiasm by the French, Dutch, Spanish, and Portuguese, among others. For example, the French ports of Dunkirk, Calais, Boulogne, Havre, Cherbourg, St. Malo, Morlaix, Brest, Nantes, and La Rochelle were all sources of private armed ships, which were usually referred to as “corsairs.” During the War of the League of Augsburg (1689-97), the privateers from St. Malo alone made 40 to 50 sorties during each year of the war (Lord Russell 1970, p. 22). During the War of the Spanish Succession (1702-12), French privateers roamed as far as Ireland, Portugal, and Rio de Janeiro in search of English and Dutch ships (Lord Russell 1970, p. 31). During that same conflict, the British sent an enormous number of privateers to sea, 1,343 to be exact (Starkey 1990, pp. 88-89).

Despite the obvious popularity of privateering, was it really just piracy masquerading as national defense? It is true that the primary function of the privateer was to capture merchant vessels flying the flag of the enemy, because it was the sale of those vessels and their cargoes which made privateering lucrative. Therefore, privateers were usually very fast vessels of modest size which carried large crews but were lightly armed (Footner 1998, pp. 101-21). They were not really expected to engage the enemy’s naval vessels in combat. Further, were the officers and crews of privateers really cutthroats who followed no code of conduct, who recognized no rules or customs, and who only fought when the risks were small and the monetary reward was expected to be great? Some certainly have thought so. William McFee is probably representative of that negative viewpoint. He asserts that “the difference between a pirate and a privateer was largely academic” and that privateering “was barren of good will, and it put a premium on lawlessness” (McFee 1950, pp. 105, 129).

Recent scholars seem to disagree strongly with such an assessment. Both profit and patriotism usually motivated those who invested in, or served as part of the crew of, a privateer (Garitee 1977, pp. 47-64). Some privateers fought heavily armed naval vessels even when they could have escaped, and others attacked enemy shipping even when there was little or no prospect of profit. For example, the American privateer *General Armstrong* fought a desperate, and ultimately, losing action against a squadron of British warships at Fayal in the Azores on the night of September 26-27, 1814 (Garitee 1977, pp. xiii-xv). That same privateer had, a year earlier, battled a British frigate, a ship several times her size and power. In the winter of 1812-13, while off the coast of Brazil, the American *Comet* captured three British merchant ships after a successful gunbattle with the large Portuguese warship that was serving as their escort (Garitee 1977, pp. 150-51).

In addition to their frequent bravery under fire, the evidence suggests that, in general, those who commanded privateering ships acted as both sober business managers and gentlemen. The great majority of privateers were characterized by “a decent, civilized greed. . . . Like sportsmen, privateers played by a code of rules” (Petrie 1999, p. 69). “[A] well-developed body

of law underlay and circumscribed the privateering business in the eighteenth century; moreover, there were considerable economic incentives to encourage privateering venturers to operate within the regulatory framework” (Starkey 1990, p. 31).⁶

First of all, since the usual goal was to capture a ship rather than destroy it, the actions of privateers probably led to fewer deaths and less property damage than did the typical naval approach. Under most circumstances privateers effected a transfer of property instead of the destruction of property. After using its cannon to inflict minor damage on the hull and rigging of an enemy ship, a privateer usually ranged alongside and captured the vessel by “boarding,” that is, by overpowering her crew through sheer force of numbers. The ship and its cargo were fair game, but the personal possessions of the crew or any passengers that might be aboard were not subject to seizure. Quite tellingly, the treatment accorded the prisoners taken by a privateer was normally of a high order. British shipmaster W.A. Bingham went to the trouble and expense of publishing in an American newspaper a declaration of his appreciation for the “very kind and humane treatment” he and his crew enjoyed after being captured by the Baltimore privateer *Dolphin* in 1813 (Cranwell and Crane 1940, p. 103). Another Englishman extended a remarkable invitation to his American captors. He asked them to visit him at his London home after the war (Maclay 1899, pp. 460-61). In his memoirs, George Coggeshall recalled that while in command of the privateer schooner *Leo*, he had “voluntarily released more than thirty British prisoners notwithstanding the American government gave a bounty . . . of one hundred dollars per head for British prisoners brought into the United States” (1970, p. 210). Clearly, these accounts do not sound like tales of seagoing criminals.

A second key concern involves the effectiveness of privateers. Did they, in fact, inflict significant damage on the enemy? Here the evidence in their favor seems overwhelming. Indeed, in Europe between 1600 and 1815, privateers “probably contributed much more than warships to the actual harm done the enemy” (Anderson and Gifford 1991, p. 101). On the other side of the Atlantic, “without the presence of the American privateers in the Revolutionary War and the War of 1812, the United States would never have been able to hold off the British Navy” (Kert 1997, p. 81). In fact, during the later stages of the War of 1812, the American privateers constituted “the nation’s only effective offensive maritime force” (Garitee 1977, p. 61).

American privateers swept the Atlantic and even penetrated within a few leagues of the mouth of the Mersey. The merchants and shipowners of Liverpool, instead of fitting out private armed vessels with the energy that had

⁶Among other possibilities, these incentives included loss of the amount of the surety bond (Garitee 1977, p. 17; Kert 1997, p. 92), loss of the letter of marque, an adverse judgment in the prize courts, damage to one’s commercial reputation, and even charges of piracy.

characterized them in former days, put their trust in the Lords Commissioners of the Admiralty, and found, too late, that the king's cruisers, like the modern policeman, were too often absent from the spot where their services were most required. The depredations of the American privateers on the coasts of Ireland and Scotland at length produced so strong a sensation at Lloyd's that it was difficult to get policies underwritten, except at enormous rates of premiums. (Williams 1966, p. 433)

The foregoing comments are powerfully positive judgments of privateers' effectiveness. Furthermore, such judgments are well supported by the available data. French privateers "captured not less than 1,300 Spanish and Dutch ships" in the 1672-79 war against Holland and Spain (Lord Russell 1970, p. 20). Between 1689 and 1697 the French "corsairs" operating out of only one city—St. Malo—alone took "no less than 3,384 English and Dutch merchant ships and 162 escorting men-of-war" (Macintyre 1975, p. 83). During the War of the Spanish Succession (1702-12), private armed French ships captured or destroyed more than 1,000 ships belonging to either the English or the Dutch (Lord Russell 1970, pp. 31-32). Over the first 14 months of the Seven Years' War (1756-63), French privateers captured 637 British vessels (Williams 1966, p. 115). Part of the explanation for this French success was a lack of effort by the British Navy. Many of the "commanders of the King's ships appear to have been shamefully lax in the unpleasant duty of convoying merchant vessels, and in pursuing the privateers of the enemy" (Williams 1966, p. 116). On the other hand, British naval officers did seek out French merchant vessels, of which at least 794 were taken as prizes (Starkey 1990, pp. 178-79). The reason for their enthusiasm for the latter activity is that naval personnel, like privateers, were awarded prize money for capturing merchant ships carrying valuable cargoes. In the first few years of the Napoleonic Wars, specifically 1793 to 1797, the British lost "no less than 2,266 vessels, a large proportion of which were captured by the [French] corsairs" (Lord Russell 1970, p. 39).

In the case of the United States, it is interesting to compare the record of the public warships with that of the privateers. During the Revolutionary War, the ships of the Continental Navy took 196 British prizes, while the privateers took at least 600 (Maclay 1899, p. viii). Moreover, as the war progressed, the number of privateers increased from 136 in 1776 to 449 in 1781 before declining to 323 in 1782. During those same years, the number of active public warships decreased from 31 to nine to seven, respectively (Maclay 1899, p. viii). In short, the British Navy succeeded against the Continental Navy, even though it failed to curtail the activities of American privateers. In the War of 1812, the U.S. Navy captured or destroyed 165 British merchant ships and 15 naval vessels. American privateers, on the other hand, took only three British naval vessels (a task for which they were really not designed), but a minimum of 1,300 merchant ships (Garitee 1977, p. 243). A Baltimore newspaper of the time put the figure at 1,750. One recent writer has said that the British lost 2,500 ships, with the majority taken by privateers (Petrie 1999, p. 1). "Even a

maritime establishment as large as Britain's in 1815 could not ignore such figures nor enjoy the prospect of greater losses at sea if the war were extended another year or more" (Garitee 1977, p. 244).

On the other side of the same conflict, the Canadian privateers also contributed to the cessation of hostilities. The privateers from the maritime provinces were few in number but both active and successful. They probably captured or destroyed close to 600 American ships (Kert 1997, p. 80). One in particular created consternation along the eastern seaboard, the Nova Scotian schooner *Liverpool Packet*. She was such a threat to shipping, that the Congress even considered cutting a canal across Cape Cod in order to reduce shipowners' losses (Kert 1997, p. 84). From the American perspective therefore, "the privateers of New Brunswick and Nova Scotia provided a major incentive for peace" (Kert 1997, p. 78).

To propose that privateers often had a significant, perhaps even deciding, impact on the course of wars between maritime nations seems beyond dispute. Only one question remains. Was privateering sufficiently profitable to assure that its practitioners would want to offer their services during wartime? There is an immediate, intuitive answer to that question. Those who undertook to build, equip, arm, and man a ship in preparation for a raiding cruise were, naturally, men with expertise in nautical matters. In other words, they were usually shipowners, merchants, and shipmasters. In time of war, their ordinary commercial activities were being curtailed by the enemy's actions: blockades, coastal attacks, diminished markets in which to sell their cargoes, privateering itself, and so forth. They had every reason to engage in privateering, both in patriotic outrage against the enemy and as a means to recover at least some of their lost income. For example, shortly after the War of 1812 was declared, large numbers of privateering vessels appeared, ready for sea, in both Canadian and American ports (Kert 1997, pp. 78, 88).

Quantitatively, the data on profits are rather limited, few account books and ledgers having survived, and they reveal somewhat mixed results, as one should expect. After all, privateering was a very risky business. It will help to illuminate the usual risk environment if one keeps in mind that 28 percent of all American and 21 percent of all Canadian privateers were either wrecked, destroyed, or captured during the War of 1812 (Kert 1997, p. 90). Most fundamentally, one must inquire as to the cost to build and outfit a typical privateering vessel, as well as the magnitude of its revenues. At the apex of privateering activity, from the late eighteenth to the early nineteenth century, the outfitting cost was roughly \$40,000 at contemporaneous prices, although this could vary considerably with the size of the ship (Garitee 1977, p. 125; Williams 1966, pp. 661-64; Starkey 1990, p. 305). Furthermore, since the average value of a ship taken as a prize during the War of 1812 was around \$13,500, any privateer of the time that took at least four prizes was likely to prove profitable (Garitee 1977, pp. 197-98). And the extant records indicate that, during that war the average number of prizes taken by both Canadian and American privateers was at least six (Kert 1997, p. 90).

In his meticulous study of privateering as a business, Jerome Garitee found that 58 percent of the Baltimore privateers were profitable. The mean average proceeds to the owners from the cruises of those successful vessels were \$116,712 per privateer (Garitee 1977, pp. 271-74). That indicates an average return on assets of about 192 percent. High profits also seem to have been achieved frequently by American privateers in the mid-eighteenth century. Two different researchers have found evidence of annual rates of return on the order of 130-140 percent (Swanson 1991, p. 218; Lydon 1970, p. 253). On the other hand, some privateering ventures brought minimal profits or even losses to the investors. Nevertheless, the fact that some privateers achieved very high returns apparently served as a powerful incentive which brought forth large numbers of private armed ships over several centuries of warfare.

It is clear that privateers were not pirates, and investments in privateering were often very lucrative. Moreover, privateering “had a marked impact on Atlantic commerce in the 1740s, just as it did in earlier wars and would continue to do in the subsequent conflicts of the eighteenth and early nineteenth centuries” (Swanson 1991, p. 2). Why, then, did privateering disappear? Many have assumed that the technological developments during the latter half of the nineteenth century—steam power, armored warships, and rifled cannon—made private ships of war obsolete, but that is false (Anderson and Gifford 1991, p. 118). Privateering disappeared precisely because it worked so well. It was effectively legislated out of existence in 1856 by means of the Declaration of Paris. The signatory nations⁷ wished to eliminate privateering, because it offered a low-cost but effective alternative to those nations who did not want to undertake the massive expenditures required by public navies (Anderson and Gifford 1991, pp. 118-19). “Privateering was not a market that can be shown to have ‘failed’” (Anderson and Gifford 1991, p. 120). Clearly, national defense, at least insofar as naval warfare is involved, need not be the exclusive province of the government.

LIGHTHOUSES

For a long time, the lighthouse was also cited as a supposedly classic example of a public good that must be publicly provided. Then Ronald Coase looked into the facts about the provision of lighthouses in Great Britain.⁸ His choice of Britain was excellent in part because maritime matters have obviously played a huge role in the history of that nation. What he found is most

⁷Those nations were Great Britain, France, Prussia, Austria, Russia, Sardinia, Turkey, Belgium, Denmark, the German Confederation, the Netherlands, Norway, Portugal, and Sweden. The United States did not sign the declaration, but renounced the practice in the Hague Peace Conference of 1899.

⁸Coase discusses only the British case. The present paper will provide information on lighthouses in the United States, Canada, and Hawaii, as well as certain details of the British system that Coase does not mention.

revealing. The standard argument regarding lighthouses has been that, once the structure is built and as long as it is maintained, its service cannot be restricted only to those who pay for it. In short, there would be large numbers of “free riders.” Therefore, private construction of lighthouses could never be profitable and must be a function of government. But contrary to this argument, Coase found that the building and operating of lighthouses by private firms and individuals was actually quite common in the British Isles. By 1820, for example, 34 of the 46 lighthouses then in operation had been built privately, and 22 were still operated by private persons (Coase 1988, p. 266). The owners of these structures gained their revenue from fees paid by shipowners, who benefited enormously from the service, so much so that they regularly petitioned the government to permit new lighthouses to be built. “The lighthouses were built, operated, financed, and owned by private individuals, who could sell the lighthouse or dispose of it by bequest. The role of the government was limited to the establishment and enforcement of property rights in the lighthouses” (Coase 1988, p. 276). This is confirmed by specialists who have concentrated on lighthouse history. For instance, Bella Bathurst, though clearly an advocate of public provision, grants that along England’s coastline “[f]or a period of three hundred years or so, most of its lights were built and maintained by individuals who had been granted charters” (Bathurst 1999, p. xxi).

Not only did the British government often fail to initiate the building of needed lighthouses, it even resisted their construction on more than one occasion. “Captains, shipowners, sheriffs, and landowners had all written to the commissioners [of the Scottish Lights] at various times in tones of mixed desperation and severity for a light on the Bell Rock,” a deadly reef 27 miles east of Dundee and 11 miles south of Arbroath (Bathurst 1999, p. 64). Engineer Robert Stevenson proposed to build a tower of his own design, but was denied permission until December 3, 1806, when the lighthouse commissioners reversed their earlier decision that the project was too dangerous and the methods untried (Bathurst 1999, pp. 69-70, 75). Stevenson began construction the following year, and the Bell Rock lighthouse was completed in 1811. Fourteen miles southwest of Plymouth, England lies the Eddystone reef, one of the more notorious hazards in the heavily-traveled English Channel. In 1664 two local men asked the commissioners for permission to build a light on this treacherous reef. Their petition was rejected on the grounds that “since there was no precedent for an offshore light, it must therefore be impossible to build one” (Bathurst 1999, p. 54). Finally, 32 years later, the commissioners relented and allowed a Plymouth man to attempt it “at his own cost and entire financial risk” (Bathurst 1999, pp. 54-55). That man passed the project on to a Henry Winstanley, who completed the first Eddystone light in 1699.

Despite the centuries of private initiative, by 1842 Parliament had eliminated all private ownership of lighthouses. Was this because the privately operated lighthouses were inefficiently run? Coase does not think so. His conclusion is that the shipowners, who paid the “light dues,” lobbied for the

change in the mistaken belief that it would result in smaller fees (Coase 1988, p. 269). Coase wisely cautions that “economists should not use the lighthouse as an example of a service which could only be provided by the government” (1988, p. 277).

One should note the basics of the British system, that is, an official regulatory body which dispensed charters to private entrepreneurs, who then charged fees for the service, were also to be found during the early period of lighthouses in Canada (Holland 1995, p. 75). This was in conscious imitation of the British. And Hawaii, prior to the American takeover in 1898, possessed a number of private aids to navigation (Holland 1995, p. 94). It might also be pointed out that the American colonists, largely left to their own devices by the mother country, frequently erected beacons and other aids for navigating the coasts. Most beacons were simple wooden structures, which often had metal baskets filled with lighted coal or oakum to cast a light seaward (Gleason 1991, pp. 4-5). As early as 1663, the Boston area could boast of having such beacons at Allerton Point, Beacon Hill, and Beacon Island. On Beavertail Point, opposite Newport, Rhode Island, bonfires were lit “for the guidance of vessels at night,” perhaps as early as 1639 (Gleason 1991, p. 4). Whenever they expected a vessel to arrive at night, the residents of Nantucket Island “would display a light from the window of a private dwelling” (Gleason 1991, p. 6). One tavern owner on Naushon Island, Zaccheus Lumbert, seemed to be aware of the basic issue. He argued that he should be exempt from the liquor tax on the grounds that the private lighthouse he operated was a public service that had saved lives and property (Gleason 1991, p. 6).

After their secession from Britain, however, the United States took a rather different approach. In 1789, Congress created the Lighthouse Establishment, which was given direct control over all coastal aids to navigation (Bauer 1988, p. 61). 1791 saw the beginning of a program of new construction. But the new agency was burdened with bureaucratic problems, so little was accomplished until well into the nineteenth century. Of the 24 existing lighthouses in 1800 it has been said that they “failed in their primary purpose of guiding ships safely at night” (Gleason 1991, p. 32). Then Winslow Lewis appeared on the scene. This political entrepreneur and inventor had installed Argand lamps in both the Boston and Baker’s Island lighthouses along the Massachusetts coast in 1810. The Argand lamp was invented around 1782 by a Swiss chemist and was a definite improvement over the “spider lamps” previously used (Gleason 1991, pp. 3, 33). Amazingly, Lewis claimed to have invented the lamp himself and through his political connections successfully sought a patent on the device. “Congress not only paid Lewis the princely sum of \$24,000 for his patent right but [also] gave him a monopoly on lighting the country’s lighthouses” (Gleason 1991, p. 43).

As economic theory would suggest, this monopoly privilege brought stagnation. In 1823 an even better device was invented by a young Frenchman—the Fresnel lens, which produced a light four times brighter than that possible with any previous method (Gleason 1991, p. 57). The results of its use

were remarkable. In France, the average annual number of shipwrecks fell from 163 to 59 (Stevenson 1959, p. xxiii). It was not until 1852 that the United States government mandated the installation of Fresnel lenses in all its lighthouses (Gleason 1991, p. 59). By that date, the Fresnel lens was already being used in Britain, France, Holland, Ireland, Belgium, Denmark, Norway, Sweden, Russia, Italy, Spain, Portugal, Egypt, Turkey, and Brazil.

To make matters even worse, Winslow Lewis was in the unfortunate habit of changing the customary characteristics of existing lights without informing the maritime community ahead of time. For instance, he changed the fixed Boston light to a revolving one, even though it had been a fixed light for almost a century, and made the revolving Cape Cod light into a fixed one (Gleason 1991, p. 52). The internationally recognized practice of course was to inform shipmasters and shipowners of such changes months in advance. During Lewis's tenure, that very reasonable "procedure was not followed in the United States, sometimes with dire consequences" (Gleason 1991, p. 52). In short, Lewis's quirky behavior caused more than one shipwreck. This public-sector endangerment of mariners was bitterly criticized by, and to the extent possible rectified by, individuals in the private sector. As early as 1817 Edmund M. Blunt, who published *The American Coast Pilot*, a widely used guide to coastal navigation, tried valiantly via his publication to inform shipmasters as quickly as possible of the changes Lewis made (Gleason 1991, p. 53). So too did the sons who succeeded Blunt in his publishing enterprise. It was not, however, until 1852 that timely notification was consistently practiced by government officials.

OCEANIC AND COASTAL NAVIGATION

The foregoing reference to Edmund M. Blunt brings to mind Nathaniel Bowditch's world-renowned book *American Practical Navigator*, which was published originally by Blunt, and thus raises the topic of private sources of maritime information. Today, most shipmasters and yachtsmen are likely to think first of their government as the primary supplier of information regarding both oceanic and coastal navigation. But that was not always the case. For centuries, to obtain critical marine information such persons relied on books made available by profit-seeking authors and their publishers. The first of these appeared in the early sixteenth century, were addressed largely to mathematicians and astronomers, and were often written in Latin (Bowditch 1966, p. 32). The first really practical navigation manual was John Davis's *The Seaman's Secrets* of 1594 (Bowditch 1966, p. 34). Bowditch's *American Practical Navigator* was first published in 1802. The following year an almost equally popular manual, J.W. Norie's *Epitome of Navigation*, was published in England (Bowditch 1966, p. 34). There were 22 editions of Norie's book; while the book by Bowditch had been through 35 editions by 1867, the later ones being revised by Bowditch's son. In 1868, the copyright

on *American Practical Navigator* was purchased by the Hydrographic Office of the U.S. Navy, and the federal government has published it ever since.

The extensive use of these navigation manuals suggests that they became an indispensable part of a shipmaster's vocation. Therefore, one might well wonder what sort of information such navigation manuals contain. A brief sampling of the contents—these tomes often exceed 1,000 pages in length—reveals that they include data on the coastal tides, ocean currents, the identification of celestial bodies, the proper use of navigational instruments such as the compass, the sextant, and the chronometer, global wind patterns, weather forecasting, methods of calculating the latitude and longitude of one's position on the sea, the use of charts, the coordinates of hundreds of port cities and natural formations around the world, and numerous tables to assist in making the necessary mathematical calculations.

For those sailing along coastlines there were similar texts which focused on tides, safe places to anchor, the locations of buoys and other seamarks, and the positions of lighthouses along with the characteristics of their lights (white, red, revolving, fixed, and so forth). "Coast pilots, or sailing directions, for the Atlantic coast of the United States were privately published in the first half of the 19th century," but then the U.S. Coast and Geodetic Survey began to accumulate data on coastal conditions and eventually displaced the private publishers (Bowditch 1966, p. 31). The transition process was exemplified by the efforts of George Davidson, who compiled the first comprehensive manual for the Pacific coast. The first edition of Davidson's *Pacific Coast Pilot* was published in the mid-1850s. Although he was employed by the U.S. Coast and Geodetic Survey, this compilation "was undertaken by Mr. Davidson wholly outside of official powers and official duties; part of it was first published in one of the daily journals of San Francisco" (Connett 1948, p. 484). And even though Davidson was familiar with "the general features of nearly every mile of the seaboard," the Superintendent of Surveys was later reluctant to publish the work "because he had known nothing of it officially" (Connett 1948, p. 485).

For those making deep sea voyages, perhaps nothing was as crucial as establishing exactly where one's ship was. The crudest method is known as "dead reckoning." This requires only that the navigator possess a compass and a "log," the latter being a device for measuring the vessel's speed. From some known starting position, one tracks the combinations of direction and distance and thereby, hopefully, determines one's current location. However, compasses are affected by magnetism, the log was only modestly accurate, and estimates of the distance covered are distorted by currents. Thus dead reckoning was notoriously unreliable. What was needed was a dependable means of finding one's position anywhere on the curved surface of the Earth. A variety of instruments were invented to give the mariner his position in terms of latitude, that is, in the north/south dimension. The earliest of these appeared in the eighth century (Bowditch 1966, pp. 40-41). Thus, even in the early Middle Ages seafarers could ascertain the latitude of their position.

However, they had no effective way to know their longitude, that is their position in the east/west dimension. As a result, the common practice was to sail to a certain latitude and then travel east or west until some known land mass was encountered.

This procedure was, obviously, very hazardous as well as causing ocean voyages to be far more time consuming than they might otherwise have been. For centuries, various maritime nations had offered large prizes to anyone who could invent a device or method which would accurately determine one's longitude at sea. In 1714 the British Parliament established the Board of Longitude whose mission was to elicit solutions to what had come to be thought of as the most pressing technological challenge of the age (Sobel 1995, p. 68). The reward for success was to be a prize of 20,000 pounds-sterling, an enormous sum for the time.

Such a magnificent reward produced many attempts, but the first practical and accurate device was the chronometer (as it came to be known) finished by English clockmaker John Harrison in 1735 after five years of effort (Sobel 1995, p. 77). Harrison was a man of little education but remarkable skills. For instance, in 1722 he constructed a clock that was placed in the tower above a local estate's stable. That clock has been running continuously ever since, except for some refurbishing done in 1884 (Sobel 1995, p. 68). Harrison saw that the heart of the longitude problem was time, and that it would be solved if an extremely accurate clock could be built, at least if such a clock would retain its accuracy throughout a long ocean voyage despite both the rolling and pitching of the ship and the unavoidable changes in temperature, pressure, and humidity. Time is the paramount concern, because every hour of time represents 15 degrees of longitude. And that translates into a certain distance in nautical miles (a mile of 6,076 feet in contrast to the land mile of 5,280 feet). Of course, one has to know in what latitude one is, since the number of nautical miles in a degree of longitude varies with latitude.⁹ While at sea, each day at noon the shipmaster checks the chronometer to see what time it is back at his home port. Each hour of difference represents 15 degrees of longitude away from that point of departure.

Harrison's chronometer made ocean navigation immensely safer and more efficient. He clearly deserved the promised prize of 20,000 pounds-sterling. His timepiece was hailed as a great success after being tested at sea on a roundtrip between England and the West Indies in 1736 (Sobel 1995, pp. 79-82). Famed explorer James Cook praised the chronometer that he used on his second voyage (Sobel 1995, p. 149). Nevertheless, Harrison never received full compensation. The Board of Longitude repeatedly stalled, changed the testing parameters, and made impossible demands on the clockmaker. Parliament amended and even repealed the original Longitude Act. Finally, by

⁹To illustrate, in 10 degrees of latitude, either north or south of the equator, one degree of longitude equals 59.201 nautical miles. In 40 degrees of latitude, one degree of longitude equals 46.110 nautical miles (Bowditch 1966, p. 1246).

appealing directly to King George III, a very elderly John Harrison received most of the money in June of 1773, 38 years after completing the first chronometer (Sobel 1995, pp. 146-49).

Despite the injustice to Harrison, a number of inventors and entrepreneurs soon saw that there were profits to be made. Men such as John Arnold, Larcum Kendall, Thomas Mudge, and Thomas Earnshaw produced chronometers that steadily became more compact and less expensive (Sobel 1995, pp. 152-64). The production of chronometers “became a boom industry in a maritime nation . . . it was by dint of the chronometer that Britannia ruled the waves” (Sobel 1995, pp. 152-53). Soon the chronometer was an essential part of every shipmaster’s daily routine. Men in the private sector had eliminated a problem that no government official had been able to solve. The solution involved a device that obviously was both rivalrous and excludable, and thus itself not a public good. However, knowledge of the proper use of the chronometer was available to all, and that rapidly became an integral part of oceanic navigation.

A further, but often overlooked, example of a private source of public benefits has been the marine society or association. In the United States, such organizations have frequently played an important role in maritime affairs. Many have focused on the dissemination of information, some on nautical reforms, others on historical preservation, still others on mutual assistance among their members. Reflecting the large part that the sea once played in American society, they began to appear rather early in this country’s history.

Colonial seamen began to form associations for mutual aid. . . . The first was established in Boston in 1742, followed by the Newport Marine Society a decade later. The Salem Marine Society was incorporated in 1772 . . . years later shipmasters in the China trade formed the Salem East India Marine Society. (The Peabody Museum of Salem was founded by the latter in 1799 as a repository for exotic artifacts gathered abroad.) Portland, Portsmouth, Newburyport, Marblehead, and Providence all formed marine societies, as did ports to the south. (Gleason 1991, pp. 9-10)

Indicative of the Salem East India Society’s intense interest in the dissemination of information is the fact that one member was fined for failing to provide a written record of the navigational, meteorological, and geographical observations he had made during a recent voyage (Gleason 1991, p. 10). Members were expected to share such information with one another, which cooperation made it possible for them to compose sailing directions for their home port, a distinctive and “useful service performed by marine societies” (Gleason 1991, p. 12). On the other hand, the “[p]reparation of charts was beyond the capacity of marine societies,” but private publishers such as Edmund M. Blunt filled that gap (Gleason 1991, p. 12). Such societies generally pursued any action that was seen to benefit the maritime community. They offered their expertise regarding the quality of nautical charts and instruments, and they often agitated for the introduction of new lighthouses or other navigational

aids. Sometimes they even performed the construction themselves. “In 1791, the Salem Marine Society undertook an ambitious project, the building of a beacon on Baker’s Island by private subscription” (Gleason 1991, p. 12). This was done despite the federal assumption of control over all navigational aids, because the members were frustrated by the U.S. government’s reluctance to act. In addition, such societies often provided mutual insurance for its members. Widows, orphans, the sick, and the elderly would be eligible for relief payments derived from the fees and fines paid by the other members.

Finally, no discussion of maritime information would be complete without at least mentioning the work of Matthew F. Maury. Without his initiative—and the assistance of hundreds of merchant shipmasters—the study of oceanography would not be nearly so advanced as it is. In 1842, Maury, then a lieutenant in the U.S. Navy, was put in charge of the Navy’s Depot of Charts and Instruments (Bowditch 1966, p. 31). This office was charged with maintaining a stock of those items and issuing them to naval officers as they left on cruises. Soon, however, Maury took it upon himself to greatly expand his range of activities. He offered shipmasters blank logbooks for “free.” He only asked that they send him the completed books, or copies thereof, when their voyages were ended. He would then compile the data and make it available to all interested parties.

Logbooks were an ancient part of seafaring, but prior to Maury’s efforts, they were often jealously guarded as proprietary information to be shared only with one’s friends and colleagues. The kind of information contained in logbooks was crucial, particularly during the age of sail. Shipmasters recorded, day by day, such data as wind direction and strength, weather patterns, ocean currents, the ship’s course and distance traveled, other ships encountered, air temperature, water temperature, and the location of uncharted landmasses, in addition to notable incidents on board the vessel, such as deaths or illnesses. The collected and disseminated data on winds and currents, in particular, made possible much faster passages by commercial sailing ships. Maury “dispelled the myths of navigation and showed shipmasters the way to save time and money” (McKay 1969, p. 116).

Maury may have been a government employee, but his contributions to knowledge were undertaken as an independent scientist. Moreover, it must not be forgotten that his success would never have been possible without the voluntary cooperation of a great number of private shipmasters. Also, it is often assumed that Maury was alone in his endeavors. He certainly deserves credit for bringing attention to the possibilities and for showing the way, but “daily newspapers also contributed in the general ‘Marine Awakening,’ for they, too, furnished shipmasters with blank logs to fill in, and published them when returned” (McKay 1969, p. 116). Nor was this data collection process unique to Americans. British shipmaster C.C. Dixon, reflecting on his seagoing experiences late in the nineteenth century, notes proudly that for “eighteen years I kept a four-hourly meteorological log for the British Meteorological Office” (McCulloch 1933, pp. 8-9).

SHIP REGISTERS AND SHIPPING INTELLIGENCE

One category of maritime information whose importance ranked right along with navigational instructions was that regarding ships' characteristics, quality, and movements: In other words, the data found in ship registers and shipping reports. Here the world's innovator was Lloyd's of London, the renowned firm of insurance underwriters. Lloyd's, which began in a coffee house in 1688, has been called "the most important and practical Corporation in the world" (Worsley and Griffith 1932, p. 13). Even if that declaration is a bit hyperbolic, Lloyd's surely was and is the best known underwriter of marine insurance. But why should such a firm collect and publish huge quantities of marine information? It is well known that all maritime nations have long had custom house officials in their port cities who recorded the tonnage and ownership of vessels for taxing purposes. The custom house records for Philadelphia go back to 1725, for example. However, Lloyd's had a powerful incentive to gather, use, and distribute additional, more detailed data. In order to make a reasonable assessment of the risk faced by insuring a ship and its cargo, the underwriter needed to know something of the size and quality of the ship, the nature of its cargo, its owners, its master, and its intended destination.

To gather such data, Lloyd's established an extensive, worldwide network of "surveyors." In 1874, Lloyd's ship surveyors could be found in cities as widely dispersed as Shanghai; Venice; Hamburg; Calcutta; Nieuwe Diep, Holland; Bergen, Norway; and Hobart Town, Tasmania, as well as 98 ports in the British Isles (*Lloyd's Register* 1874). The collected data on many thousands of vessels were then published annually as *Lloyd's Register*, a bound volume(s) that was considered a vital tool of the trade for merchants, shippers, shipowners, shipmasters, and above all, the underwriters at Lloyd's itself.¹⁰ A marine underwriter needed to be a "man with a great knowledge of ships who could read and understand *Lloyd's Register* as easily as he could read the *Daily Mail* and could tell exactly the kind of damage to which any particular cargo was subject" (Gibb 1972, pp. 178-79). Beginning in the 1860s, *Lloyd's Register* also produced an annual of *American and Foreign Shipping* for the benefit of American shipping interests. Registers emulating that of Lloyd's were published in the United States by the New York Marine Underwriters beginning in 1857 and by the American Shipmasters' Association beginning in 1867. French and other European ships not already surveyed by Lloyd's were recorded by the Bureau Veritas beginning in 1828.

In addition to the documentation found in *Lloyd's Register*, Lloyd's underwriters could track the movements and experiences of ships by means of a

¹⁰*Lloyd's Register* was published first in 1746, sporadically until 1775, then has been published every year since 1775. The publication of this document became such a large undertaking that in 1834 it was set up as an independent branch of the overall operation of Lloyd's (Worsley and Griffith 1932, pp. 93-95).

proprietary global communications system. This involved agents, some 1,500 of them by the early 1930s, found in all the important ports of the world. Their job was to “examine and report on any ships or cargoes that may have suffered damage for the purpose of enabling the Underwriters to ascertain the amount of the loss” (Worsley and Griffith 1932, p. 16). Of almost equal importance were Lloyd’s signal stations around the world, which “speak and report all passing ships” (Worsley and Griffith 1932, p. 16). These depended on flags, semaphore, and signal lamps in the days of sail, which might seem primitive and ineffective today, but their utility was demonstrated on many occasions. Perhaps the most famous example of the effectiveness of Lloyd’s communication system occurred in 1740 during the War of Jenkins’ Ear. In that year Lloyd’s reported to the Prime Minister that Admiral Vernon had been victorious at Portobello even before the British Navy could inform the government (Worsley and Griffith 1932, p. 160; Gibb 1972, p. 35). In short, Lloyd’s has long kept in touch with maritime events around the world. Moreover, since 1738 the firm has shared that shipping intelligence with the public by publishing the daily newspaper known as *Lloyd’s List*, “the most complete record in the world of ships’ movements” (Gibb 1972, p. 116).

The abovementioned publications have also produced an unintended benefit that Lloyd’s probably never even considered. For several generations, maritime historians have depended on *Lloyd’s Register* as a foundation for their research. And *Lloyd’s List* led to the cataloging of Lloyd’s Voyage Record Cards, housed in the Guildhall Library in London, which are a unique means of tracking marine events.

PILOTS AND PILOTING

The profession of piloting is very old, dating back to the origins of oceanic travel (American Pilots’ Association 1979, pp. 1-5). Most fundamentally, a pilot must be one with extensive knowledge of a particular harbor and its environs, because his task is to guide commercial vessels safely into and out of the port. He must know the depth of the channel at every point, the strength of currents, the prevailing winds, and the locations of all aids to navigation. It is thus not surprising that the first pilots were usually local fishermen who knew the waters well and wanted to supplement their normal income (Rees 1939, p. 13). The earliest recorded piloting activities in the United States date from 1633 for Boston and 1634 for Chesapeake Bay (American Pilots’ Association 1979, pp. 6-7).

Until quite recent times, piloting was an arduous and dangerous occupation. In order to generate an income, pilots had to patrol the waters outside a harbor, ready to assist any vessel. This meant that they must stay at sea for long periods in all sorts of weather. Moreover, to guide a vessel the pilot had to be on board her. The transfer of the pilot from the small pilot boat to a large merchant ship—whether sail or steam—was often very hazardous. During bad weather, for example, the pilots of Liverpool, England tied a rope around

themselves, under the armpits, leaped into the sea from the deck of their pilot boat, and were pulled aboard the waiting ship by means of the rope (Rees 1939, p. 126).

Pilots were private suppliers who faced intense competition. "Competition was keen and each pilot schooner tried to get as much business as possible" (Knopp 1996, p. 67). "These boats raced as far as several hundred miles out from the coast to meet incoming ships, it being agreed among the pilots at that time that the first pilot to board an incoming ship served as her pilot for both the incoming and outbound trip" (Knopp 1996, p. 6). A similar situation existed among British pilots, with "the most enterprising and venturesome securing the greater part of the work . . . each [pilot] boat acting independently of the others for its own gain" (Rees 1939, p. 17).¹¹ Market pressure not only drove pilots to outperform their rivals, it also constituted one of the reasons why shipmasters were usually eager to employ a pilot. The underwriters of marine insurance were often reluctant to insure vessels that did without a pilot altogether, or used a pilot whom the underwriters did not consider competent (Russell 1929, pp. 61-62).

One might think that pilots would be content with just doing their allotted job, considering that it was a challenging task and a service vital to maritime safety and efficiency. But most of them chose to do more. Many took it upon themselves to provide services that, in the United States today, people would expect of the U.S. Coast Guard.

For example:

The Sandy Hook pilots became popularly known as the "coast police" through their efficient work in rescuing the crews of small craft and scows that had drifted out to sea. Just how many lives were saved in this way by the sturdy harbor mariners must be guessed at, for no complete record has ever been kept of the rescues. The items gathered and at hand are so numerous, however, that it would require many pages to chronicle them all. (Allen 1922, p. 72)

And this public service was not unique to the New York pilots, nor were small boats and their occupants the only beneficiaries. During the 1890s, the Philadelphia pilot boat *J.H. Edmunds* encountered a Norwegian brig in distress off Cape Henlopen. The Norwegian crew had been decimated by yellow fever and were short of provisions. The men of the *J.H. Edmunds* "at the risk of their lives, boarded the plague-stricken vessel, supplied her with plenty of provisions, and set her off on a correct course for her destination" (Knopp 1996, p. 48). Boston pilot George Lawler rescued the crew of the *William D.*

¹¹Competition generally declined, and both collusion and government regulation increased, in the period 1890-1910 (see Russell 1929, pp. 378-82). Today, most pilot organizations operate more or less as regulated guilds. In some nations, pilots are even government employees.

Cargill in 1884 and that of the schooner *Hattie L. Curtis* in 1888 (Eastman 1956, p. 49).

In 1857, the Liverpool, England pilot boat *Pioneer* discovered a schooner that was leaking badly. She first tried to tow the schooner to safety, but the connecting hawser parted under the pressure. At that point the *Pioneer* was brought alongside, and the men of the pilot boat were able to rescue the schooner's crew just before the schooner capsized (Rees 1939, p. 156). Another Liverpool boat, the *Pride of Liverpool*, was renowned for saving a dozen vessels at the same time in 1866. There was a howling gale blowing such that the pilot boat herself was in danger, and it was impossible for the pilot to board any of the ships. Strictly speaking, the pilot had met his obligation, and could have simply returned to port, leaving the incoming ships to their fate. But the men of the pilot boat were determined to do more. They signaled to the assembled group to follow their boat closely, and the *Pride of Liverpool* safely led those 12 ships over the Mersey bar and into Liverpool, thereby saving half a million pounds-sterling worth of property and scores of lives (Rees 1939, pp. 154-55). The most amazing of all the rescues by pilot boats occurred in 1886, when the American schooner *Phantom* saved all of the 700 passengers and crew of the sinking Cunard steamship *Oregon*. "Every inch of deck room on the little pilot boat was jammed full with disheartened passengers and crew of the ill-fated *Oregon*" (Allen 1922, p. 35).

CUSTOMARY PRACTICES AT SEA

In addition to the facets of maritime life explored above, there were a number of customary practices which every shipmaster took for granted during the days of sail. Some of them are especially noteworthy and those will be reviewed in what follows. The lesson to be culled from all these examples, as from those already discussed, is that governmentally-provided goods and services are not a necessary condition for either peaceful social interaction or effective commerce. As was true on other frontiers, seafarers usually solved their own problems.

One of the memorable events at sea was to encounter another vessel. Anytime two ships met and at least exchanged the names of the ships and those of the shipmasters, this was known as "speaking" a vessel. Often the shipmasters would check with each other to confirm their navigational position. This was critical in cases where, say, one ship's chronometer was malfunctioning due perhaps to damage. Such a vessel would not know its longitude with any precision unless it received the information from the other. From that point she could rely on dead reckoning until, with luck, she encountered another ship. To speak another ship at sea also meant that, when each reached its destination, the shipmaster would report the meeting, giving the date, the name of the other ship and the latitude and longitude of the meeting. Such information was published by both the local newspapers (many newspapers had extensive sections of marine news in those days) and

by Lloyd's of London in *Lloyd's List*. If a ship was long overdue, and she had not been reported by any other ship, Lloyd's was likely to consider her "missing." The spontaneously-developed process of ships speaking one another provided, in short, a global tracking system that was a boon to the entire maritime community—underwriters, owners, builders, and merchants, as well as the families and friends of shipmasters and seamen.

Maritime histories and the memoirs of retired shipmasters are replete with references to speaking ships at sea. For instance, British shipmaster William A. Nelson, while commanding the bark *Rising Star* in 1890–91, spoke the *Coriolanus*, *Maraval*, *Alice Platt*, *Drumeltan*, *Drumlarig*, *Rottingham*, *Garsdale*, *Agnes Oswald*, and *Lismore* on one round trip to Chile (Falkus 1982, p. 81). The same man was in command of the four-masted bark *Auchencairn* in 1897 on a passage from San Francisco to Queenstown, Ireland. During that passage the *Auchencairn* spoke the *Rockhurst*, *Euterpe*, *Marie*, *Socotra*, *Perseverance*, *Glenfinart*, *Criffel*, *Doisan Hill*, *Norman McCleod*, and *Drumpark* (Falkus 1982, p. 100). The list of similar examples is virtually unlimited.

An exchange of information was by no means the only result of these encounters at sea. On occasion a vessel would have been so long on her passage that her crew would run low on certain vital supplies. Food was the most common problem. One must keep in mind that these ships very rarely had any kind of refrigeration,¹² and the canned and pickled meats which they relied on sometimes spoiled. Sometimes the specific problem was the onset of scurvy. In that case, the crew would be desperate for fresh fruit. A lack of fresh water was another common difficulty. There were usually no means by which fresh water could be condensed from salt water, and if the ship's water tanks sprang a leak, dying from thirst became a real possibility unless the ship was fortunate enough to pass through several rain showers. Of an importance almost equal to that of food and water was tobacco. For centuries sailors cherished tobacco, whether smoked or chewed, and considered its absence to be a grave hardship.

The point is that deep-water encounters between ships often brought about a transfer of such badly needed supplies. For example, in 1846 Captain Jotham Blaisdell of Maine, in command of the bark *Abbot Lord*, gave food to the ship *Monmouth* while near the Bahamas (Daggett 1988, p. 40). The *Monmouth* had already taken 84 days to reach that point from Liverpool, a distance that many vessels would have covered in a month or less. In 1878 the crew of the American brig *R.M. Heslin* gratefully received both food and tobacco from two vessels they "spoke," one Dutch and the other Nova Scotian (Kittredge 1971, p. 289). Walter Runciman recalled being a member of the crew of an unnamed British vessel in the mid-1860s which ran dreadfully low of food. After many days of privation, and being almost too weak to move

¹²The exceptions would be those few ships in the ice trade from Boston to India or the frozen meat trade between New Zealand and Britain.

about, they signaled the bark *Ariel*, which came to the rescue. Her master gave them “beef, pork, flour, biscuits, tea, coffee, sugar, and a few tins of preserves and tobacco. . . . The extent of the joy that man put into our souls can never be fully expressed” (Runciman 1924, p. 154).

At times a ship would be in need of other forms of assistance. In 1872 the passenger sailing ship *Collingwood* was dismasted during a storm in the South Atlantic. Soon thereafter, two other British sailing ships, *Palmyra* and *Scawfell*, saw her in distress and hove-to¹³ to offer their help (Course 1961, pp. 50-51). In 1870 the three-masted American schooner *Lucy Gibson* foundered in the North Atlantic, “but before she sank all hands but one were taken off by the Dutch brig *Engelina*, and carried to Falmouth, England” (Kittredge 1971, p. 35). The American clipper ship *Flying Mist* was off the coast of Chile in 1857 when her master sighted a yacht sinking. The yacht could not be saved, but all its passengers were rescued (Kittredge 1971, p. 201). Nor were men in small boats excluded from this benevolent tradition of the sea. Two fishermen from the schooner *Solomon Poole* were lost and adrift in their dory off Newfoundland in July of 1882. After eight days of suffering, they were picked up by a brig on its way to Brazil. They were cared for and then returned to their homeport of Gloucester, Massachusetts in September (Garland 1983, p. 79).

Some shipmasters were renowned for their voluntary lifesaving and salvage actions. Captain John Collins of Truro, Massachusetts, for instance, was “always ready to heave to and assist vessels in distress” (Kittredge 1971, p. 129). Indeed, during his career Captain Collins received numerous medals and commendations for his rescue efforts, which included the vessels *Scotia*, *Erin go Bragh*, and *Garnet* (Kittredge 1971, pp. 129-30).

One additional service that shipmasters periodically performed for one another was the transportation of letter mail. After meeting at sea, one of the vessels might be destined for the homeport—or at least a port nearby the homeport—of the master of the other. Since shipmasters were often absent from home for up to a year at a time, this afforded them the opportunity to communicate relatively quickly with their families. In 1885 the three-masted schooner *City of Baltimore* spoke the ship *E.B. Sutton* off the coast of South America. The master of the former agreed to mail a letter for the master of the latter, later noting that “the captain wrote a letter to his family, sent it on board of me, and I mailed it from Rio Grande de Sol. I suppose he was well around the [Cape] Horn before the letter reached his family” (Burgess 1967, p. 159). In 1899 the same man did a similar favor for both the master and the mate of the schooner *Bianca* by mailing their letters when he arrived in New York (Burgess 1967, p. 368).

¹³Heaving-to was a procedure in which some sails were set so as to propel the vessel forward and others were set so as to drive her backward. The net effect was to keep the ship more-or-less stationary. This was also used when picking up a pilot.

Before electronic communication, signal flags were the primary method by which either ship-to-ship or ship-to-shore messages were sent. The earliest developments were made by public navies, but those were not very applicable to the usual activities of merchant shipping. In Britain, certain distinctive flags were adopted by various chartered companies which had quasi-official status, such as the Royal Africa Company and the East India Company (Wilson 1999, pp. 36-37). However, at the beginning of the nineteenth century “there was no generally understood flag ‘language’ by which ordinary merchant ships could signal to one another, except for certain conventions such as the hoisting of the ensign upside-down as a signal of distress” (Wilson 1999, pp. 82-83).

This problem was solved in 1817 when Frederick Marryat published the first edition of his book *Code of Signals for the Merchant Service*. Marryat’s was a numeric system that made it possible both to communicate whole sentences and to identify each individual merchant ship in the world via its unique assigned number. The *Code of Signals* was an enormous success, “going through no less than nineteen editions between 1817 and 1879 (not including foreign language editions). . . . The preface to [the] twelfth edition claimed, accurately enough, that ‘an European vessel is rarely met unprovided with these signals’” (Wilson 1999, p. 84). Even though replaced officially in 1857 by the *Commercial Code of Signals* via an act of the British Board of Trade, some shipmasters were still using the Marryat system as late as 1890.

CONCLUSION

The maritime world during the days of sail was not unlike other frontiers. As long as individuals bore the full costs of their actions, they tended freely to take responsibility for their lives. And thus those in the private sector provided the goods and services that were needed. Government-provided goods and services were usually superfluous or redundant, if not burdensome. Of course, over the past century, roughly speaking, there have been both amazing technological advances and huge increases in government involvement in daily life, both on land and on the sea. One should not be deceived into thinking that the former have necessitated the latter. It is not that the sea was a frontier whose primitive characteristics led to the superfluity of government involvement. It is that on such a frontier individuals were generally unable to socialize the costs of their actions. Both benefits and costs accrued to those who acted. The government provision of goods and services largely constitutes a convenient method by which some individuals can retain the benefits for themselves while shifting many of the costs to others.

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