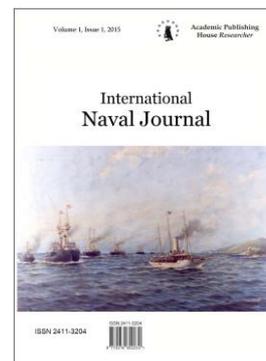


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Ottoman Seapower and Naval Technology during Catherine II's Turkish Wars 1768-1792

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Abstract

Empress Catherine II of Russia's reign is largely shaped by the two Russo-Turkish wars (1768-74 and 1787-91). This conflict did result with a most radical alteration of the balance of power in Eastern Europe and both the Romanov and Ottoman navies did play a decisive role in the outcome of these two wars. However, in stark contrast with the well researched Russian naval power, the knowledge about the Ottoman navy in this crucial era is still largely limited to the 18th century assumptions and judgements. This short article is an attempt to redress this situation by comparing the strength, construction, arming and manning of the Ottoman sailing navy with its Russian counterpart in light of the latest research from the Turkish, Western European and Russian archives.

Keywords: Ottoman Navy, Russian Navy, Age of Sail, marine engineering, naval warfare, Russo-Turkish Wars.

Introduction

Empress Catherine II's two Turkish wars constitute, without doubt, a veritable watershed in the history of Eastern Europe. From both ethnic and political points of view, the events between 1768 and 1792 paved the way for the creation of modern Ukraine, Poland and Balkans. The momentous land battles and sieges of the two Russo-Turkish wars consequently received great attention and detailed studies of those engagements appeared in both Turkish, Russian and Western European languages. Unfortunately, until a few years ago, it was not possible to make the same statement about the crucial naval dimension of the 1768-1792 period. Fortunately, with Prof. Galina Grebenshikova's three volume study of Catherine II's navy, a turning point was reached. Professor Grebenshikova's study constitutes a quantum leap for our understanding of the Russian naval technology, infrastructure and strategy which were effectively used in the destruction of the Ottoman monopoly over the Black Sea and in the ascension of Russia among the foremost naval powers of the world. Nevertheless, an all-encompassing overview of these campaigns is still lacking as Ottoman naval power in general, and naval technology in particular have been insufficiently studied.

In all major Western languages and in Russian, it is possible to find a great number of scrupulous descriptions regarding the specifications, merits and disadvantages of all Great Power navies during the age of sail. However when it comes to the Ottoman naval technology a deafening

silence greets the researcher. In Russian historiography, available information about Ottoman naval technology is largely limited to on-the-spot observations of Russian naval officers during engagements, occasional spy reports and, from time to time, French and English reports from specialists who were employed by the Porte to improve Ottoman naval assets. All of these sources are valuable, if they are used with scrupulousness and cross checked with Turkish sources. Unfortunately, with a few exceptions, it appears that no attempt has been made so far by Russian historians to tap into the available published literature in Turkish, let alone the material preserved in the «Cevdet-Bahriye» files of the Prime Ministry's Ottoman Archives (*Başbakanlık Osmanlı Arşivleri*) in Istanbul. There is also the sad fact that because of the Ottoman archival tradition, almost nothing useful for contemporary students of technological history has survived. In Turkish language literature only recently a serious and concentrated effort has begun to bring together what little – but very important – amount of information available, regarding the Ottoman shipbuilding in the age of sail.

Largely overlooked however are very critical foreign archives. Particularly, in the archives of three countries, there exists a wealth of accurate and detailed documents regarding Ottoman ships and seapower. The first of these is the Venetian State Archives (*Archivio Stato di Venezia*), which contains spy reports about Ottoman warships and dockyards with exquisite drawings and pictures. The second is the naval section of the French Ministry of Defense Archives (*Archives Historiques de la Défense*). The third, which is the richest and most important concerning Late Ottoman naval affairs, is the Russia Federation's Naval Archives (*Russkii Gosudarstvennyi Arkhiv Voennno Morskogo Flota*). These three institutions contain a large, but yet little analysed amount of material which only recently began to come into broader circulation. Still, even with what is available for now, we are finally able to draw a more or less accurate picture about the state of the Ottoman shipbuilding during the Russian wars of 1768-92 period.

Ottoman Ship Types and Naval Strength 1768-1792

When Catherine II's first Turkish War started in 1768 both the Imperial Russian and Ottoman navies possessed two very different types of fleets. The main fleet of the Ottoman naval establishment was the «Great Fleet» (*Kebir Donanma*), the high seas force composed of sailing warships armed with broadside artillery. The other force was known as the «Slim Fleet» (*Ince Donanma*), an amphibious element composed of light draft oared ships like galleys and gunboats. In both two Russo-Turkish wars, the safety and freedom of action for the amphibious forces depended on performance of the sailing fleet; therefore in this section only the ships used by the «Great Fleet» will be described.

The generic Ottoman term for a sailing ship of the line was *kalyon*, a Turkified appropriation of the word «galleon». In the Russian Navy, as well as in the all Western navies, ships of the line were classified in «rates» or «ranks» according to their firepower. The Ottoman navy did not use such a «rating» system; instead the ships of the line were classified according to the length of the keel. The standard Ottoman unit of length for ships – until the reforms of Mahmud II – was *zira* (also called *arşın*), a measurement also used in the Russian Empire as *arshina*. The exact measurement of *zira* varied depending on the purpose (like architecture) and timeframe, but for this period, the latest scholarly study of the Ottoman sailing navy fixes one unit of *zira* used in the Golden Horn Imperial Shipyard (*Tersâne-i Âmire*) as equal to 75 centimeters. The Ottoman «length of keel» in its turn, was understood as the length between the upper tips of the stem and sternposts.

The largest Ottoman ships of the line were called as *üç ambarlı*, which is translated as «three-decker». As clearly understood, these were the Ottoman equivalents of Russian and Western first rate ships, which carried 100 or more guns in three complete gun decks. Ottoman *üç ambarlıs* usually had a keel length of 55-61 ziras. The first real Ottoman three-decker was a 108 gun ship commissioned in 1697 and participated in the last naval battles of the First Morean War (1684-99). Her replacement was an enormous 120 gun vessel commissioned in 1702 and was described by Pyotr Tolstoy, the first permanent Russian ambassador to the Porte. The heyday of the Ottoman three-deckers was in 1738, when a total of four were mobilized. Russian accounts of the battle of Chesma (1770) claim the presence of two three-deckers in the Ottoman fleet, one of 100 guns and another of 96. These claims however, are wrong. Following the certain end of the Venetian threat in 1739, the Ottoman navy rapidly discarded these very costly three-decker ships. The last three-decker commissioned before the *Nizam-ı Cedid* reforms of Selim III (before 1798 precisely) was the *Nüvid-i Fütûh* (Harbinger of Conquests), which was completed in 1754. This 61 zira long vessel of

120 gunports was still extant in 1768, but in poor condition and there was never any thought of fitting her out for combat. Following the battle of Chesma, she was hastily converted into a floating battery to defend Istanbul in case of a Russian break in via the Dardanelles, and was finally broken up in 1774. No Russian and Ottoman three-decked ships met in combat during Catherine II's Turkish wars.

The bulk of the Ottoman ships of the line were two decked vessels. They came in two types: the «large galleon» (*Kebir Kalyon*) were vessels with a keel of 50 zira or more, usually having 74 to 86 gunports. The second type «small galleon» (*Sagir Kalyon*) usually had a keel of 40 to 50 ziras and these had 54 to 70 gunports.

The largest type of two-deckers were 86 gunport ships with a 55 zira keel. The first example was the *Burc-i Zafer* (Constellation of Victory), completed in 1750. With dimensions «equal to a three-decker» (*üç ambarlıya bedel*), these vessels were cheaper substitutes as flagships. Consequently they were few in number, with three on the lists in 1768 and all lost two years later at Chesma. Four more built from 1772 to 1790 –the last, *Bahr-i Zafer* (Sea Victory), was completed in 1790, in the middle of the second war - and one of these, the *Melik-i Bahri* (Sovereign of the Sea) was burned at the battle of Tendra in 1790. Apparently the large 86-gun two decker was unsatisfactory, as Sultan Selim III himself had described the *Bahr-i Zafer* as «badly proportioned» (*endaze-siz*) and ordered that no more battleships of the type be built.

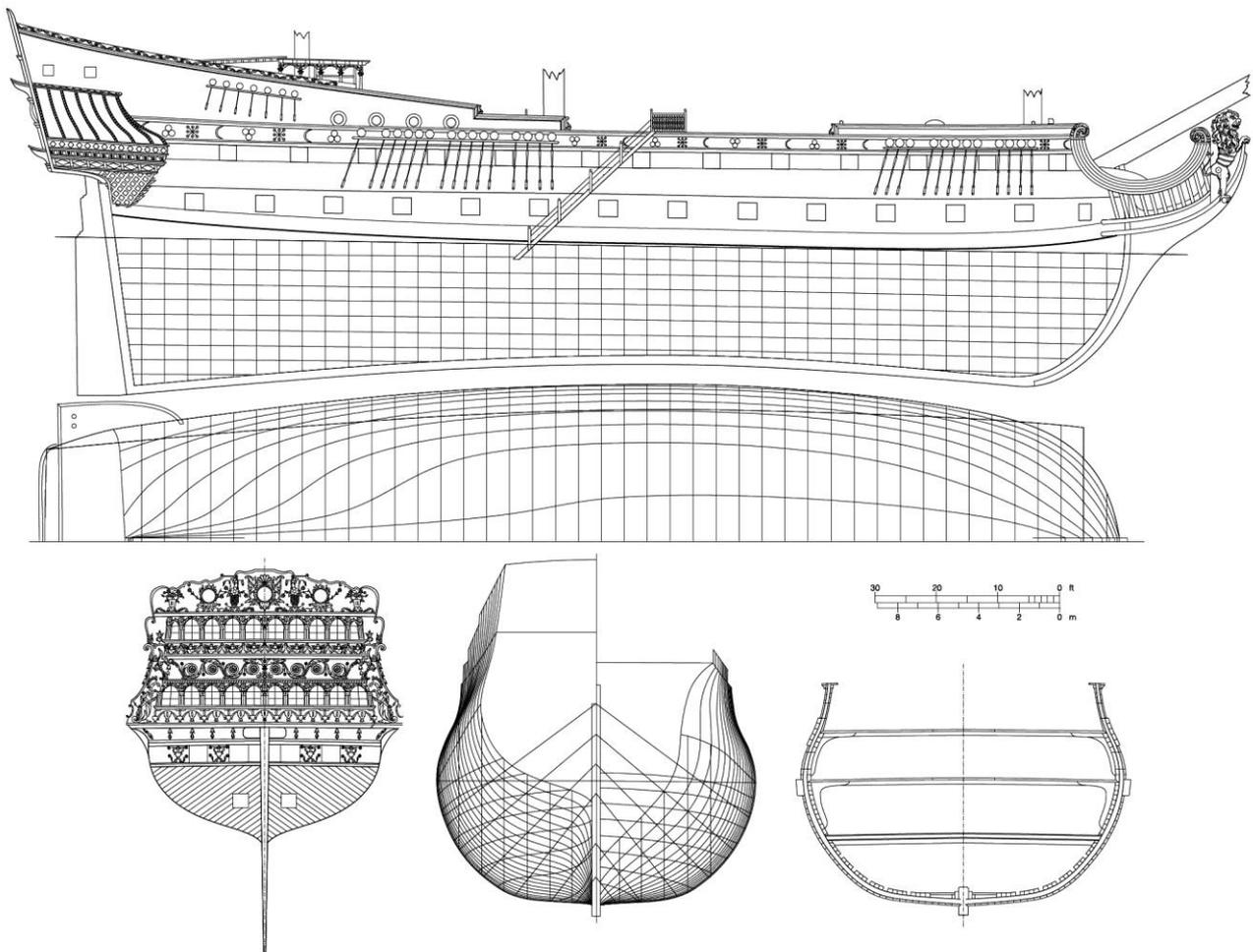


Figure 1. The lines of the Peleng-i Bahri/Ioann Predtecha, redrawn by Laszlo Veres, from the original plans conserved in the Russian naval archives of St. Petersburg

The backbone of the Ottoman battle line was composed of vessels with a 51 zira keel and 74 gunports. In 1768 there were five vessels of this type (one very old and in useless condition) and three were lost in Chesma. From 1772 to 1791, ten more were commissioned (though one launched as a 44-gun razee frigate) and of these two were lost. The *Ejder-i Bahri* (Sea Dragon) sank in storm

in 1788 and the *Peleng-i Bahri* (Sea Tiger) was captured by the Russian Black Sea Fleet at the battle of Tendra in 1790. Renamed *Ioann Predtechka* and commissioned into the Black Sea Fleet, her splendid draughts drawn by Nikolaev Yard's master shipwright Katasanov, are the only surviving plans of an eighteenth century Ottoman ship of the line and as will be explained, their re-discovery in the Russian Naval Archives revolutionized our understanding of the Ottoman naval technology.

Supplementing the 74-gunport ships were the 43 zira long 60-gunport vessels and 41 zira long 54-gunport ships of the «small» type. In the thirty years of peace between the treaty of Nis (1739) and the outbreak of the Russo-Turkish War in 1768 such small vessels were preferred by the Ottoman admiralty, as they were better suited to the standard peacetime duties of anti-piracy patrols and escorting the yearly grain convoy from Alexandria. Another important consideration was the conditions of Black Sea campaigns, which were so far strictly coastal and amphibious in character. Smaller vessels with less draft were naturally more useful in such conditions. In 1768, the «small galleons» formed the majority of the Ottoman fleet with nine units (five 60s and four 54s); of which one was burnt at Chesma and another, the *Semend-i Bahri* (Sea Horse), was captured in the same battle. In the aftermath of the disastrous 1768-74 War, as the Ottoman navy was being rebuilt for what was seen as the unavoidable future campaign to liberate Crimea, 74-gunport ships rapidly superseded the small galleons in anticipation of engagements with the brand new Russian Black Sea Fleet. Nevertheless, there were 11 small galleons at the outbreak of the second war in 1787 (six 60s and five 54s); contrary to expectations, these played the main role in the decisive battle of the Ochakov Liman in 1788. Accordingly, they suffered catastrophical losses and eight were lost. One of those lost in the Ochakov was the 60-gunport ship *Ejder Başlı* (Dragon Figurehead), which was renamed *Leontii Muchenik* after being captured by the Black Sea Fleet. A magnificent shipyard model of her, built by Katasanov, is still in the collections of the Central Naval Museum in St. Petersburg; unfortunately her draughts and drawings have not yet been prepared. It is hoped that a scientific study of this remarkable model, together with full drawings and lines, will be executed in the near future.



Figure 2. The photo of the *Ejder Başlı/Leontii Muchenik*'s exquisite dockyard model, currently in the collections of the Central Naval Museum in St. Petersburg. This model was for long thought to represent the «*Semend-i Bahri*», a similar 60-gunport ship captured at the battle of Chesma and renamed as «*Rodos*» by the Russians

Outside of these main types, there were also 64, 66 and 70-gunport ships of intermediate size, but they were very few in number (four in 1768, three in 1787) and apparently were not particularly favoured.

The last «galleon» class ship type of the 18th Century Ottoman navy was the «caravella» (*karavele*). There is still confusion about the exact nature of these vessels. Most of the current Turkish naval history specialists still continue to link the *karavele* with the Portuguese caravels of the age of exploration. Fortunately a remarkable recent dissertation from Istanbul University, is an in-depth study and tentative reconstruction of the *Şehbaz-ı Bahri* (Sea Falcon), a caravella from the first half of 18th Century. As this study clarifies (also supported by factual knowledge from contemporary Venetian and Russian intelligence reports), the Ottoman *karavele* had nothing to do with the medieval caravel: it was the equivalent of very small, fifth rate two-deckers. The etymology of both the Portuguese caravel and the Ottoman *karavele* was the same: the Greek word *kara-bia/karavia*, which, in medieval times, indicated a certain type of ship; but became a generic word for all large, three masted and square rigged ships in the 18th century Levantine nomenclature. The Ottoman *karavele* in the second half of the 18th Century was a vessel with a 38 zira keel and 48 gunports. They could function both as independent cruisers or as part of the battle line, being particularly useful in coastal warfare thanks to a very light draft (The Royal Navy had commissioned a good number of similar very small two-deckers during the American Revolutionary War, precisely for the same reasons). In 1768, there were three *karaveles* on the Ottoman navy list and between 1772 and 1785, five new ones were built. After this date they were replaced by the new frigates. Despite their usefulness in regards to Ottoman naval geography, *karaveles* (like the British fifth rates) were quite dissatisfactory with very poor handling qualities and especially in French reports they were much derided and ridiculed.

The introduction of the frigate (*firkateyn* in Turkish) into the Ottoman navy is a confused and poorly understood issue. Both Russian eyewitness reports from the battle of Chesma and the dean of the Turkish naval historiography, Fevzi Kurtoğlu, state the presence of frigates in the Ottoman Mediterranean Squadron of the 1770 campaign. Thanks to Yusuf Alperen Aydın's and Tunçay Zorlu's groundbreaking studies however, we now know that those previous assumptions were wrong and were the result of misidentification. The frigate first entered into the Ottoman navy in 1778, through purchase from Britain. By 1787, there were a total of ten frigates ready, but these were either foreign purchases or razees ships of the line. It was only during the *Nizam-ı Cedid* reforms that the first Ottoman built «true» frigates appeared. During the War of 1787-92, the Ottomans regularly employed their frigates in the battleline, especially the five razees which had kept their heavy lower deck artillery.

Below the frigates, there were large bomb vessels called «bomb frigates» (*bomba firkateyni*) and large xebecs (*şehitiye*). These ships were all three masted and square rigged, with 24 to 30 gunports. The twelve such small cruisers on the lists in 1787 often confused Russian eyewitnesses and caused them to inflate the number of the Ottoman frigates they encountered during the battles.

Ottoman Naval Technology: Myths and Facts

All non-Ottoman eyewitnesses of the period are unanimous in describing Ottoman ships with very high sterns and high decks. A French report from the era of Selim III, titled *Essai sur la Puissance Navale des Turcs* (Essay about the Turkish Naval Might), nicely sums up the general Western opinion about the Ottoman naval technology before the era of reform:

«Up until a short while ago, the Turkish ships of the line were built with disproportionately and astonishingly high sterns. Because they held too much wind, these vessels were slow, often strayed off the course and were very badly affected from anything more than a calm sea. In the battle, they constituted a huge targets for the enemy cannons. Due to the irregularity and uncertainty of their maneuvering, they sailed awkwardly and luffed up in a cumbersome way. The Turkish ships were built of oak and they had spacious interiors; but because of the length of their beams, their skeleton was weak... None lasted too long and even upon a thorough careening, they used to rapidly start a leak. Turkish naval artillery consisted of brass guns, but these cannons lacked uniformity of calibers and they were both difficult and slow to serve. The irregularity with which the guns were placed on the decks used to increase the chaotic conditions and decreased the rate of fire even further».

Interestingly, Mahmud Raif Efendi, who wrote the famous French language propaganda book about Selim III's Nizam-ı Cedid reforms, also gives almost the same description about pre-reform warships in the chapter about the naval innovations. On the other hand, the Russian eyewitnesses, who were at the receiving end of the Ottoman guns, deliver quite an opposite picture: in regards to quality they were superior ships to their own. They had copper plated hulls and very large sails, giving superior speed; so they were able to dictate the place and time of the engagements on their own terms. Thanks to the discovery of captured Ottoman ships' draughts in the Russian archives and the latest research by Turkish scholars, we can now make definitive conclusions regarding these polarly opposite descriptions.

The first point to investigate is the tall stern and the low length-to-breadth ratio of the Ottoman *kalyon*. The exquisite draughts of the 51 zira long, 74-gunport *Peleng-i Bahri/İoann Predtecha*, verifies that the verbal descriptions are indeed largely correct. The high, towering stern in the drawings garners attention on the first hand, as well as the very broad cross section. The complete measurements given in the plan reveal that, with a main gundeck length of 47,6 meters and maximum breadth of 16,3 meters, the *Peleng-i Bahri* had an astonishingly low length-to-breadth ratio of approximately 3/1. Such proportions were typical of contemporary merchant ships; no Western or Russian ship of the line from the same period had a length to breadth ratio less than 4/1.

Verification of the descriptions by the French observers and Mahmud Raif Efendi brings forward the second question, concerning the sailing qualities of the Ottoman ship of the line. Unfortunately, the Russian draught do not include details of masts, spars, and sails; nor was such information written down elsewhere after the capture of *Peleng-i Bahri*. Thus unfortunately it is not possible to confirm the very large sails and spars which appear in Russian descriptions. Regarding proportions, a ship with a low length-to-breadth ratio was slower and more difficult to handle than one with a sharper hull. Does this mean that the French and Mahmud Raif Efendi were again correct? However, the fact remains that Ottoman ships were always able to outrun their Russian opponents in both wars. A main factor stated by Russian officers, and still repeated in Russian language naval histories, is that the bottoms of Ottoman ships were copper plated against fouling by parasitic marine organisms, a big advantage for smooth sailing. Thanks to the research by Tuncay Zorlu, we now know that this supposition was not true: there was no copper plated ship in the Ottoman navy until 1793. It is necessary to search for the answer to this dilemma elsewhere.

A recently found Venetian intelligence report from 1725, gives a highly detailed description of two Ottoman three-deckers on the stocks at the Sinop shipyard on the Black Sea coast. A major detail given in the report is that Ottoman *kalyons* were built according to the same «single-frame system» employed in the Arsenal of Venice. The single-frame construction was the standard method used by the Byzantines and was consequently inherited by both Venice and the Ottoman Empire, two successor states. The single-frame method results in a very light hull due to the presence of few ribs. Yet, this also results in a hull too fragile to carry much weight and unable to absorb damage in battle. A look at the draughts of *Peleng-i Bahri* reveal such a delicate hull with few ribs and thin outer planking, almost like an eggshell, confirming the Venetian observation. Thus the relatively light, single-frame hulls of Ottoman ships of the line helps to explain their speed advantage over the double-framed and heavily planked Russian ships, built according to the oceanic standards.

Next to hull quality and handling characteristics comes firepower, the second main factor in a warship. Fortunately, detailed gun and ammunition allocation rolls survive in the Ottoman archives and they reveal a surprising picture: extraordinarily underarmed ships with mostly light calibre guns. The fact that all ships in this article have been identified by the number of gunports rather than guns may have seemed an unusual metric. This was a deliberate measure as Ottoman ships carried considerably less artillery than their actual capacity. Whereas in the Western and in the Russian navies the number of gunports usually equalled the number of guns, this was not the case in the Ottoman ships. A 86-gunport ship usually carried no more than 72 guns, the 74-gunport ships usually had 66 guns, and 60 and 54-gunport ships had 58 and 52 guns respectively. The 48-gunport *caravellas* usually carried no more than 38 guns. A major reason for this practice was probably the light and delicate single-frame built hull; however, another and perhaps more important reason was the way the Ottomans understood naval power and used their ships. More will be said about this factor in the conclusion.

As in the other navies, the Ottoman naval guns were classified according to the weight of their cannonballs. The unit of weight was *kuyye*, or *okka*, which equalled to 2,826 pounds. Accordingly, a conversion table for the main types of the Ottoman naval guns can be represented as such:

Calibre in Kuyyes	Conversion Value (pounds)	Rating as Rounded Up
14	39.5	40-pdr
9	25.4	25-pdr
5	14.13	14-pdr
3	8.47	8-pdr
1.5	4.23	4-pdr

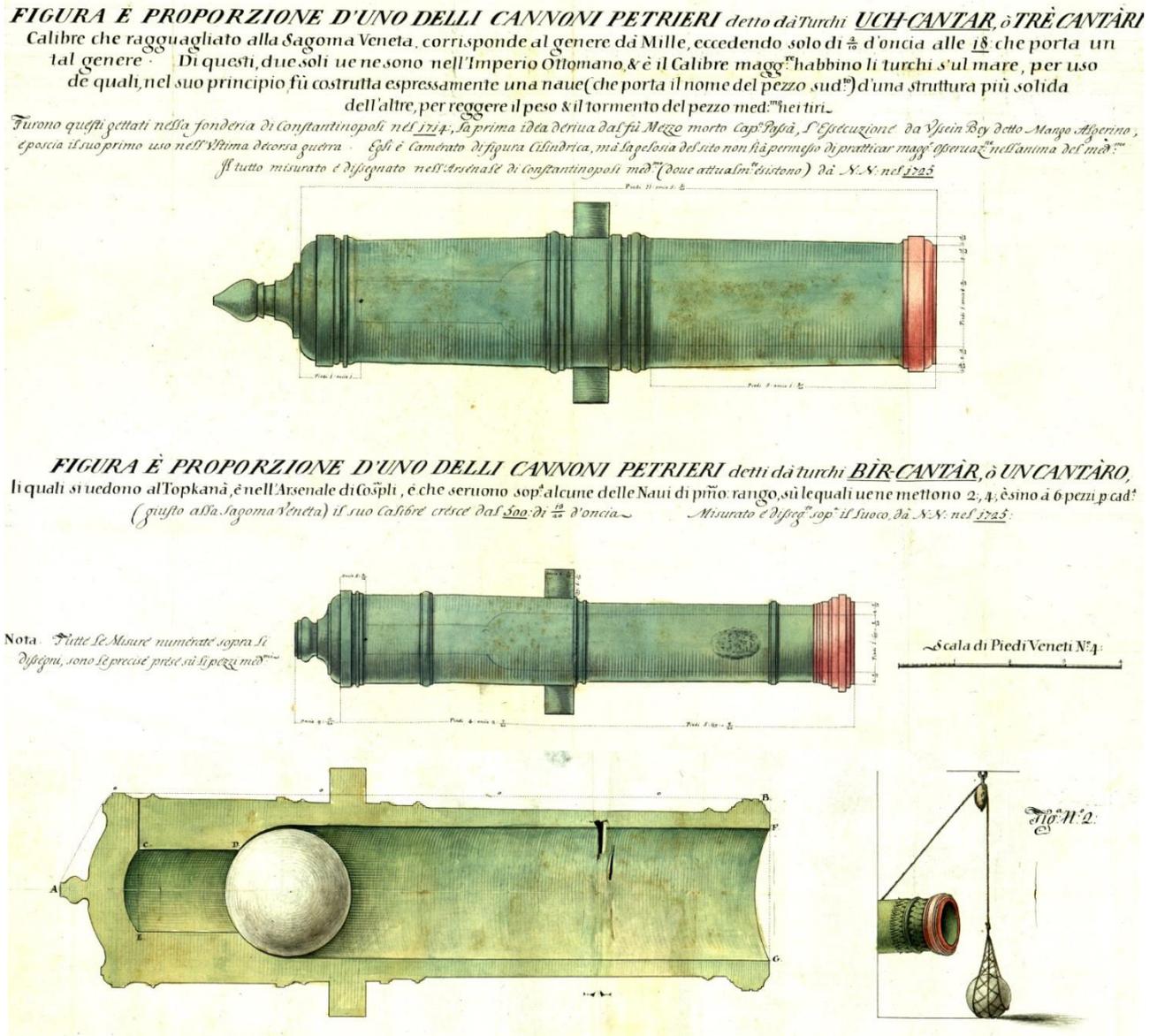


Figure 3. Scale comparison of a 3-kantar and a 1-kantar barrel (above) and the cutaway view of a 3-kantar barrel; together with the sling and pulley system to handle the enormous 336 pound marble ball (below) These drawings are part of a Venetian spy report from 1725

The Ottoman navy was unique in the Western Hemisphere as –with a few exceptions- it armed all its *kalyons*, even the small caravellas, with full bronze artillery. In Atlantic fleets and in the Russian navy, only a few select prestige ships were armed with brass (bronze) guns. It is a well-known fact in military and naval history, that brass guns were both lighter, much superior and safer to oper-

ate than iron guns well until the last quarter of the 18th Century. However, their production cost was much higher. It is a strong possibility that this economical drawback also played a role in the Ottoman practice of underarming warships; due to the difficulty of producing enough weapons.

The Ottoman naval arsenal also had a peculiar and highly unusual weapon at its disposal: the *kantar* guns. *Kantar* is an old Ottoman unit of weight which equals to 112 pounds and, while it seems not credible at first sight, indicates the weight of shot for these weapons as in other, more standard artillery. *Kantar* guns were the culmination of the renaissance era «basilisk» guns, and like their predecessors threw marble cannonballs. The design was however reversed: whereas the basilisk had an extremely long barrel, *kantar* guns were by contrast very short and consequently useless in anything but point blank range. As the marble cannonball had only a fraction of the density compared to iron ammunition, *kantar* guns used much less propellant powder when firing and consequently their barrels could be produced with very thin walls. Short and thin barrels meant they were not much heavier than the usual lower deck guns, where *kantar* guns were also mounted. Venetian sources attribute the invention of the *kantar* gun to the famous reformist Kapudan Pasha of the 17th Century, Mezzo Morto Hüseyin. This weapon had initially two types: 1 and 3-*kantar* barrels, resulting in a 112-pdr stone thrower and a 336-pdr monster weapon. The first recorded use of the 1-*kantar* gun in battle was in 1697 and the 3-*kantar* guns was first deployed in 1717, when a *kalyon* armed with two of them almost sank the Venetian flagship at the battle of Imbros. In his detailed report about the Ottoman navy, ambassador Pyotr Tolstoy described *kantar* guns but derided them for producing «much noise but little else». Nevertheless, *Gazavat-ı Gazi Hasan Paşa* (the semi-autobiography of Cezayirli Gazi Hasan Pasha, the operational commander in 1770), hints to the possibility that a 3-*kantar* marble might have played an instrumental role in the sinking of the Russian flagship *Sv. Evstafii* in close combat during the daytime phase of the battle of Chesma. 1 and 3-*kantar* guns apparently fell out of favor after Chesma as there is no recorded use of them in the 1787-92 War. However in that conflict, each of the 86-gunport class Ottoman flagships still carried four 66-pdr guns which threw marble balls and were usually referred to as half-*kantar* guns. The employment of *kantar* guns demonstrate they were analogous to the later carronades; highly suitable for the Ottomans' preferred point blank range tactics. But when confronted by Russian fleets which were trained for engagements in Atlantic standards, the Ottoman special weapons were rendered largely useless.

In total contrast with the lightly built and armed Ottoman ships, Russian ships of the 1768-92 period were heavily built and overloaded with artillery of calibers greater than they were designed to carry. This situation was specifically true for the ships of the Black Sea Fleet in the second war. The main reason for this was the fact that the Black Sea Fleet was conceived mainly as a coastal defense force tasked with repelling possible Ottoman assaults to Crimea; the primary design objective was to provide as much firepower into each ship as possible. The practice went to the point of inventing a new class of ship, called a «battle frigate»: a large frigate armed with battleship calibre guns. The price paid for maximum firepower in turn was sluggish handling and a very brief service life for each ship; the overloaded hulls rapidly hogged and became useless under the strain of the weight of their heavy artillery. A few comparative tables help to clarify the disparity of firepower between Russian and Ottoman ships of corresponding size, both in the 1768-74 and 1787-92 periods (Table 1, 2).

Table 1. Comparative Firepower in 1774

Ship	Lower Deck	Upper Deck	Quarterdeck & Forecastle	Broadside
<i>Mansuriye</i> 74/62	24x25-pdrs*	28x14-pdrs	8x8-pdrs	528 lbs
<i>Rostislav</i> 66	24x24-pdrs	26x12-pdrs	16x6-pdrs	492 lbs
<i>Berid-i Fütûh</i> 48/32	16x14-pdrs	10x8-pdrs	6x4-pdrs	164 lbs
<i>Nadezhda</i> 34	20x12-pdrs	-	14x6-pdrs	162 lbs

Table 2. Comparative Firepower in 1790

Ship	Lower Deck	Upper Deck	Quarterdeck & Forecastle	Broadside
<i>Melik-i Bahri</i> 86/72	22x40-pdrs**	28x25-pdrs	14x14-pdrs, 2x25-pdrs	913 lbs
<i>Rozhdestvo</i> 80	30x36-pdrs	30x18-pdrs	20x8-pdrs	890 lbs
<i>Peleng-i Bahri</i> 74/66	26x25-pdrs	26x14-pdrs	12x8-pdrs, 2x14-pdrs	569 lbs
<i>Sv. Pavel</i> 66	26x30-pdrs	24x12-pdrs	16x6-pdrs	582 lbs
<i>Burc-i Zafer</i> 60/52	10x14-pdrs	22x8-pdrs	8x6-pdrs, 2x12-pdrs	194 lbs
<i>G. Pobiedonosets</i> 50	28x24-pdrs	-	24x6-pdrs	408 lbs

*: also had two half-kantar guns

** : also had four half-kantar guns

The point blank range Kantar guns are omitted in the broadside calculations.

The third and the last parameter to be considered is the quantitative manpower carried by the Ottoman ships. The muster rolls from the 1787-92 War demonstrate very large crews present aboard Ottoman vessels. In 1790, the 86/72-gun flagships had 850-900 men, 74/66-gun ships had between 600-750 men, and 52 or 58-gun vessels had 400-500 men. In contrast, the 80-gun Russian flagship *Rozhdestvo Christovo* had 560 men, a typical 66-gun ship had an authorized complement of 476 men, and the «battle frigates» such as the 50-gun *Georgii Pobiedonosets* had a complement of 322 men. Unfortunately no such muster rolls are known for the 1770 campaign. However, as described by the Kapudan Pasha Mandalzade Hüsameddin himself, the whole squadron had only half the necessary number of men and this was the key factor in the ultimate defeat and destruction at Chesma. As Hüsameddin Pasha complained that for his flagship (86 gunport type) «five hundred men were required to handle the ship and another five hundred for battle», we can assume that the complements known from 1790 were also the norm in 1770. The emerging picture is a curious one indeed: compared to their Ottoman opponents which were underarmed with lighter caliber weapons, Russian ships overloaded with heavy calibre guns were being handled with almost half the number of men. The disparities between the Russian and Ottoman fleets in both construction, arming and manning, were the results of two very different understandings and employments of seapower.

Conclusion

This short examination of written and visual evidence about the Ottoman naval technology in the second half of the 18th Century reveals a surprising picture: short, broad and roomy ships with towering sterns and lightly built hulls, underarmed to the extreme and crammed with an enormous number of men. In light of the available information, one can hardly think that the subjects of discussion here are warships, not merchant ships. Why then did the Ottomans persistently build ships so unsuitable for warfare? Was it because of mindless conservatism? Of incompetence? Of lack of creativity? These were indeed the answers given by the contemporary observers such as Baron de Tott and William Eton. The unanimous opinion about Ottoman naval marine engineering was de Tott's oft paraphrased (even in a supposedly scholarly text published in 2011) statement, which claimed that Ottoman warships had higher decks to make room for wearing turbans. Moving away from this caricature and reaching towards an accurate explanation, my suggestion is to re-evaluate the way Ottomans understood and employed naval power in 18th Century.

Until John Guilmartin Jr.'s epoch making study of Mediterranean seapower and naval warfare in the Renaissance era, Alfred T. Mahan's «command of the sea» paradigm, built upon the high seas battlefleet and decisive battle, was usually the dominant approach in the studies of the Mediterranean naval powers. Guilmartin correctly dismantled this ossified understanding by pointing out the limitations of galley fleets which were the dominant naval weapons systems of the era. He instead clarified the amphibious nature of the war in the Mediterranean and demonstrated that decisive «naval» campaigns in this region were actually amphibious operations to capture or hold the strategic fortified ports of the galley fleets. Still, even Guilmartin himself yields to the «Mahanist» battlefleet theory, following the large scale intrusion of the Dutch and English sailing fleets into the Mediterranean by the second half of the 17th Century. This is a step backwards however as it can be argued that regardless of the changing technology, Guilmartin's pattern of Medi-

terreanean naval warfare is demonstrably valid up until the end of the 18th Century. The Ottoman navy and seapower are proof of it.

The sailing warship may have had matured in the 17th Century and established its operational-tactical superiority over the oared warship around 1680 but the naval geography of the Ottoman Empire, naturally, had not changed. This levantine empire was bound to operate in narrow and shallow waters, dotted with hundreds of islands and fortified bottlenecks which dominated the main trade routes of the region, and most especially the vital Alexandria-Constantinople axle which played a major role in feeding the Ottoman capital. In addition, the Ottomans had no naval opponents in their home waters except for Venice, which also understood and applied the naval power in very much the same way. Therefore, the primary duty of the Ottoman navy continued to be subservient to the army: carrying men, ammunition and supplies to and from coastal strongpoints, giving assistance with firepower just sufficient to cover the landing parties or to repel the besiegers, and in peacetime patrolling trade routes against pirates. The sailing warship entered into this context not as a replacement of the galley but as a complement, to work in conjunction with the oared warships. Indeed, up until the Nizam-ı Cedid era, oared craft not only continued to operate but actually outnumbered sailing ships. The sailing ship however was the vital bulwark behind which the oared workhorses of amphibious warfare could operate in safety. Therefore, the peculiar technology of the pre-reform Ottoman *kalyon* can only be understood once its symbiotic existence is kept in mind. She was not a tool of oceanic gun duels; rather she was a broad and roomy armed transport, with room for the maximum number of soldiers and supplies. Yet, in order to obtain the best speed despite her disadvantageous proportions, she was built with a light albeit fragile hull. As her weight tolerance was low, her firepower had to be sacrificed. Consequently, the Ottoman navy was unique in the age of sail, building its combat methodology upon manpower rather than firepower. The towering stern of the Ottoman *kalyon* was a siege tower in which sharpshooters and musketeers were based. Indeed, during all open sea battles of the 1787-92 War in which the Ottomans were usually on the offensive, the standing orders of Ottoman commanders were to «swiftly bear down upon opponents of equal size and conduct a boarding.» Such an operational concept could be in total opposition with established practice in the rest of Europe; but it was what Ottomans required due to their Levantine theater of operations.

This evaluation of Ottoman naval power in the age of sail brings forward the following question: if Ottoman naval technology was so suitable to their peculiar conditions, why did the Ottomans ultimately feel such a strong need to change and subsequently adapt to the oceanic standards? It was because the newly emerged Russian navy had changed the rules of the game. Once the loss of Crimea and much of the Northern Black Sea coast was complete in 1788-89, the frontier was effectively pushed into the sea. Further defense (or counterattack) against this mortal threat had to first contend with the Russian Black Sea Fleet, a force built and trained upon the firefight. The Ottomans predicted what was to come and the first Ottoman *kalyon* which could be a match for the new Russian ships, the 74-gun *Mukaddeme-i Nusret*, was launched in 1787. She was built according to standard French draughts which were brought by a military mission from France. By the start of the Nizam-ı Cedid in 1793, this revolution in Ottoman naval affairs was in full swing. However, in one of the great ironies of history, the highly effective results of Selim III's naval reforms were not to be used against the Russians, but in alliance with the Russian Empire against Revolutionary France during the War of the Second Coalition.

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Османская морская мощь и военно-морская техника периода турецких войн Екатерины II 1768-1792 гг.

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Аннотация. Правление императрицы Екатерины II в значительной мере определилось двумя русско-турецкими войнами (1768-74 гг. и 1787-91 гг.). Этот период самым радикальным образом изменил баланс сил в Восточной Европе, и как романовская, так и османская военно-морская сила сыграли в этом решающую роль. Тем не менее, степени проработанности состояния российской военно-морской мощи разительно отличается от знания об османском флоте, которое в значительной мере определяется предположениями и суждениями, бытовавшими еще в XVIII веке. Предлагаемая короткая статья представляет собой попытку исправить эту ситуацию путем сравнения силы, конструкции, вооружения и системы комплектования османского парусного флота с его российским оппонентом в свете последних турецких, европейских и российских архивных исследований.

Keywords: Ottoman Navy, Russian Navy, возраст парусов, морская техника, морская война, русско-турецкие войны.