

OTTOMAN MARITIME ARSENALS AND SHIPBUILDING TECHNOLOGY IN THE 16th AND 17th CENTURIES

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OTTOMAN MARITIME ARSENALS AND SHIPBUILDING TECHNOLOGY IN THE 16TH AND 17TH CENTURIES

BY PROF. DR. IDRIS BOSTAN*

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The Ottoman state that was founded as a small principality in northwest Anatolia expanded its territories towards the west and the north and reached the coast within a short time period. Thus they made use of the knowledge and experience of such Anatolian principalities as Karesiogullari, Aydinogullari, Menteseogullari and Candarogullari. Besides, they utilised naval bases that were seized from the Byzantine Empire such as, Izmit, Karamursel, Gemlik and Edincik.¹ With the inclusion of Gallipoli into Ottoman domination and with the restoration and reparation (1390) of the dockyard by Yildirim Bayezid, the Ottomans acquired a maritime arsenal for the first time. They then started activities to protect their territories against the Venetian and Genoese fleets, rival to them in the seas.

While the conquest of Istanbul was a step for the Ottoman state to extend its hegemony worldwide, Ottoman navigation gained a new centre. The new centre of the state, Istanbul, started to develop as the centre of Ottoman navigation. Sultan Mehmet the Conqueror, having noticed the mild and deep waters of the Golden Horn appropriate for a maritime arsenal, appointed the Commander of the Navy, Hamza Pasha, for the construction of a maritime arsenal in the Haskoy side of the Kasimpasa River. So, the first maritime arsenal, which was composed of a few sections, a mosque and a hall of audience started to be built. Many carpenters, sailors and artists were brought from the coastal areas of the Empire to Istanbul to enable the continuation of the activities of this maritime arsenal.²

The term *tersane* has entered the Turkish language after many usages of the Arabic word *dar al-Sina'a* by various Mediterranean countries throughout centuries. It was used by the Spanish as *ataruzana*, *arsenal darsena*, by the Portugese *darsenale*, *drasena*, by the Italians *arsenale*, *darsena* and by the Maltese *tarzna*, *tarznar*. The Ottomans were using the word "port" instead of maritime arsenal, but from the beginning of the sixteenth century onwards, they started to use the term *tershane* or *tersane* which was similar to the Italian usage of the word.³

The pictures of the late fifteenth century, depicting galleys anchored or repaired in the Golden Horn, point to the fact that the arsenal was functioning. The Ottoman fleet which was built in the Gallipoli Maritime Arsenal

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¹ For a detailed explanation at the navigation experiences of the Anatolian principalities, see Halil Inalcik, 'The Rise of the Maritime Principalities in Anatolia, Byzantium and the Crusades'. *The Middle East and the Balkan under the Ottoman Empire*, (Bloomington 1987), pp. 309-341.

² For the establishment and history of the Istanbul Maritime Arsenal, see Idris Bostan, *Osmanli Bahriye Teskilati: XVII. Yüzyılda Tersâne-i Âmire* [Ottoman Naval Organization: The Main Maritime Arsenal in the Seventeenth Century], [Ankara 1992], pp. 1-14. See also W. Muller-Wiener. "Zur Geschichte des Tersane-i Amire in Istanbul," *Türkische Miszellen*, *Robert Anhegger Armaganı*, (Istanbul 1987), pp. 253-273.

³ On the etymology of the term, see H-R Kahane- A. Tietze, *The Lingua Franca in the Levant, Turkish Nautical Terms of Italian and Greek Origin*, (Urbana 1958), pp. 428-430.

that continued to be the Ottoman naval base in this period and the newly-established Istanbul maritime arsenal (Figure 1) dominated the Black Sea and seized Otranto under the command of Gedik Ahmed Pasha (1480). The maritime arsenal was enlarged during the reign of Sultan Bayezid II and many ships that engaged in wars with the Venetians were built here under the supervision of Kemal Reis.



Figure 1. The Imperial Arsenal (Halic) map drawn by Velican in the XVIth century. *Hunername minyaturleri ve sanatcilari*. Istanbul: Yapi ve Kredi Bankasi, 1969.

The Expansion of the Istanbul Maritime Arsenal in the Sixteenth Century

The fundamental modification in the Istanbul Maritime Arsenal was made during the reign of Sultan Selim I, who wanted to be strong in the seas as well as in the lands, and sought to expand the Istanbul Maritime Arsenal to have a greater fleet. Upon his return from the *Caldiran* campaign, he expressed his views to the Grand Vizier Pirî Mehmed Pasha as follows: "If these scorpions (Christians) are occupying the seas with their ships, if the flags of Doge of Venice, the Pope and the kings of France and Spain are waved in the coasts of Thrace, this is because of our tolerance. I want a very strong navy large in number as well." Upon this, Pirî Pasha replies as follows: "My Excellency, you just stated what I would like to present. Scold me, especially, when we come to your presence with the other viziers. Order immediately for the construction of a maritime arsenal and five-hundred warships. The Franks will be frightened when they hear this news. You will see that before the completion of the yards and the laying out to the sea of forty galleys, they will come

demanding for the renewal of the treaties and payment of taxes. By this way, most of our expenditures will be met by their payments."⁴

After these meetings, they paid attention to the maritime arsenal and naval affairs. The maritime arsenal construction that had started in the area extending from *Galata* to *Kagithane* River under the supervision of Admiral Ja'far was completed in 1515. In this construction, 50,000 coins were spent for each section and 150 ships were ordered to be built. By this way, the Galata (Golden Horn, Istanbul) maritime arsenal that would serve as the constructive and administrative centre of the navy was established.

During this period, the Ottoman sultans paid utmost attention to navigation and from the reign of Bayezid II onwards, they pursued policies towards the Mediterranean and the Black Sea on the one hand and towards the Red Sea and Indian Ocean, on the other.

In the beginning of the sixteenth century when the Ottomans turned towards the south, Sultan Selim stated his views to the famous scientist, Kemal Pashazade (later the Head of *Ulema*) as follows:

"I wish to increase the number of maritime arsenals to three hundred. They should extend from *Hisar Kagithane* and this is the way it should be. I hope to conquer European countries." Kemal Pashazade replied by emphasising the necessity of a strong maritime to establish a strong state.⁵

As a matter of fact, Sultan Selim I had turned its attention towards the seas when he came back from the Egyptian campaign. He had previously seized important ports in the Eastern Mediterranean, as Syria and Egypt and he regarded it as vital to conquer Rhodes which was on the route that connected these states to the Ottoman Empire. Because it was necessary to stop the Saint-Jean L. Hospitality knights of Rhodes, who would possibly threaten the commercial ships passing through, and to provide for the security of those who would visit the Holy Land. To this end, it was crucial to have Rhodes and other islands under the Ottoman control. Thus realising this fact, Sultan Selim I spent his last years with the preparation of a huge fleet. However, the conquest of Rhodes was accomplished by his son, Sultan Suleyman the Magnificent.

The Main Maritime Arsenal continued its development during the times of Sultan Suleyman and his son, Selim II. During the times of Hayreddin Barbarossa Pasha (Figure 2) and other famous seamen that he trained, the Arsenal served as the central base of the fleet which materialised the Ottoman hegemony. In this period, the maritime arsenal extended from *Azapkapisi* to *Haskoy*. Among its outhouses were sections that were approximately two hundred in number where shipbuilding and reparation took place, various ammunition depots, production studios, administrative buildings, a mosque, a dungeon, a bathhouse and fountains. With these facilities provided, the Istanbul Maritime Arsenal became the most famous one worldwide in the sixteenth century. A similar one existed only in Venice.⁶

⁴ Hammer, *Devlet-i Osmaniye, Tarihi* [The History of the Ottoman state] trans.: M. Ata, (Istanbul 1330), IV, 151-152.

⁵ See Lutfi Pasa, *Asafnâme*, (Istanbul 1326), p. 21.

⁶ Ruggiero Romano, "Economic Aspects of the Construction of Warships in the Sixteenth Century", *Crises and Change in the Venetian Economy in the 16th and 17th Centuries*, (ed.: B. Putlan), (London 1968), pp. 59-87.



Figure 2. The statue of Barbaros Khayreddin Pasha in Istanbul.

In the development of the Main Maritime Arsenal, known also as the *Galata* Maritime Arsenal, some Grand Admirals as Guzelce Kasim Pasha, Hayreddin Barbarossa Pasha and Sokullu Mehmed Pasha played an important role.

In a map of Istanbul in Pin Reis's book, *Kitab-i Bahriye*, among the outhouses of the Galata Maritime Arsenal that extended from *Azap Kapisi* to *Haskoy*, were the *Meyyit* Seaport located in the eastern coast of the Golden horn, Old Hall of Audience, *kureklik* (the oar warehouse), Hall of Audience, cellar, maritime arsenals and Maritime Arsenal Garden.

From 1515 on, the activities of the maritime arsenal were transferred from Gallipoli to Istanbul and the Galata maritime arsenal had become the central base. The development and the process of shipbuilding activities were possible only through the books of registers. The first of such books that belonged to the years 933-934, (1527-1528) indicated that the annual revenue provided for the expenses of the Galata Maritime Arsenal were 1,662,377 coins.

The expenses of the Galata Maritime Arsenal comprised the salaries (*mevacibat*) paid to the people who worked in the shipbuilding process such as caulkers, carpenters, *parutiras* (cutters), *makaraci* (pulley-workers), *kumbaraci* (bombardiers), *haddad* (blacksmiths), *ustubucu* (mop workers), and menders. In addition to that, the *mubayaat* (brokers) spent for the purchase of the necessary inputs to be used for the shipbuilding process, *icarat* (wages) that were paid to the artisans, who worked in the transportation and construction phases. The total population of the Maritime Arsenal ranged around 84 to 89 people during the years 933-934, (1527-1531). According to the accounting books, shipbuilding had continued in the Istanbul Maritime Arsenal between the years 1527-1531.

Between 1527 and 1531, 1530 became the year when the highest amount of ships were constructed. 24 galleys were rebuilt and 8 galleys were repaired. The number of galleys built during this period was 44, and

repaired 32. Between the years 1527-1530, a stone ship had been built every year and 10-12 cannon ships were regularly repaired. However, small war galleys, called *bastarda*, were not rebuilt and only 8 of them were repaired between 1527 and 1528.

Approximately 60 years later, some changes are seen in the numbers of built and repaired ships. In 1585, the number of built and repaired *bastardas* was 23, galleys were 37. In this year *mavna* (barges), *karamursel* (small cargo crafts), stone and horse ships that were used in transportation, were also repaired.

The artisans who worked in ship-building were composed of caulkers, carpenters, oar-workers, pulley-workers, bombardiers, iron-workers, mop-workers and repairers. The number of the artisans that were working at the maritime arsenal on a regular basis was 89. However, when there was a need for craftsmen, they were brought to Istanbul from the coastal areas of the empire and employed at the maritime arsenal.⁷

Until the discovery of steam ships in the nineteenth century, oar-crafts and sail-ships were built in this maritime arsenal. Among them were oar-ships like galleys, small war galleys, firkate (frigates), kalyata (small galleys) and mavna (barges), and sail-ships like kalyon (galleon), burtun (large warships), barca (old large galleys) and agribar (pirate ships). To give an example, it is possible to argue that 1200 ships were built and repaired at the Istanbul Maritime Arsenal in the seventeenth century. In the campaign years, this number naturally increased. (Figure 3)

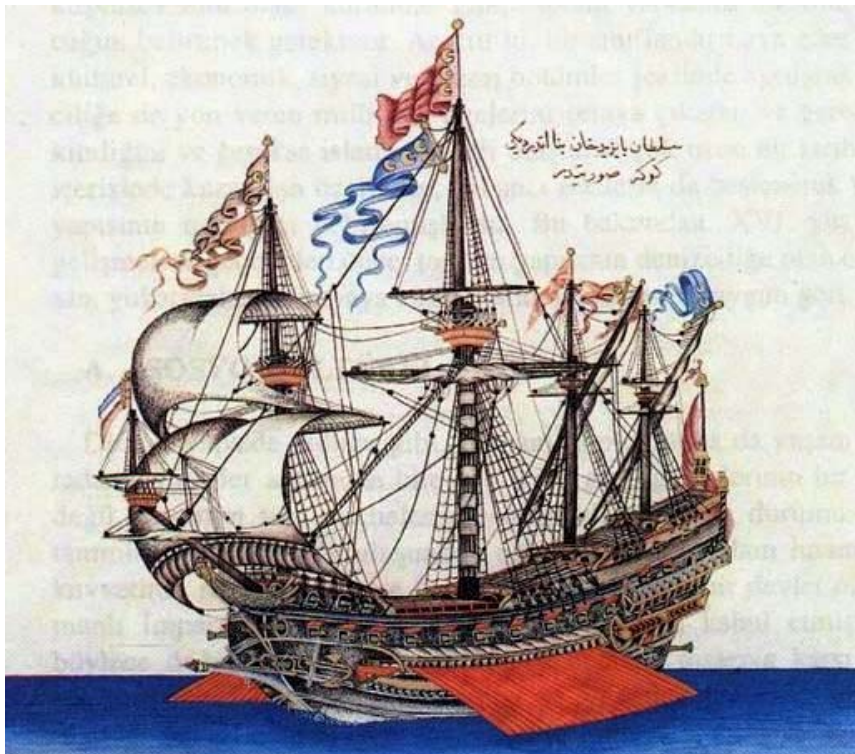


Figure 3. "Goke" an Ottoman war ship. Miniature taken from Katip Celebi's manuscript Tuhfetü'l-kibar. Topkapi Palace Library, R. 1192.

⁷ Bostan, *Tersâne-i Âmire*, pp. 3-14. See also Murat Cizakca, "Ottomans and the Mediterranean; An Analysis of the Ottoman Shipbuilding Industry as Reflected by the Arsenal Registers of Istanbul 1529-1650", *Le Genti del Mare Mediterraneo*, (ed.: R. Ragosta), (Napoli 1981).

After the defeat at Inebahti in the sixteenth century, there were not any campaigns which necessitated great preparations. However, during the conquest of Crete, the maritime arsenal had become active again. It is possible to see the magnitude of the shipbuilding activity at the state-owned Main Maritime Arsenal of the Ottoman Empire, by comparing it with the maritime arsenals of the other states at that time. In the sixteenth and seventeenth centuries the only comparable maritime arsenal to the Main Maritime Arsenal was in Venice. For instance, while 18 galleys were built at the Venice Maritime Arsenal in 1583, there were 13 small war galleys built in addition to 11 small war galleys 36 galleys repaired at the Main Maritime Arsenal. Towards the end of the seventeenth century, galley-building had almost stopped and the galleys left their places to galleons.⁸

Main Maritime Arsenal and Its Outhouses

The renovation and development of the Istanbul Maritime Arsenal in the sixteenth century had started after the creation of the office of the Grand Admiral and in this respect; Guzelce Kasim Pasha had played an important role.

In a map of Istanbul of the sixteenth century, among the outhouses of the Galata Maritime Arsenal that extended from *Azap Kapisi* to *Haskoy*, were the *Meyyit* Seaport located in the eastern coast of the Golden Horn, the *Divanhane* (the Old Hall of Audience), *kureklik* (oar warehouse), *divanhane* (the Hall of Audience), the cellar, maritime arsenals and the Maritime Arsenal Garden.⁹

According to Evliya Celebi, during the reign of Sultan Suleyman the Magnificent, among the Maritime Arsenal buildings were the *Baruthane* Tower, 70 captain cellars, oar-houses, seven leaden-cellars, the new *divanhane*, the *Sanbola* dungeon, the *Cirit Meydanı kasrı*, the *Sahkulu* Gate and the *Meyyit* Seaport gate.¹⁰

After the defeat of Inebahti (1571), there were some attempts at re-strengthening the fleet and among these efforts was the outhouses added to the Main Maritime Arsenal. In this year, more locations were reserved from the *Has Bahce* that was close to the Arsenal and a maritime arsenal with eight arches was built that would enable the building of eight ships.

Before the time of Sokullu Mehmet Pasha, the area on which the maritime arsenal was built was an unoccupied zone. When he became the Grand Admiral (1546-1550), he built a cellar behind every section to keep the galley equipment and had surrounded the maritime arsenal with a wall the interior of which could be seen only from the sea.¹¹

The Maritime Arsenal Subdivisions

For the subdivisions with stocks above them, which were used to build ships and protect the ones that returned from expedition during winter, the term "arsenal" was used. As a matter of fact, in the plan in *Kitab-i Bahriye*, the term "maritime arsenals" were used to denote maritime arsenal subdivisions. In the

⁸ For more information about the types of ships in the fleet and the number of ships built, see Bostan, *Tersâne-i Amire*, pp. 83-101.

⁹ Piri Reis, *Kitab-i Bahriya*, TSMK, Revan 1633, fol. 434a.

¹⁰ Evliya Celebi, *Seyahatname*, I, 417.

¹¹ Colin H. Imber, "The Navy of Suleyman the Magnificent", *Archivum Ottomanicum*, VI, (Belgium 1980), pp. 239-240.

books of registers of the Main Maritime Arsenal, the same terms were also used regarding the reparation parts.

It was understood that in the *Galata* Maritime Arsenal, there were 114 sections in 1522 when Rhodes was conquered, 92 in 1534, 123 in 1557, 120 in 1655, 137 in 1668 and 110 divisions (shipbuilding yards) in 1684. Brick, tile and lead were used in the construction of the maritime arsenal sections. Again in these sections, the most repaired parts were the stocks on which the ships were laid and the round balks called *felenk* to lay the ships on stocks and in sea.

The Cellars

At the beginning, there was only one cellar in the Main Arsenal (*Tersane-i Amire*). By the beginning of the sixteenth century, it doubled. One of the cellars was called *mahzen-i surb* (the Leaden Cellar) and *anbar-i cub*. Among the equipment that was kept in the Leaden Cellar were various irons, nails, copper pots, leaden plates, hemp ropes, barrels, sail, awning, anchor, cannon, lantern and paper. A leaden cellar was built in 1626, during the time of the admiral of the sea, Catalcali Hasan Pasha (1626-1630). *Mahzen-i cub*, on the other hand, was used to preserve timber necessary for ship-building.

The account of the ammunition in the cellars was kept by the new supervisor in case there was a change in the supervisor of the main maritime arsenal and then the account was accepted. The book that was kept by the cellar clerk would be registered at the Office of Head Accounting. The maritime arsenal supervisor and the clerk were primarily responsible for the maintenance of the equipment in the cellar, for the big fires in the maritime arsenal were causing great damage.

The Studios

In the main maritime arsenal there were studios of several branches of art. Among them were carpenters, calligraphers, mopworkers, boat-makers (*zevrakcilar*) and saw-makers (*errekesler*). It is possible to have an idea about the magnitude of some studios from the reparations done.

The Chambers

At the Main Maritime Arsenal there were the chambers of the Maritime Arsenal Stewart, the Maritime Arsenal Supervisor, Maritime Arsenal Agha, and The Clerk of the Leaden Cellar etc. The chamber of the Grand Admiral was at the Hall of Audience. One of the chambers of the Maritime Arsenal Stewart was at the old Hall of Audience and the other small chamber was near the sections close to the old Hall of Audience.

Some of the articles that were used in these chambers were felt, small rug (*kalice*), velvet, pillow, basin, ewer, jug, round tray, cotton, dining-table, napkin, macramé, large bath-towel, a kind of twilled cotton used for linings (*bogasi*) etc.

The Hall of Audience (Divanhane)

The Hall of Audience where the administrative affairs were taken care of and chambers of the Grand Admiral and Maritime Arsenal Stewart were located, was first established by Sultan Mehmet the Conqueror and was added a new Hall of Audience during the reign of Sultan Selim I when the maritime arsenal was expanded. In the sixteenth century, there were two halls of Audience in the Main Maritime Arsenal, one of which was old. In the new Hall of Audience that was built in the seventeenth century, there were the chambers of the Grand Admiral and in the old one there was the chamber of the Maritime Arsenal Stewart.

The Dungeon

The Maritime Arsenal dungeon, in which slaves and criminals were put and also called *forsa* and *sanbola* was composed of three sections in the sixteenth century. In the first section, the artisans working in the shipbuilding were living, in the second section the ones who had no artistic talents and were forced to live and the third section was used as a hospital. Since the dungeon was surrounded by high walls, only the roofs of the buildings inside could be seen. Also there were no windows and the light was coming through the windows at the ceiling. In the sixteenth century, 300 *azab* were assigned on duty for the dungeon. Besides the dungeon, there was also a small mosque, bakery, kitchen, bathhouse and fountain.

The Maritime Arsenal Garden

The garden that was established in *Haskoy* for the first time by Sultan Mehmet the Conqueror was also referred to as the Maritime Arsenal Garden because of its proximity to the maritime arsenal. It was also called the *Has Bahçe*, since it was a place where the sultans made pleasure walks from time to time. There were mansions (*kasirs*), bathhouses, numerous chambers, a hall with fountain (*sofa-i sadirvan*), and a stable and similar buildings. The most important palace of the Maritime Arsenal Garden, the imperial mansion (*Kasr-i Humayun*) was built in 1613 during the reign of Ahmet I by the Grand Admiral Halil Pasha (1608-11, 1613-16). The Ottoman Sultan were going to the Garden from time to time through the sea, riding horses and climb to *Okmeydani* and played the game of jereed (*cirit and cevgan*).¹²

Other Ottoman Maritime Arsenals

The Gallipoli Maritime Arsenal

The primary, largest and orderly of Ottoman maritime arsenals was built in Gallipoli. During the construction that had started in 1390, the damaged outer wall of the Gallipoli castle was pulled down and the inner castle on a hill was strengthened. The artificial port composed of two pools in each side for the ships to take shelter. Also, for security reasons two towers were built in the entrance of the port that could be closed with a chain. Together with this port, there were shipbuilding yards, equipment preservation depots, fountains to provide water for the ships, bakeries for ship's crackers, and gunpowder depots which made the Gallipoli maritime arsenal a complete state maritime arsenal.

¹² For detailed information about the buildings within the arsenal, see, Bostan, *Tersane-i Amire*, pp. 7-14.

Despite the establishment of a new maritime arsenal in Galata with the conquest of Istanbul, the Gallipoli maritime arsenal had kept its importance until the end of the reign of Sultan Selim I. Moreover, Gallipoli had become the settlement area and a central sanjak of the province of *Cezayir-i Bahr-i Sefid* in 1534.

After the assignment of Gallipoli to maritime arsenal and navigation affairs, during the first years of the Ottoman state, the indigenous Greeks appointed to work were paid salaries and some others were paid wages called *harac ispenç* and *avariz-i divaniyye* for the ship-building and reparation and the maintenance of the pool.

In the first half of the sixteenth century, with the development of the Galata Maritime arsenal, the Gallipoli Maritime arsenal became the second rank in importance and was used only when there was a need for ship-building. The Gallipoli Maritime arsenal which had 30 pools in 1526 was repaired from time to time in later stages.

The Sinop Maritime Arsenal

Sinop was a very appropriate maritime arsenal since it was the only natural port in the Black Sea coast and had the necessary resources for shipbuilding which could all be found in the neighbourhood of Sinop. The right to use the forests in Sinop was granted to the Main Maritime Arsenal and most of the trees were used in the ship-building in Sinop and some were sent to Istanbul.

The Ottoman Empire had inherited the maritime arsenal in Sinop from *Candarogullari* and had built many of the war ships in this maritime arsenal. As a matter of fact, among the ships that were built in the Sinop Maritime Arsenal in 1566 were 15 galleys and 3 barges, and in 1571, 25 galleys. We can understand from the variety and amount of the ships that Sinop was the third biggest maritime arsenal after the Galata and Gallipoli arsenals.

The Izmit Maritime Arsenal

The presence of suitable forests around Izmit which had a maritime arsenal even before its conquest by the Ottomans had enabled the ship-building to take place here in all periods.

The Izmit maritime arsenal was one that had shipbuilding yards and timber cellars. The maritime arsenal that was located near the *Hunkar* Palace had been repaired from time to time in the sixteenth century. For instance, after the general reparation in 1554, its four gates and some walls had been rebuilt in 1556.

The Suez Maritime Arsenal

The Ottomans had started ship-building in Suez against the Portuguese who had come to the Black Sea and aimed at helping the Mamluk Navy by building the arsenal long before the conquest of Egypt. Just in 1513, 20 ships that were built under the supervision of an Ottoman seaman, Selman Reis, were laid on the sea in the presence of the Mamluk Sultan Kansu Gavri. In 1517, when the Ottoman undertook the protection of the Red Sea and especially Hejaz with the conquest of Egypt, through the seizure of Yemen in 1526, and

Aden in 1538, they tried to establish control in the region. The Suez Grand Admiralty and the maritime arsenal had been transformed into a naval base for the Red Sea and the Indian Ocean.

The asset of the Ottoman Navy that was present in the Red Sea in 1525 was 6 small war galleys (*bastarda*), 8 galleys and 3 small galleys (*kalyata*). In 1531, 80 ships, 30 of which were galleys and were built in the Suez maritime arsenal with the aim of fighting with the Portuguese in Yemen and in the Indian Ocean under the command of Egypt's governor-general Hadim Suleyman Pasha. In the Suez maritime arsenal, the Mediterranean-type ships were built. The activities in this maritime arsenal were increasing from time to time depending on the years of the expeditions, and sometimes were decreasing so that the presence of the maritime arsenal was being questioned.

The Birecik Maritime Arsenal

The establishment year of the Birecik maritime arsenal is not known exactly, but it is understood that it was active in the first half of the sixteenth century. Actually, in 1522, rowboats, in 1571, 250 military ships and 150 grain ships were built.

The Basra Maritime Arsenal

With the conquest of Egypt (1517), the Ottomans had acquired the Suez maritime arsenal and could have had access to the Red Sea and the Indian Ocean. With the acquisition of Basra in 1538, they acquired a new port and a base.

In the sixteenth century, there was also a grand admiralty and the navigation affairs were conducted intensely. A Portuguese traveller, who had visited the Basra maritime arsenal in 1563, indicated that he had seen 5 newly-built galleys and also galleon-type ships. Again in the Basra maritime arsenal, 5 *kalyatas* were built in 1571, and 15 galleys were repaired.

The Ruscuk Maritime Arsenal

With the conquest of Hungary, a navy was formed on the Danube and in the Ruscuk maritime arsenal, small galleys, frigates, the Hungarian *sayka*, and a kind of boat with no top called *ustuacik* that were suitable for the Danube, had started to be built.

The Samsun Maritime Arsenal

The maritime arsenal in which the most numerous ships were built after Sinop and especially the hemp fibre and hemp ropes were used in ship-building technique was in Samsun.

The Kefken Maritime Arsenal

By having a look at the amount of the ships built, it is understood that the Kefken maritime arsenal was very active. This maritime arsenal was inherited with an edict. In case of reparation, eight volunteers were appointed from that region, to be held exempt from *avariz* tax.

Other Ship-Building Yards

In the sixteenth century and especially in time of war preparations, there were also shipbuilding activities in the maritime arsenals other than the Main Maritime Arsenal and the above-mentioned ones. Actually, in the aftermath of the defeat of Inebolu, imperial orders were issued for shipbuilding in many coastal seaports and the shipbuilding activities to continue. For instance, as the order about the provision of nails sent in October-November 1571 to Vize Bey and the Maritime Arsenal Clerk implied, in Thrace and Anatolia 50 ships each, 100 in total were envisaged to be built. In the same year, if it is considered that the number of ships built in the Main Maritime Arsenal totalling 134, the rest of the activities outside the Main Maritime Arsenal can be considered as having a great share in the total production. Among the shipbuilding yards were the ones in Varna, Ahyolu, Vize, Ineada, Trabzon, Semendire, Nigbolu, Mohac, Budin, Sakarya, Kemer, Silivri, Biga, Samanli, Istankoy, Inebahti, Preveze, Avlonya, Nova, Antalya and Alanya.¹³

Types of Ships Built In the Maritime Arsenal

The Ottomans increased their naval power towards the end of the fifteenth century. They adapted technical terms in navigation and navigation experiences from their Western neighbours and especially from the Venetians. They increased the number and type of their ships and established their hegemony in the Mediterranean in the first half of the sixteenth century.

The ships in the Ottoman navy were divided into two: Those with the oars and those with the sails. The ship which ran with both the oars and the sail were called "cekdiri", "cekdirir", or "cekdime", those that ran with the sails only were called "yelkenli" (sailing ships) or "galley-type ships."

The ships with oars, called 'cekdiri were divided into two groups as the large fleet ships and the narrow fleet ships. Among the big fleet ships were bastarda, galley, kalyata and frigates.

The Bastarda was bigger than the galleys, smaller than barges with 26-36 seats. Each of its oars was pulled by 5-7 oarsmen. They were divided into three with respect to their magnitude as the medium bastarda, the pasha bastarda, and the sultan bastarda.

The most utilized warship and the most destructive one in the Ottoman fleet since its inception was the galley. The length of an Ottoman galley between its sternposts was 42-43 meters. Galleys were long and narrow and fast-moving. Each galley had three sails, two awnings, five anchors (lenger) and 27 coils (kanga!) of ropes. At the end of the fifteenth century each galley had a big cannon and 4 guns (darbzen) and 8 prangi cannons. In the galleys one empty space for the oars was used as a kitchen. Each oar was pulled by four or five people. So, in a normal galley, there were 328 people, 100 of which were warriors, 196 (or 245) oarsmen, 20 rope-workers and others.

The *Kalyata* was a warship of 32-34 meters long, had 19-24 seats and was used in ship chasing. They had a cannon ball and had 220 people during the war.

¹³ For a detailed list of the maritime arsenal and shipbuilding yards by the sea and on the rivers in the Ottoman Empire and for the shipbuilding activities, see, Bostan, *Tersane-i Amire*, pp. 14-29 For the maritime arsenals and shipbuilding yards, see also I. H. Uzuncarsili, *Osmanli Imparatorluğunda Merkez ve Bahriye Teskilati* [The Central and Naval Organization of the Ottoman Empire] (Ankara 1948), pp. 394-405.

The *Firkate* had 10-17 seats and 2-3 oarsmen were pulling the oars. At the same time it was used in the rivers and had 80-100 people at times of war.

The narrow fleet ships were mostly used as auxiliary ships and some of them were used in transportation or in rivers. Among them were *karamursel* (small cargo crafts) which were initially used as a warship and then for transportation. Among others that had an important place were *sayka* (a kind of Hungarian boat) that was used on the rivers or sometimes on the Black Sea Coast, *iskampoye*, that was used as messenger and transportation, *ustuacik*, *aktarma*, *cekeleve*, horse, stone and cannon ships that was used in transportation and guarding.

Even though the sailing ships started to be mostly used in the seventeenth century, there were also ships that used sails to some extent in the sixteenth century and they were mostly used in transportation. The most important ones were galleon, *barca*, and *agribar*.¹⁴

The Necessary Materials for Shipbuilding

The materials that were used for building and equipping the ships were acquired through two means. One way was to obtain these materials as a tax liability from the regions where they were produced the most. The second way was to purchase these materials.

Timber, columns, yard, lead, car, pitch, grease, resin, wax, hemp, mops, linen cloth, canvas embroidery, broadcloth and gunpowder were proposed to the reaya as the family estate (*ocaklik*) in return for their taxes (*avariz*).

Being a tax liability, *avariz* meant that the goods and services would be obtained from the regions and the producers instead of tax payments. *Ocaklik*, on the other hand, meant the transmission of the necessary equipment to the places which needed these materials in return for *avariz*. The materials necessary for the maritime arsenals were distributed as *ocaklik* to the producing areas in return for their *avariz* and were obtained through this way. The most important material was timber. The appropriate types of timber for shipbuilding were oak, pine, elm, chestnut, walnut, box, linden tree and plane-tree. Timber was mostly provided from Kocaeli and its neighbourhood, Biga and its neighbourhood, and from the Anatolian and Thracian coasts of the Black Sea.

The nail and anchors, and iron that were used in the making of anchor and likewise instruments that were used in shipbuilding were acquired from Samakov that could be considered as the centre of the iron industry. In addition to that, Sofia, Dubnije, Pazarcik, Iznebol and some other places were among those from where iron was provided. Lead was extracted from the mines in Northern Serbia and Bosnian region in Thrace, and from Gumushane, Ergani and Keban mines in Anatolia. Tar was acquired from Albania, Walachia, and the Black Sea region and around Canakkale. Pitch was acquired from Midilli, Avlonia, Pazarcik and Gallipoli. Hemp was brought from the Black Sea region and partly from the Aegean and Thrace. Linen cloth that was produced from cotton was used in the making of ship sails and awnings and was acquired from Gallipoli, Egriboz, Egypt, the Aegean region and Cyprus.

¹⁴ For the types of the ships used in the Ottoman fleet, see Bostan, *Tersane-i Amire*, pp. 83-97.

The war materials that were used in ships were gunpowder, cannon ball, bow and arrow. Gunpowder was derived from the mixture of saltpetre, coal and sulphur. Saltpetre was easily found in the lands of the Empire and especially in Karaman, Kayseri, Nigde, Aksaray, Egypt, Syria and Lebanon. Sulphur, on the other hand, was found in around the Lut Lake, and in eastern Anatolia. The most important gunpowder houses were Kagidhane and Sehremeni in Istanbul, Gallipoli, Izmir and Salonika. Being the heaviest artillery of the Ottoman land forces, cannon were used in ships according to the size of the latter. Among these cannon types were *kolonborna*, *sayka* balls, head and side cannons, *darbzen* and *prangi*. The bullets that were to be fired from the cannons were called balls, (*yuvarlak* meaning round), and they were made of iron or marble. They were produced in Istanbul and Banaluka.

In the sixteenth century, the shipbuilding activities seen in the Ottoman maritime arsenals are very informative about the Ottoman shipbuilding technology and the industry it required. While the Ottomans were continuing their shipbuilding activities, they had no difficulty in providing the necessary materials and ammunition. The sources of ammunition for the Empire were sufficient to maintain the presence of the fleet. For this reason, the materials that were needed by the Main Maritime Arsenal were not imported. On the contrary, some produced goods were even exported because of their high quality, such as the sailcloth.¹⁵

The Administration of the Ottoman Navy

The administrative staffs of the Ottoman navy were divided into two: Navy High Officials and Main Maritime Arsenal High Officials. Among the Navy High Officials were the navy commanders and the admirals who worked with them and the other servants on the ships. The Main Maritime Arsenal Officials included the workers in the Maritime Arsenal. (Figure 4)



Figure 4. An Ottoman kalyon, a war ship and naval army personnel. From <http://www.turkkorsanlari.com>

¹⁵ For the materials used in the shipbuilding, the equipment necessity for the functioning of the ships and the ammunition that was put on

The military and civilian head above these ranks working in the Navy and the Maritime Arsenal was the Grand Admiral of the Ottoman Fleet (*Kapudan Pasha*). Previously, the Grand admirals used to serve as the sanjak beys of Gallipoli. In later stages, they were appointed as the governor-general of the province of *Cezayir-i Bahr-i Sefid* that was established with the joining of Barbaros Hayreddin Pasha to the Ottoman fleet, and by the end of the sixteenth century they obtained the rank of vizier. The Grand Admiral could join the meetings or imperial council (*Divan-i Humayun*) when he became vizier. He could hear cases in every place he went with his fleet and when he came to the Maritime Arsenal. He was responsible only to the Grand Vizier and the sultan about the administrative and military affairs of the Ottoman Navy. He also dealt with the administration of the province that he possessed and the completion of the construction of the navy. As a matter of fact, Barbaros Hayreddin Pasha had spent the winter months of the year 1534 in the maritime arsenal dealing with ship-building. Likewise, Kilic Ali Pasha had spent the winter in the maritime arsenal to rebuild the Ottoman fleet that was almost destroyed at Inebahti (1571).¹⁶

The naval commanders (*derya beys*) who were called *sanjak beys* before were also participating in the expeditions with the fief-holder cavalymen with their galleys. This reserve fleet, also referred to as 'bey ships' separate from the central fleet constructed in the state-owned Main Maritime Arsenal, was formed during the reign of Sultan Selim I. With the joining of Barbaros Hayreddin Pasha under the service of the Ottoman state, and with the formation of the province of *Cezayir-i Bahr-i Sefid*, the sanjaks devoted to navigation were attached to this province. This province, like the others was composed of sanjaks and the sanjak beys were serving their posts in the maritime expeditions. During the formation of the province of *Cezayir-i Bahr-i Sefid*, there were the sanjaks of Rhodes, Midilli and Egriboz in addition to the central *sanjak* Gallipoli. By the mid-sixteenth century Karlini, Inebahti and Chios were some other islands were added to them and in time, their number changed.

The naval commanders possessed the same sort of authority as the *sancak beys* had in administration and protocol. These commanders were in charge of coastal security, and the protection of coasts in their region and the commercial vessels against the pirates with the ships under their command.¹⁷

The Maritime Arsenal High Officials were working in the maritime arsenal when the fleet was there and at a time when ships were built and repaired. When the fleet was sent to the expedition, some of them were leaving, since there was less to do. Among those officials were *Tersane Emini* (official in charge of dockyard) and, under his command, *katip*, *ruzmanceci*, *Mahzen Eminleri*, *Liman Katibi*, *Defter Emini* and his *kethuda*. The Maritime Arsenal Supervisor used to deal with shipbuilding there with his attendants and used to provide the necessary equipment.

The most important figure among the Maritime Arsenal High Officials was the Maritime Arsenal Agent who was also one of the commanders of the fleet. He was the second in rank after the Grand Admiral in maintaining order in the maritime arsenal.

The population in charge of maritime arsenal affairs were the captains, marine workers (*azab*) and the ones working in the ship-building were such craftsmen as carpenters, caulkers, cutters and mop-workers. By the mid-sixteenth century, the number of the maritime arsenal population was approximately 2650.¹⁸

ships as war materials, see Bostan, *Tersane-i Amire*, pp. 101-179.

¹⁶ Ismet Parmaksizoglu, "Kaptan Pasa", *IA*, VI, 206-210.

The Ottoman Empire, which was building the greatest fleets in the world with such huge personnel, was facing the problem of dispatching and administration of these fleets as they were put out to sea. The preparation of thousands of oarsmen in each expedition and the provision of the food for them necessitated a separate form of organisation.

For this reason, in the sixteenth century, with its presence in the Mediterranean, the Black Sea and the Indian Ocean, the Ottoman Empire looked like a Seaborne Empire.¹⁹ Even though it had been influenced from Western states and especially from the Venetians, regarding the shipbuilding technology and navigation techniques, in time, it established a Nautical Organisation and had maintained it through modifications throughout centuries.

FIGURES

Figure 1. The Imperial Arsenal (Halic) map drawn by Velican in the XVIth century. Hunername minyaturleri ve sanatçilari. Istanbul: Yapi ve Kredi Bankasi, 1969.

Figure 2. The statue of Barbaros Khayreddin Pasha in Istanbul.

Figure 3. "Goke", an Ottoman war ship. Naval Museum, Istanbul.

Figure 4. An Ottoman kalyon, a war ship and naval army personnel. From <http://www.turkkorsanlari.com>

¹⁷ Idris Bostan, "Derya Beyi", *DIA*, VI. 200-201.

¹⁸ On the administrative structure of the maritime arsenal see Bostan, *Tersane-i Amire*, pp. 32-81.

¹⁹ Andrew Hess, "The Evolution of the Ottoman Seaborne Empire in the Age of the Oceanic Discoveries, 1453-1525", *American Historical Review*, LXXV/7 (December 1970), pp. 1892-1919.