IRON SHIPS AND IRON MEN: NAVAL MODERNIZATION IN THE OTTOMAN EMPIRE, RUSSIA, CHINA AND JAPAN FROM A COMPARATIVE PERSPECTIVE 1830-1905

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Title: Iron Ships and Iron Men: Naval Modernization in the Ottoman Empire, Russia, China and Japan from a Comparative Perspective 1830-1905

The Industrial Revolution of the nineteenth century dramatically transformed navies from fleets of wind-driven wooden ships into steam-propelled ironclad squadrons. The industrial framework, administrative competence, personnel training and financial capability necessary to maintain an up-to-date navy skyrocketed. The Ottoman Empire attempted to maintain a modern fleet throughout the nineteenth century with a varying degree of success. In this thesis, the naval modernization strategies of the Ottoman administration during the years of Industrial Revolution are examined in comparison with those of the Russian, Chinese and Japanese Empires, which shared social and administrative structures similar in many ways by using detailed monographies and various other works related to the topic.

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Başlık: Demir Gemiler ve Demir Adamlar: Mukayeseli bir Perspektiften Osmanlı İmparatorluğu, Rusya, Çin ve Japonya'da Bahriye Modernleşmesi 1830-1897

On dokuzuncu yüzyıl'daki Endüstri Devrimi donanmaları çarpıcı biçimde değiştirmiş; rüzgâr gücüyle hareket eden ahşap gemilerden kurulu filolar buhar gücüyle işleyen zırhlı kuvvetlere dönüşmüşlerdir. Çağdaş bir donanmayı ayakta tutmak için gereken endüstriyel altyapı, yönetim becerisi, mürettebat eğitimi ve finans kapasitesi kat kat artmıştır. Osmanlı imparatorluğu Endüstri Devrimi seneleri boyunca etkili bir donanma kurmak için çaba göstermiş ve değişen bir başarı oranına sahip olmuştur. Bu çalışmada Osmanlı yönetiminin donanma modernleşme stratejileri, gerek yönetsel gerek sosyal yapıları pek çok yönlerden Osmanlılarla benzeşen Rus, Çin ve Japon İmparatorlukları ile mukayeseli olarak incelenmiş; detaylı monografiler ve konuyla ilgili çeşitli diğer eserler başlıca kaynakçayı oluşturmuşlardır.

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CONTENTS

CHAPTER I

INTRODUCTION

"War is the father of everything"
Herakleitos

"It is on the navy, under the good providence of God, that our wealth, prosperity and peace depend."
Charles II, King of England

When king Charles II ascended the throne in 1660 and made the remark above on the importance of British naval power, he could not foresee that the starting date of his reign would be taken also as the start of the true influence of seapower upon history by a certain Captain Alfred Thayer Mahan some 230 years later. Mahan was an officer of the United States of America; a country which was just being colonised by Englishmen during the reign of Charles II. In fact, it would be upon this concept of colonisation that Mahan would develop his theory, binding the wealth of overseas possessions and great power status with a strong navy. His arguments fuelled the ambitions of not only the emerging new great powers on the world scene, like Japan and Germany, but also every country with a seacoast and regional rivals, from South America to the Mediterranean. The "long" nineteenth century in which Mahan lived and wrote was the time of the greatest transformation that the world had ever seen since the rise of agriculture in pre-historic times: the Industrial Revolution.

Few other institutions reflected the transformation more than the navies. The wooden, sail-powered warships firing relatively short range ammunition were transformed into steam driven, armorclad leviathans with an unimaginable destructive power. These armored warships altered the nature of the relationship between the West, which developed them, and the rest of the world. In 1815, Western European countries and USA possessed 35% of the world. In 1914 this percentage had become 85%.[1] The superiority of firepower, logistics and mobility that the Industrial Revolution warships provided was one of the main factors in determining the outcome of a century of colonial power struggles. Naval power emerged for the first time as *the* main arbiter. In such conditions it is not surprising that the first studies about the nature and role of the seapower started in the nineteenth century.

Since Mahan's publication of *The Influence of Seapower Upon History 1660-1783* in 1890, navies have been classifed into two categories or "school"s. The first category is the "Bluewater School," which indicates a navy organized with a view to long range power projection, using heavily armed and armored seagoing battleships arrayed in battle squadrons. The tasks of a bluewater navy is to provide the safety of the trade, destroy any enemy naval presence, snatch command of the sea and choke the enemy trade by relentless blockade. The archetypical bluewater navy is the British Royal Navy (hence will be referred only as "Royal Navy" in the text).

On the diametrical opposite stands the "Brownwater School," tailored for the primary task of coast defense and blockade breaking. Commerce raiding often becomes an important element in brownwater navies when

[1] Geoffrey Parker, *Askeri Devrim 1500-1800* (İstanbul: Küre Yayınları, 2003), p. 7.

fighting with a bluewater navy which most probably belongs to a nation with a sizeable merchant fleet. Brownwater navies often employ a symbiotic combination of fortified ports and specialist warships like coast defense gunboats, torpedoboats and cruisers. It is difficult to find a navy built solely upon brownwater school principles in the timeframe of this study but the pre-Spanish-American War (1898) U.S Navy and the post-1872 Austro-Hungarian Navy are the best examples.[2]

Upon this Mahanian scheme, countless scholarly studies have been made about the primary naval powers of the world since the early twentieth century. However, the Ottoman navy, which was one of the primary naval powers throughout the sixteenth and seventeenth centuries, and thereafter kept its status as a foremost second rank naval force, curiously had been left out of such serious monographical study until recently. However, with the pioneering studies of Colin Imber, İdris Bostan and Salih Özbaran, monographies about the Ottoman navy have proliferated in the last two decades. Understandably, these early studies were focused on the classical era, and the groundbreaking comparative study of Ottoman seapower in the sixteenth century by Palmira Brummett crowned the analyses of the classical era. However, the attention shown to the sixteenth and seventeenth centuries wanes considerably when the later Ottoman history is concerned. Monographs and comparative studies of the Ottoman naval power still are mostly lacking for especially the eighteenth century. The critical nineteenth century is also less analysed compared with the classical era, however in the

[2] The terms "Bluewater Navy" and "Brownwater Navy" does not have an exact counterpart in Turkish language; however they can be most closely translated as "Açık Deniz Filosu" and "Sahil Müdafaa Filosu" respectively. (Author's note)

last decade first class monographical studies which extensively rely on the Ottoman archives have started to come out.

The first in-depth monography was *Bahriye'de Yapılan Islahat Hareketleri ve Bahriye Nezareti'nin Kuruluşu 1789-1869* by the late Ali İhsan Gencer.[3] This study was his Ph.D thesis, in which he analyzed the administrative modernization of the Ottoman Navy in the nineteenth century as primary topic, an episode which was marked by the increasing centralization of naval assets[4] until they became a single ministry in 1867. In the background, Gencer studies the modernization in the methods of levying sailors and introduction of steam power into the Ottoman navy.

Gencer's synthesis was followed by Tuncay Zorlu's *Innovation and Empire in Turkey: Sultan Selim III and the Modernisation of the Ottoman Navy*, and Şakir Batmaz's *İkinci Abdülhamid Devri Osmanlı Donanması*, both Ph.D dissertations.[5] Zorlu examines the dramatic Ottoman naval reforms during the *Nizam-ı Cedît* (New Order) reform period with a particular focus on technological advances and the role of the foreign engineers in the initiation of these changes, while Batmaz draws a complete panorama of the Ottoman naval assets in one of the most controversial epochs of the Ottoman seapower. Both studies draw extensively upon archival material.

As far as is known, currently there is a similar monography in process by Bill Blair from Princeton University under the supervision of Bernard Lewis on the massive naval expansion during the sultanate of Abdülaziz.

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[3] Ali Ihsan Gencer, *Bahriye'de Yapılan Islahat Hareketleri ve Bahriye Nezareti'nin Kuruluşu 1789-1869* (Ankara: Türk Tarih Kurumu Yayınları, 2001)

[4] "Naval assets" are all elements which together form a navy, which means ships, naval bases, personnel and framework. Karl Wilhelm Darr (master's thesis, University of Lousiville, 1998), p. 3.

[5] Tuncay Zorlu, *Innovation and Empire in Turkey: Sultan Selim III and the Modernisation of the Ottoman Navy* (New York: I.B Tauris, 2008), Şakir Batmaz, II. Abdülhamid Devri Osmanlı Donanması (Ph.d diss., Erciyes University, 2002)

Another important monograph about the Ottoman Navy of the nineteenth century is *1822-1922 Osmanlı Donanması* (The Ottoman Navy 1822-1922) by Bernd Langensiepen and Ahmet Güleryüz, an invaluable databank for every single steam ship which was part of the Ottoman Navy in the given period and supported by a wealth of photographs and drawings.[6] This proliferation of studies about the Ottoman navy of the reform age is a very positive development; however so far there has not been a comparative study similar to Professor Brummet's dissertation. This void gave me impetus to attempt at least a little start in that direction.

This study, settles the Ottoman navy of the nineteenth century into its place among the world navies, with a special focus to the pattern of modernization it followed compared with the other terrestrial and non-western empires of the time: Russia and China. What was the purpose of the seapower for these empires during the age of industrial revolution? What was the response of the imperial administrations to the rapid changes in naval warfare? Which materials did they use and how did they procure them? According to which strategies did they acquire their ships? How did they levy and train their crews? How was the officer corps educated to cope with the changing nature of war at sea? How were these imperial navies affected by wars in which they fought?

A summary account is given of the rise of the Imperial Japanese Navy, as it is the only example of a non-western country managing to build a world class navy upon Mahanian principles; thus it provides a wonderful opportunity for comparison. There exist many monographic studies about the

[6] Bernd Langensiepen,and Ahmet Güleryüz, *1828-1923 Osmanlı Donanması* (İstanbul: Denizler Kitabevi, 2000)

Chinese and Japanese navies. The ones utilized for this study were Richard Wright's well received *The Chinese Steam Navy 1862-1945* and *Kaigun: Strategy Tactics and Technology in the Imperial Japanese Navy 1887-1941* by David Peattie and Mark Evans, possibly the most important single volume study about the Japanese seapower in the English language.[7]

It was difficult to find a similar study on the Imperial Russian navy. Compared to a wealth of works in the Russian language, English language monographies about the Russian navy of the nineteenth century seem to be both meagre and rather out of date. One of the best current studies about the Russian naval history is the three volume *Tri Veka Rossiiskogo Flota* (Three Centuries of the Russian Navy) by F.N Gromov, Vladimir Gribovsky and Boris Rodionov. As I am as yet unable to read Russian, I tried to made up this deficit by relying on English sources which made extensive use of this particular study.

To draw the global context, I used two first class single volume works about the the nineteenth century naval warfare: *Naval Warfare 1815-1914* by Lawrence Sondhaus, and *Handbook of the Nineteenth Century Naval Warfare* by Spencer C. Tucker.[8] In the sections dealing with technological details, extensive use was made of the *Steam, Steel and Shellfire: The Steam Warship 1815-1905* from Conway's acclaimed twelve volume *History of the Ship* series, one of the main current reference material about naval technology.[9] For the accounts of the nineteenth century naval battles, Herbert Wrigley

[7] Richard N. J. Wright, *The Chinese Steam Navy 1862-1945* (London: Chatam Publishing, 2000), David Peattie and Mark Evans, *Kaigun: Strategy, Tactics and Technology in the Imperial Japanese Navy 1887-1941* (Annapolis: Naval Institute Press, 1997)
[8] Lawrence Sondhaus, *Naval Warfare 1815-1914* (New York: Routledge, 2001), Spencer C. Tucker, *Handbook of Nineteenth Century Naval Warfare* (Annapolis: Naval Institute Press, 2000)
[9] *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992)

Wilson's classic two volume *Battleships in Action 1850-1918* was the main source of reference.[10] As the scope of the study was broad and I was not making a detailed monograph, I did not attempt to use archival material; though I used a few contemporary publications and memoirs. I tried to support the monographies cited above with as many other related works and articles as possible. In no way can I claim that my study is a comprehensive one, but if it shall make other scholars think about similar comparative studies of the Ottoman seapower in the great adventure of the modernization era, it will have served its intended purpose.

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Chapter Two, "The Changing Nature of the Naval Warfare 1815-1905," summarizes the nineteenth century naval transformation, when the wind powered wooden battlefleets reached the zenith of their evolution by mid-century and then ultimately were eclipsed by the steam driven, iron or steel-hulled battleships by 1890's, along with the fascinating rise of Japanese seapower between 1868-1905. Chapter Three, "The Ottoman Quest for Naval Renovation 1830-1897," traces the transformation of Ottoman Naval assets throughout the nineteenth century, with a particular emphasis on the technology transfer, naval professionalization and naval production resources, along with concise accounts of some key engagements. Chapter Four, "Ironclad Steams East: The Russian and Chinese Navies," summarizes of the development of the Imperial Russian and Imperial Chinese naval assets to provide the necessary background for the last chapter, "Conclusion," where a

[10] Herbert W. Wilson, trans. Lütfü Çekiç and edited by Emir Yener, *Zırh Devrinde Deniz Muharebeleri v.1 1850-1914* (İstanbul: Kitap Yayınları, 2006)

final assessment of the Ottoman, Russian and Chinese naval modernizations is made.

CHAPTER II

THE CHANGING NATURE OF NAVAL WARFARE 1815-1905

The Ottoman navy which started on its own long nineteenth century only in 1830 saw its material transformation from wood and sails to iron and steam just forty years later. At the start of the period, the Imperial Ottoman navy was still built and manned essentially in the same way as it had been when the great Kapudan Pasha Mezamorta Hüseyin promulgated the regulation of galleons in 1701.[11] Warship building was still a largely artisanal enterprise, while crews were composed from a mix of volunteers and men from occasional impressment.[12] However, as a result of Sultan Selim III's far reaching naval reforms in late 1790's, scientific shipbuilding methods were introduced to Ottoman naval construction.[13]

Especially after the disaster of Navarino in 1827, Ottoman naval architecture embraced modernization with a renewed vigor and the navy which fought in the Crimean War was built just in the same way as the allied navies of Britain and France, or that of Russia, the enemy. Manning the ships, however, despite the significant introduction of western style drill, which was critical for crew cohesion and discipline, did not dramatically change. In this aspect the Ottomans were not alone though, the British Royal Navy along

[11] For further information about Mezamorta Hüseyin Pasha and the transformation of Ottoman Navy from oared warships to sailing man-of-war see İdris Bostan, *Osmanlılar ve Deniz* (İstanbul: Küre Yayınları, 2007), pp. 48-52. A transcription of Mezamorta's regulations is on pp. 185-189.

[12] Gencer, pp. 52-58.

[13] Bostan, pp. 55-60.

with all others was still crewed by a mix of voluntary service and impressment (or in French and Russian cases, conscription), which was used since the early eighteenth century.[14]

The first major manifestation of the industrial revolution in naval warfare declared its arrival in the form of steam power by the 1840s.[15] Despite the limitation of the first steam warships propelled by paddles due to weak armament, the strategic impact of the emancipation from the wind was so revolutionary that naval strategy makers in France and Britain immediately dedicated themselves to discovering the full potential of the new energy source, looking at possibilities to exploit it best. In the following decade, the invention of the screw propeller, the perfection of the rifled gun and explosive ammunition in the 1850s finally rang the death knell of the wooden sailing navy by the end of the Crimean War. As one of the little known facts of contemporary naval history, the Ottoman navy was among the first to introduce auxiliary steam power officially. Suffering from the agile enemy pioneer steam warships during the Greek War of Independence (1821-30), Ottoman admirals first acquired auxiliary steamers on their own initiative by the Russo-Turkish War of 1828-29. Benefiting from the reformist atmosphere of the Tanzimat era in the next decade, the steam warship became an institutional part of the Ottoman navy.[16] However, the more crucial novelties of the screw propeller and the rifled gun were not adopted until after the Crimean War.

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[14] Anthony J Watts, *The Royal Navy* (Annapolis: Naval Institute Press, 1999), p. 23.

[15] Sondhaus, pp. 22-23.

[16] Ibid., p. 31.

Accompanying the revolution in marine engineering, the seeds for an equally significant change in crewing warships were being sown. To make the new mechanical outfits work properly, an hitherto unseen component in personnel was needed: the engineer class. However, in European navies, a conservative reaction to and resentment of this new type of personnel, mostly of positivistic mentality and well-versed in scientific knowledge but little experienced about seamanship was to prolong the militarization of the engineering class until late the 1860s.[17]

Ottoman navy interestingly seems not to have suffered from such an inter-service reaction. In contrast, many regular naval officers were even eager to be trained in machinery. In late 1830s a far-sighted student exchange program was initiated to train selected young Ottoman naval officers in Britain in steam machinery.[18] The fact that during this period the Royal Navy did not officially possess an engineer class may give an idea about the almost futuristic approach of the Ottoman admiralty. But for some still unclear reasons, the exchange program was stopped in the early 1840s and naval administration went to the opposite extreme of hiring civil European machinists in increasing numbers.[19]

The next step in the great transformation of naval warfare in the nineteenth century was the installation of metal armor on warships. Although this development was for a long time seen as *the* fundamental change, more recent studies of industrial revolution era navies from the perspective of

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[17] Watts, p. 24.

[18] Mücteba İlgürel. "Buharlı Gemi Teknolojisini Osmanlı Devletinde Kurma Teşebbüsleri" in *Çağını Yakalayan Osmanlı*, edited by Ekmeleddin İhsanoğlu (İstanbul: IRCICA yayınları 1998), p. 142.

[19] Sondhaus, p. 31.

military revolution and institutional analysis have repositioned the ironclad warship as an incremental but not so revolutionary development. Despite the accompanying introduction of a fully new weapon, the torpedo, which possessed the potential of creating a real revolution in strategy and tactics; the big gun battleship and the traditional strategy of blue water naval superiority managed to keep their primary status, along with the equally traditional tactic of line ahead.[20]

Therefore, it is necessary to start our account with a review of the nineteenth century naval revolution to understand the dynamics of change in the Ottoman navy and place it in the international context.

The Last Wooden Navies

At the end of Napoléonic Wars, the main arbiter of naval might on the high seas was the ship-of-the-line. Tracing back its origins to the early 17th century, the ship-of-the-line was the most refined and excellent early modern tool of war. Bristling with 74 to 120 cannons of heavy caliber, the ship-of-the-line possessed a firepower which far surpassed a 30,000 men army corps with 30-50 light calibre field guns. Only the most elaborate bastions of latest design with thick masonry could withstand to the deadly broadside of such a battleship. Indeed, the appearance of a small squadron of those floating fortresses off a trouble point was often enough to compel the assailed side to come to terms.

[20] For a discussion of the full extents of nineteenth century naval revolution see Herwig, Holger. "The Battlefleet Revolution, 1885-1914" in *The Dynamics of Military Revolution 1300-2050*, edited by McGregor Knox and Williamson Murray (Cambridge: Cambridge University Press, 2001), pp. 114-132.

Ships-of-the-line were constructed of hardwoods resistant to saltwater rot, such as oak, teak and cedar. The propulsive power was the wind and a 74-gun ship-of-the-line should set up to some 4,500 square meters of canvas in favourable weather. When pitted against each other, ships-of-the-line would form a single file, called "line ahead" and try to batter their opponent into submission by the sheer weight of fire while sailing on parallel courses. Success thus relied on the rapidity and accuracy of fire which required constant drilling, discipline and integrity of the crew.[21]

Besides the huge battleships, there were frigates, corvettes and sloops, collectively called "cruisers." These carried between 28-54 medium calibre cannons and were used to patrol far flung seas, trade routes and colonies. In the nineteenth century, the last surge of piracy which followed the Napoléonic Wars was suppressed by patrols of British and American frigates. In times of war, frigates also proved to be excellent craft to raid and disrupt the opponent's trade. Most of the second or third rank navies opted to acquire frigates as the backbone of their navies instead of costly ships-of-the-line, which was not versatile either.[22]

By 1815, the undisputed command of the seas was in the hands of the British. Honed to perfection by constant warfare in every part of the world's oceans from 1793 to 1815, the Royal Navy was quantitatively and qualitatively the unsurpassed master of naval warfare. It is no coincidence that the nineteenth century was called "Pax Brittanica," guarded by the "wooden walls" of the Royal Navy. Despite the immediate demobilisation and discharge of thousands of seamen and officers, Britain's emergent

[21] Philip Haythornwaite, *Nelson's Navy* (Oxford: Osprey Publishing, 1993), pp. 4-6.
[22] Ibid., p. 5; Sondhaus, p. 5.

position as the global economic hegemon forced it to commit to the duties of policing the oceans against slave traders (slave trading in the United Kingdom and its colonies was prohibited by act of parliament in 1807[23]) and suppressing the piracy which had boomed in South American waters and in the Mediterranean due to the breakdown of authority during more than two decades of warfare.

An accurate quantitative consideration of sailing fleets after 1815 is difficult. The sources disagree over the true numbers in the major fleets. Also, a great number of the ships included in the naval rosters were in a dilapidated state, unable to ever take to the sea in any circumstance. Also, many ships were either incomplete or were "in ordinary," which means they had been stripped of their armament and masts, and were lying in harbor devoid of crew. How many of these ships would have been fit or worthy to be fit for service in an emergency is likewise subject to debate. The best estimates for the Royal Navy in 1815 give a number of 218 ships-of-the-line, 309 frigates and 261 smaller cruisers. However one source indicates a number just half of this. In 1830, the number of ships-of-the-line was down to 106, with only 71 considered suitable for war service, while frigates were down to 144 units. As the warships shoddily built of green wood rapidly rotted, new ships of reduced numbers but of superior construction replaced them. Thus, British shipyards launched a total of 58 new warships between 1815 and 1849.[24]

Britain's chief naval rival, France, having suffered a continuous series of smashing defeats during the Napoléonic Wars, had abandoned all hopes of challenging Britain ever again in a fleet battle and did not try to maintain its

[23] Sondhaus, p. 2.
[24] Ibid., p. 2.

ships-of-the-line. In 1815 France had 69 ships-of-the-line and 38 frigates. By 1835, French navy had just 35 ships-of-the-line fit for duty, but the number of frigates had risen to 67 after a post-war construction program. This was the result of a national strategy change which emphasised commerce raiding instead of fleet battle.[25]

The Russian Empire was the primary Baltic power after the defeat of Napoleon and had the third greatest fleet in the world. Unlike the British and French navies, which gradually grew after 1800 and sharply diminished after 1815, the Russian navy reached a full mobilisation number of more than 80 ships-of-the-line and 40 frigates in 1800 and maintained a constant peace cadre of 47 ships-of-the-line and 27 frigates from 1815 to post-Napoléonic Wars years. Approximately two-thirds of this number were stationed in the Baltic and the rest were in the Black Sea. The Russian ships were of extremely low quality, having been built of fir, and they seldom remained serviceable for more than a decade.[26]

The once great naval power of Spain was mauled in the Napolenic Wars; the battle of Trafalgar being its swan song. Nevertheless, in 1815, Spain was the fourth greatest naval power, with 21 ships-of-the-line and 15 frigates. With the country ravaged by rampaging armies from 1808 to 1814, South American colonies declaring independence and civil wars erupting after the retreat of the French, the Spanish navy quickly vanished from the scene. Despite a desperate attempt to bolster the numbers by purchasing (mostly half rotten) five ships-of-the-line and six frigates from Russia in

[25] Sondhaus, p. 3.
[26] Ibid., p. 3.

1818-19, the Spanish Navy was down to four ships-of-the-line and five frigates in 1830.

Denmark, the old hegemon of the Baltic, saw its great fleet destroyed twice by Britain in the Napoléonic Wars and by 1830 had just three ships-of-the-line and seven frigates left; while its rival, Sweden, had a fleet of eight ships-of-the-line and five frigates in 1830. However, the nature of warfare in the Baltic necessitated a reliance on oared, shallow draft gunboats as the main weapons system for what was presumed to be an amphibious and coastal campaign against Russia, the most likely adversary for both countries.[27]

The most significant development on the post-Napoléonic naval balance of power, was the emergence of United States as a rapidly expanding naval force with ships of superior construction and manned by highly efficient personel. During the War of 1812 against Britain, the lackluster performance of the U.S army was in total contrast with the string of its navy's successes in ship-to-ship or small squadron actions, thus ensuring public and senatorial favor to the service. Britain was only able to overwhelm the U.S navy by using its huge numerical superiority to impose a close blockade of American shores.

A bitter lesson for the U.S on the effects of losing command of the sea was the burning of Washington D.C by British landing parties in 1814. This combination of earlier tactical successes and later organizational failures created a resolve in the American public to construct a navy which could defend the shores of the republic even against major naval powers. An accelerated wartime construction program approved in 1813 authorized five

[27] Sondhaus, p. 5.

ships-of-the-line, though before the war's end only one had been completed. In 1816, nine more battleships were approved. However, the construction of those 14 ships-of-the-line proceeded at a slogging pace and in the end, only seven were completed as warships; three became storeships and the remaining four were cancelled. Among the seven completed, not more than one was in active service in any given year until the start of the Civil War in 1861.

U.S navy's real workhorses were its powerful 50-gun frigates armed with 24-pdr. guns compared to their 18-pdr. armed European counterparts. Nine such cruisers were in service by 1815 and, following the war, with the "gradual increase" program, the grand total was raised to 20 heavy frigates. Usually, 10-11 of them were in service at any given time.[28]

The field of warship construction in the decade 1813-23 brought an evolutionary line which had started with the development of galleon in the early sixteenth century to a point of perfection and size limits allowed by wood. Two defining novelties were the diagonal riders and closed bow-stern construction by the Surveyor of the Royal Navy, Sir David Seppings. Diagonal riders were extra ribs placed in trapezoidal order, giving unprecendented sturdiness to the hull and completely solving the hogging[29] problem which had plagued wooden warships since their first inception, limiting their size.[30] Seppings' other novelty, introduced during 1820's, was fully planking the stern and the bow, which hitherto had been covered only with weak bulkheads and broken with galleries; thus presenting an unopposed

[28] Sondhaus, pp. 3-4.
[29] Hogging, or hog, refers to the semi permanent bend in the keel, especially in wooden hulled ships, caused over time by the center of the ship being more buoyant than the bow or stern.
[30] Gardiner, Robert. "Design and Construction" in *The Line of Battle: Sailing Warships 1650-1840*, edited by Robert Gardiner, p. 122.

entry to cannonballs aimed towards these parts of the ship.[31] This traditional structural weakness of wooden battleships at bow and stern had made the raking fire[32] position the ideal sought by every naval officer in a fight. However, Seppings' closed (also called round) bow-stern design greatly reduced the vulnerability of wooden warships against raking positions. The natural result of Seppings reforms into naval architecture was a complete overhaul of the ship classification system. With the increase in size, number of guns carried on two-deckers increased first to 84 and finally to 92, while three deckers became standardised with 110-120 in almost every navy.[33] Cruisers also were enlarged. Frigates first followed the American models and rose from 40 to 50 and even to 60 guns in some navies, while corvettes increased from 28 to 35 guns.[34]

Accompanying the size increase was an increase in armaments and firepower. With the problem of hogging eradicated, decks being strenghtened and with a new need for more firepower to penetrate closed bows and sterns, the traditional way of arming warships with three different calibres of guns (32 or 36 pdrs. on lower deck, 24 pdrs. on gundeck and 18 pdrs. on upper decks) gave way to a uniform armament consisting of guns with a caliber no

[31] Lavery, Brian; "The Ship-of-the-Line" in *The Line of Battle: Sailing Warships 1650-1840*, edited by Robert Gardiner (London: Conway Maritime Press, 1998), p. 23.
[32] Raking fire is fire directed parallel to the long axis of an enemy ship. Although each shot is directed against a smaller target profile than by shooting broadside and thus more likely to miss the target ship to one side or the other, an individual cannon shot that hits will pass through more of the ship, thereby increasing damage to the hull, sails, and crew. A stern rake is more damaging than a bow rake because the shots are not deflected by the curved (and strengthened) bow. Tracy, Nicholas. "Naval Tactics" in *The Line of Battle: Sailing Warships 1650-1840*, edited by Robert Gardiner (London: Conway Maritime Press, 1998), p. 182.
[33] Sondhaus, p. 2.
[34] Gardiner, Robert. "The Frigate" and Gardiner, Robert. "The Sloop-of-War, Corvette and Brig" in *The Line of Battle: Sailing Warships 1650-1840*, edited by Robert Gardiner (London: Conway Maritime Press, 1998), pp. 42-43, 59-61.

lesser than 30 pdr. and 60 pdr. carronades.[35] The French navy took the lead in rearming the warships during 1830s and other navies followed suit.[36]

Steam Power Revolution

The greatest breakthrough achieved in marine engineering since the construction of ocean-going sailing ships armed with gunpowder artillery in the late fifteenth century took place at the start of the nineteenth century. It was the introduction of steam power to warships. Like the sailing ship revolution which had taken place as the result of a major societal transformation –i.e. the rise of capitalism- the introduction of steam was the product of a transformation era which soon was to change all the world forever: the industrial revolution. The first attempts to construct mechanically self-propelled ships produced awkward results which, when retrospectively assessed by later generations, seemed to offer no serious modifier to established perceptions. The truth, however, was the complete opposite. Naval policy makers and strategists were fully aware that something very important was happening. A transformation which was to change traditional strategies so painstakingly composed as the result of trial and error, setbacks and cost, was at hand.[37]

[35] The carronade was designed as a short-range naval weapon with a low muzzle velocity, and is said to have been invented by Lieutenant General Robert Melville in 1759 and developed by Charles Gascoigne, manager of the Carron Company. It was adopted by the Royal Navy in 1779. The lower muzzle velocity of a carronade's round shot was intended to create many more of the deadly wooden splinters when hitting the structure of an enemy vessel, leading to its nickname, the smasher. Gardiner, Robert. "Guns and Gunnery" in *The Line of Battle: Sailing Warships 1650-1840*, edited by Robert Gardiner (London: Conway Maritime Press, 1998), p. 153.
[36] Sondhaus, p. 22.
[37] Ibid., pp. 22-23.

Steam power itself was not a new invention. During Antiquity, there had been many well recorded experiments with the power of steam.[38] However, it was not until the late seventeenth century, with the huge expansion of industry in Western Europe, that steam started to be considered as a serious alternative energy source to supplement hydroforce and wind power. The Huguenot mathematician Denis Papin developed and then described the piston using steam pressure in 1690. Using Papin's development, British inventor Thomas Newcomen built the first practical steam engine in 1712. Newcomen's engine, although cumbersome, provided a big boost to mining in Britain by pumping out underground water. Fifty years later, another British inventor, James Watt, developed Newcomen's engine further, turning the cumbersome and costly to operate machine into a potent source of power. Watt's steam engine effectively started the Industrial Revolution.[39]

While steam power was being harnessed for use on land, there was the almost simultaneous attempt to adapt it into use at sea. Denis Papin is recorded to have built a steamboat in 1704 in the German city of Kassel. His invention was propelled by oars linked to a steam piston. In 1774, the French inventor Marquis Claude de Jouffroy built the first successful steamboat the blueprints reached today; and sailed it in Doubs. Apparently de Jouffroy designed the circular paddles used on later steamboats. In 1801, the Scottish engineer William Symington built the *Charlotte Dundas*, a steam tug designed to tow barges in the Clyde Canal; the first practical steamboat.

[38] The most famous example is no doubt Heron of Alexandria's steam powered sphere, the *Aeoliphile*. "*The Hutchinson Dictionary of Scientific Biography*", (Abingdon 2004) , p. 546.
[39] James McClellan and Harold Dorn. *Dünya Tarihinde Bilim ve Teknoloji* (Ankara: Arkadaş Yayınları, 2006), pp. 327-329.

Finally, in 1807, the Irish-American businessman Robert Fulton started the first commercially successful steamboat enterprise with his *North River Steamer* in Albany.[40]

The military use of steam power afloat first ocurred during the Anglo-American War of 1812. By that time, steamboats had been established firmly in the major inland waterways of United States.[41] It was again Robert Fulton who built the first steam propelled warship, a 1450 ton catamaran hulled floating battery propelled by paddles which were placed into the space between double hulls. Christened the *Demologos*, the vessel was specifically designed to provide a mobile defense for New York harbor. Its armament of sixteen 32-pounder guns was shielded by a solid mass of oak framing for a speed of 5.5 knots.[42] The *Demologos* laid down in January 1814 and completed in 1816. By then the war had finished and she never saw action. However, in the New Orléans campaign of 1815, U.S Commander Andrew Jackson used the civilian steamer *Enterprise* to ferry reinforcements, thus demonstrating the first example of steam power's strategic mobility.[43] Rapid troop ferrying would emerge as one of the two main functions fulfilled by steamers in the initial era of steam warships.

Following these pioneering developments in the United States, it took nearly two decades to refine the new technology and fully adapt it to the open sea. Even then, steamships were not considered successful choices as first-line warships as they were propulsed by large, unwieldy and vulnerable

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[40] Björn Landström, *The Ship* (New York: Doubleday, 1960), pp. 228-230.

[41] Still, William, Watts, Gordon and Rogers, Bradley. "Steam Navigation and the United States" in *The Advent of Steam: The Merchant Steamship before 1900*, edited by Basil Greenhill (New Jersey: Chartwheel Books, 2000), p. 63.

[42] Sondhaus, p. 18.

[43] Tucker, p. 53.

paddles which occupied the space necessary to carry enough ordnance.[44] Despite this structural failure, auxiliary steam warships started to enter into the service of the major naval powers as a result of many action results in diverse corners of the world in late the 1820s. Among these initial war experiences, two merit being cited individually. The small paddle steamer *Diana* of the East India Company (EIC) was the first armed steam warship used in action, towing troop barges and bombarding the Burmese shore fortifications along the Irrawady River with Congreve rockets in 1824 during the First Anglo-Burma War.[45] The Same year, Greek revolutionaries ordered a pioneer specialist paddle warship from Britain. Completed in 1825, the 400 ton vessel was christened the *Karteria*. She was armed with four 68 pdr. guns and an oven in which to prepare red-hot incendiary shot. With a speed of 7 knots, under the command of Frank Abney Hastings, RN, the *Karteria* operated in the Aegean archipelago and caused serious headaches to the Ottoman naval command.[46] Both cases are demonstrative of the two principal functions assumed by early steam warships: providing strategic mobility to the unmechanised main battle fleet and using tactical mobility to conduct an effective raiding campaign. In case of the *Diana*, she was instrumental in moving EIC troops upriver and providing fire support. The *Karteria* became a constant thorn in the Ottoman side by menacing transport ships of the Ottoman army, forcing the Porte to shift its seaborne troop movements onto neutral flagged Austrian ships with extra financial cost. As a result of the

[44] Landström, p. 235.
[45] Roff, W.J. "Early Steamships in Eastern Waters" in *The Advent of Steam: The Merchant Steamship before 1900*, edited by Basil Greenhill (New Jersey: Chartwheel Books, 2000), p. 29.
[46] Tucker, pp. 53-54. Tucker argues that Karteria achieved little but reports from commander of the Ottoman Constantinople squadron, Çengeloğlu Tahir Bey, imply otherwise. See Fevzi Kurtoğlu, *Yunan İstiklal Harbi ve Navarin Muharebesi* (İstanbul: Deniz Matbaası, 1944), pp. 152-154.

further experiences in the British intervention to the Portuguese Civil War in 1828 and the French invasion of Algiers in 1830, auxiliary paddle warships became regular components of the battlefleet by the 1830s.

In design terms, civilian paddle steamers and their naval counterparts were structurally almost indistinguishable. Thus, when the need arose, it was possible to commandeer or charter civilian steamers and turn them into auxiliaries by fitting a few heavy shell guns. Equally, admiralties were often in co-operation with civilian design bureaus and most of the larger steamships were built according to naval construction regulations. A typical product of such co-operation was *SS Great Western*, the first steamship to cross the Atlantic under steam power alone.[47] In a way, it can be argued that this intertwining of civilian and military shipbuilding industry foreshadows the pattern of the "military-industrial complex" which was to become the defining feature of late nineteenth century international relations.

While the paddle steamer was a very useful auxiliary which had revolutionised the concept of naval strategic mobility, it was not without its disadvantages. The greatest of them was cost. Maintaining enough auxiliary steamers to tow ships-of-the-line in major fleets caused a serious drain on the already tightened peacetime naval budgets. As paddle steamers grew in size to accept more coal and more powerful machines, their building and operating costs rapidly overtook those of ships-of-the-line although their firepower did not change and remain constante around thirty guns in the biggest specimens.

[47] Greenhill, Basil. "Steam Before the Screw," in *The Advent of Steam: The Merchant Steamship before 1900*, edited by Basil Greenhill (New Jersey: Chartwheel Books, 2000), p. 16.

By the end of 1840s; it was clear that paddle warship had reached the limit of its development. The answer to the limits posed by the paddle came in the form of the screw propeller. The screw's advantages over paddles were obvious and without doubts. Situated underwater abaft of the ship, the screw did not interfere with gundecks, was incomparably more effective in hydrodynamic terms and because it could be detached and hoisted into a well inside the poop when the ship was to move by sail, it did not cause drag.[48]

The concept of the propeller goes back to antiquity. The Sicilian Greek engineer Archimedes was the inventor of the spiralling action screw in the third century B.C. At the dawn of the practical use of steam at sea in the early nineteenth century, the idea of screw propulsion was resurrected. The American inventor John Stevens built the first screw propelled experimental steam boat in 1804. In reality, Stevens' propellor was nothing but an Archimedes screw laid horizontally in the screw box. It was the Czech inventor Josef Ressel who designed the basic shape of the modern ship propellor with a conical hub with multiple blades. He tested his propellor successfully in 1827. Finally, in 1835, the British inventor Sir Francis Petit Smith developed the basic propellor design into a relatively practical mechanism.[49] In 1837, the great Swedish-American engineer John Ericsson independently developed a similar screw propellor and successfully demonstrated it with his steam launch, the *Francis B. Ogden*, to the British Admiralty. The following year, Petit Smith patented his own design and built the 200 ton experimental ship, the *Archimedes*. As with all prototype inventions, Ericsson's and Smith's screws had some capability problems: both

[48] Sondhaus, p. 38.
[49] Andrew Lambert, "The Screw Propeller Warship" in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), pp. 31-32.

experimental vessels were significantly slower than paddle steamers. However, it is clear that there was no obstacle for the development of screw as the main propulsive mechanism of steamships.[50]

In 1843, John Ericsson launched the 1050-ton screw sloop of war, the *Princeton* for the U.S Navy; and the Royal Navy comissioned the 888-ton screw sloop, the *Rattler*. Both were the first technically successful screw warships. In April 1845, the Royal Navy made a trial to test the paddle versus the screw propellor. The *Rattler* was tied by the stern to the paddle auxiliary *Alecto* of the same horsepower and both two ships made flank speed in the opposite directions. The *Rattler* dragged the *Alecto* without any difficulty; thus dispersing the last doubts about the efficiency of the screw. Then, between 1845 and 1852, the Admiralty fitted screws to four old 74-gun ships-of-the-line with reduced rigs to convert them into slow "blockships" for use in the blockade of Cherbourg in case of war with France.[51] Meanwhile, the French navy first experimented with screws on small despatch vessels and in 1845 fitted two frigates with the new propulsive system. In 1847, Stanislas Dupuy de Lôme, the foremost French naval architect of the era, laid down the first purpose built steam powered battleship. But it could only be completed in 1850 due to the disruption caused by the 1848 Revolution. Christened the *Napoléon*, the 5120-ton ship-of-the-line was armed with 92 guns and was capable of a respectable 13 knots at full speed.[52] The British response to the *Napoléon* was the 90-gun *Agamemnon*, which was completed a few months later, a 5080-ton design capable of 12 knots under steam. The *Napoléon* was built primarily as an escort to short range convoys between Algeria and

[50] Sondhaus, p. 37.
[51] Tucker, pp. 58-59.
[52] Sondhaus, pp. 40-41.

Marseilles and the sail was the auxiliary motive force; while the *Agamemnon* was built with an eye to worldwide service in the British Empire, with sailing characteristics as the primary motive and steam engine was auxiliary.[53]

The building of the *Napoléon* and the *Agamemnon* effectively marks the end of the purely sailing battlefleet. The critical freedom of movement provided by steam engine meant a far greater chance of success for a French fleet attempting a landing in Britain. Following the unsuccessful republic of 1848-52, Napoléon Bonaparte's nephew, Charles Louis Napoléon proclaimed himself Emperor by plebiscite and resurrected the aggressive policies of his uncle. In the increasingly tense diplomatic atmosphere of the 1850s, Britain had good reason to fear a new war against France. Under the able administration of Admiral Baldwin Wake-Walker, the Royal Navy began building a steam battlefleet, by fitting screws to suitable sailing battleships or constructing new ones from the keel up. Imperial France followed the same way. By the time of the Eastern Crisis and the outbreak of the Crimean War, over seventy percent of British and French main battleships were either equipped or were planned to be fitted with screws. By 1852, no other country had started to build steam battleships.[54] While most of the second rank naval powers (Russia, Austria, Italian kingdoms and Ottoman Empire) had acquired at least one steam ship-of-the-line in the following decade, the US Navy built a series of enormous frigates armed with extremely heavy artillery instead of screw battleships.[55]

Thus, in the four decades between the end of Napoléonic Wars and the Crimean War, steam power first supplanted and then rapidly replaced the

[53] Lambert "The Screw Propeller Warship," pp. 39-40.
[54] Ibid., p. 41.
[55] Ibid., pp. 42-43.

wind power which, for three centuries, had been harnessed to propel warships. The revolution in naval affairs triggered by the strategic mobility of steam engine was immediately recognised. As early as 1822, Colonel Henri Paixhans from the French artillery, who invented the explosive shell gun, prophesised that the future belonged to swift steamers, armed with incendiary ammunition and protected by metal armor, exploiting tactical mobility and superior technology to set lumbering wooden battleship afire.[56] Paixhans was certainly ahead of his time and his ideas remained out of the mainstream policies. However, when the able career seaman Prince de Joinville of France published his influential treatise *De l'état des forces navales de la France* (About the State of French Naval Forces) in 1844, a reorganisation of the French navy centered on the opportunities presented by the steam power commenced. According to Joinville, British superiority in the Mediterranean was based clearly on steam power as there were just three ships-of-the-line stationed in this region against nine big paddle steamers. As the steam warships were so crucial to British naval might and as there was not such a big disparity between the number of French and British steam warships yet, it was possible to concentrate on building new technology warships, closing the gap in a short time. A fleet of sailing frigates would be enough to protect French interests worldwide. Joinville's report shaped the naval program of 1846, which constituted the essence of French naval strategy until the disaster of the Franco-Prussian war in 1870-71, when the French military system faced total collapse.[57] In 1848 however, due to the revolution and the economic hardship of the new republic, the naval program seemed to be in

[56] Sondhaus, p. 23.
[57] Ibid., pp. 37-38.

danger of ending before it even was put into effect. The Republican government sought a way to agree to a naval arms limitation treaty with Britain in 1849 but this diplomatic move failed and the new imperial government re-invigorated the naval program. The battlefleet of Napoleon III was to become the most powerful that the French nation had seen since the days of Louis XIV.[58]

The British reaction to the shift in French naval strategy was one of alarm. In 1845, Lord Palmerston had warned the House of Commons that the English Channel was rapidly becoming a "steam bridge" from which the French would launch an invasion.[59] However, the naval policy makers in Britain were assured that the far greater industrial capacity at their disposal would allow them to outbuild the French navy at will. They were proved right when in the 1850s, the Royal Navy achieved a marked numerical and qualitative superiority in screw battleships over its rival across the channel.[60]

This "superiority complex" however, was to breed a dangereous complacency in the later years of the century. The change of building policies and strategic re-organization of French navy did not stimulate a similar reform movement in the Royal Navy. The fleets sent to war against Russia in 1854 and 1855 were composed of warships incorporating all the innovations of the preceding years but were commanded by an ultraconservative officer corps and manned by crews recruited and accomodated little differently from the days of Nelson.[61] However, the flexibility offered by steam power was starting to have a deeper effect on naval tactics. The foremost thinker of naval

[58] Sondhaus., p. 41.
[59] Ibid., p. 40.
[60] Ibid., p. 74.
[61] Clive Ponting, *The Crimean War: The Truth Behind The Myth* (London: Random House, 2005), p. 22.

warfare under steam was French admiral Bouet-Willaumez, who wrote the treatise *Batailles de Terre et de Mer* (Terrestrial and Naval Battles, 1856). He prophesised that due to the independence in mobility provided by steam, the naval battles of future would be decided by the craftiness, dash and boldness shown by the personnel of individual ships.[62] The naval battles which took place between 1860-1895 would vindicate the veteran French admiral; until advances in signalling and gunnery through the 1890s would once again impose fleet discipline and line ahead as key to victory.[63]

Shell Gun, Iron and Steel

The incremental but dramatic change from wood to iron and steel in the building of warships between 1860-1890 closed the loop of transformation which began with the introduction of steam propulsion. Altough it is often perceived as an independent development, the introduction of armor was closely linked with the critical changes in naval artillery and the emergence of reliable incendiary ammunition.

Just as steam power, neither incendiary ammunition nor metal naval armor were new discoveries. In East Asian naval warfare use of rockets and incendiaries was established by the twelfth century AD. During the Japanese military ruler Toyotomi Hideyoshi's invasion of Korea in 1596, Korean admiral Yi Sun-Sin supervised the construction of *geobukseon*, the fabled "turtle ships" covered with metal plates which protected the crew, and armed with gunpowder artillery. They proved central in the defeat of the Japanese

[62] Sondhaus, pp. 66-67
[63] Tucker, p. 253

invasion armada.[64] In European naval warfare, however, the established norm was forcing the surrender or retreat of the enemy warship, rather then destroying it ultimately, so the use of incendiary ammunition was much rarer. When used, it was generally an iron cannonball "baked" in fire until it became glowing red. This was not a particularly successful or accurate weapon and despite its psychological impact, red hot shot did not push European navies to develop metal armor. It was only with the advent of a reliable shell gun that incendiary ammunition became a threat, which ultimately forced the adaptation of metal armor.[65]

Along with the advances in shipbuilding and propulsive power during the 1820s and 1830s, there was an equally dramatic transformation in artillery. As a result of the advances in metallurgy, it was now possible to cast long and heavy guns which could resist heavier charges of explosives, thus providing a longer range for heavy projectiles. In 1822, Colonel Henri Paixhans, mentioned above, produced a new 68-pound gun which fired an explosive ammunition that was able to doom any wooden warship. This ammunition consisted of a hollow spherical case filled with gunpowder, and was fitted with a time-set fuse ignited by the sparks produced by the propellant.[66] As reliable as the new ammunition was, the great expectations were dashed when it was discovered that the gun was slow to load, inaccurate and possessed only half the range of lighter conventional guns. Nevertheless, the possibility of one or more well placed hits which could destroy a battleship in the closer range gunfights was attractive enough to naval staff

[64] Stephen Turnbull, *Fighting Ships of The Far East, v.2 Japan and Korea 612-1639* (Oxford: Osprey Publishing, 2003), pp. 16-20.
[65] Lambert, Andrew. "Iron Hulls and Armour Plate," in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), p. 50.
[66] Tucker, pp. 78-79

and it became customary to load a few of those pieces on battleships and frigates. But especially for auxiliary paddle steamers which had limited gun space, the highly destructive heavy gun was the choice of weapon *par excellence.*[67]

The vulnerability of wooden ships to shell gun was demonstrated more than once during Crimean War (1853-55), the most famous example being the destruction of the Ottoman Winter squadron at the Battle of Sinop by the Russian Black Sea Fleet at the start of hostilities in November 1853. Impressed enough by the performance of the Paixhans gun at Sinop and against the allied fleet bombarding Sevastopol, Napoleon III ordered floating armored batteries to assault the Russian fortifications at Crimea. Designed by Dupuy de Lôme, the *Dévastation*, a class of three 1575-ton flat bottomed craft, were ready for the assault on Kinburn on 17 October 1855. Protected by a 4-inch thick wrought iron belt, equipped with machinery giving a speed of just 4 knots and three light collapsible masts in case of emergency, French floating batteries were not suitable for open sea service and had to be towed all the way long from France to the Black Sea. However limited they were, at Kinburn the three ships approached 1000 yards to the fortress and sent 3000 rounds into the fortification with impunity. By the end of the day, the fortress surrendered.[68] The armored warship had come of age.

Upon the success of his armored batteries, de Lôme resurrected his project of building a fully seaworthy armored warship. In the rapidly deteriorating diplomatic atmosphere between France and England after the end of the Crimean War, Napoléon III agreed to let de Lôme proceed. In

[67] Sondhaus, pp. 22-23
[68] Ibid., p. 61.

March 1858, the new ship was laid down in Toulon. By her measurements and underwater hull shape, she was practically a copy of the traditional looking *Napoléon*. However above the waterline everything was different. The slab-sided vessel carried her thirty-six 6.4-inch rifled muzzle loading guns on a single deck and the broadsides were covered with 4.5-inch thick wrought iron armor. Although possessing three masts and a symbolic barquentine rig, the 5630-ton armored frigate was clearly propelled by steam power alone, cruising at the maximum speed of 13 knots. Christened with the name *Gloire*, de Lôme commented about her creation that compared with traditional wooden warships she would be like a "wolf among a flock of sheep."[69]

The *Gloire* created a stir across the Channel and the answer to this threat to British naval supremacy instantly came: the Royal Navy laid down the *HMS Warrior* in May 1859. Like her French rival, she was a broadside armed armored frigate but superior in every respect to the *Gloire*. Designed by Isaac Watts, the 9140-ton battleship was 125 feet longer than the *Gloire*, carried 200 tons more coal and could set twice the surface of sail for a maximum speed of 14 knots, a very important feature considering the limited endurance of early steamships and the global commitments of the Royal Navy. In fact, with a capacity to carry just 700 tons of coal and weak sailing capability *Gloire* would be suitable only for service within French national waters.[70]

The *Warrior* was armored with a 4.5-inch thick belt like *Gloire*, but carried forty guns. Half of this armament consisted of a new artillery

[69] Lambert "Iron Hulls and Armour Plate," pp. 53-54.
[70] Ibid., pp. 55-56.

development: Armstrong's 7-inch breech loading gun. The breech loading system was without doubt the ideal sought for the ever growing sized nineteenth century artillery, providing a vast improvement in accuracy and rate of fire.[71] However, the cast iron used to produce guns was not a suitable material for breechloding artillery, not being tensile enough to stand the shock of propellant. Also, Armstrong's loading mechanism was prone to a high degree of gas escape, which badly affected range and accuracy. As a result of many accidents and insufficient performance, the Royal Navy returned to heavy rifled muzzle loading guns in the middle of the1860s; other navies followed suit. Only after Krupp's perfection of high tensile steel casting methods and the development of a reliable breechloading mechanism in the late 1870s, did breechloading artillery replace muzzle loaders. Accordingly, the *Warrior* was re-armed in 1865 with an all muzzle loading armament.[72]

Besides superiority in endurance and weaponry, the *Warrior* was superior also to the *Gloire* in perhaps the most important aspect: construction material. Whereas the French vessel was a wooden hulled ship plated with iron armor, the *Warrior*'s hull was fully constructed of iron.[73] Unlike armor and incendiary ammunition, the iron-hulled ship was a truly novel feature in maritime history. Four centuries of increasing trade and increasing size of navies and ships in the Western hemisphere had resulted in a serious depletion of forests suitable for shipbuilding by the end of eighteenth century. While the traditional naval supplies were thus becoming costlier to acquire;

[71] Sondhaus, p. 75.
[72] Campbell, John. "Naval Armaments and Armour," in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), pp. 158-160.
[73] Tucker, p. 70.

with the advent of the industrial revolution iron was becoming a cheap and widespread construction material for the first time in history.[74]

In the late eighteenth century there already had been iron barges in use on the Thames River. In 1822, such a craft had been fitted with a simple steam machine to become the *Aaron Manby*, the first iron-hulled ship of history. In the 1830s, the Scottish shipyards that specialised in iron construction commissioned a few experimental open sea steamers, the most fabled being perhaps the *Nemesis* of the East India Company. Armed with two guns and congreve rockets, the 700-ton vessel wrought havoc on the Yangtze river during the First Opium War (1839-42).[75] These first experiments also served to pinpoint and solve the initial problems of iron hulls, such as its adverse effect on the ship's compass and rapid corrosion.

By 1845, iron ship construction technology had matured enough for Isambard Kingdom Brunel to build the then gigantic merchant liner *SS Great Britain* of iron, a vessel which is today preserved as a museum in Bristol and is considered "the first modern ship."[76] After the success of the *Great Britain*, iron rapidly spread as a major shipbuilding material. However, as iron hulls required extensive dockyard facilities to maintain, they were deemed not feasible enough to be used on ships which were to serve at distant stations where there were not even basic docks. As a result, composite hulled ships which had iron keel and frames planked with hardwood became widespread

[74] Sondhaus, p. 67.
[75] Lambert "Iron Hulls and Armour Plate," pp. 47-48.
[76] Corlett, E.C.B; "The Screw Propeller and Merchant Shipping 1840-1865" in *The Advent of Steam: The Merchant Steamship before 1900*, edited by Basil Greenhill (New Jersey: Chartwheel Books, 2000), p. 89.

both as merchantmen and cruising warships until durable steel hulls became available by the 1880s.[77]

With the commissioning of the *Gloire* in 1859 and the *Warrior* in 1860, the era of the ironclads had thus begun. The wooden ship-of-the-line which had dominated the seas since the sixteenth century was now part of history. By rendering the ship-of-the-line obsolete, the ironclad had created a *tabula rasa* situation which equalised naval rivals throughout the world; just like the *Dreadnought* would do 45 years later. Aside from the old naval powers in North Sea and the Baltic, new naval powers in the Adriatic and Americas started to place orders for ironclads in a new naval arms race. By 1870, Britain had commissioned thirty-seven, France thirty-five, Russia ten, Spain seven, Denmark three, Italy sixteen, Austria-Hungary eleven and Peru two armored ships with open sea capability. The Sweden had three and Brazil had thirteen small coastal ironclads. The United States had built a mighty armored armada during the American Civil War (1861-1865) and by 1870 had some fifty-one ironclads but all these were quite small coastal craft incapable of open sea work.[78]

The appearance of the ironclad warship also started a technological competition between armor and gun. In order to penetrate ship armor, naval guns immediately started to increase in caliber and size. While the *Warrior* was armed with cannons firing 7-inch shells, the Unionist ironclads of the American Civil War were usually armed with at least one gun firing a 15-inch

[77] Sondhaus,p. 84.
[78] Ibid., p. 103.

shell by the end of the conflict. By 1870 the Armstrong foundry had produced a 17.7-inch monster gun weighing over 100 tons.[79]

To counter this growth of firepower, first experiments were made with "sandwich" armor consisting of wrought iron plates covering a teak core. By the start of the 1870s compound armor was developed by covering the surface of iron plates with steel and it became the standard protection used on warships until the 1890s. In 1890, Harvey's nickel-steel armor, developed by the American inventor Hayward Augustus Harvey through a carbonization process, was presented to the naval circles. The Harvey armor proved to be almost indestructible compared to the compound armor. Meanwhile, the German industrial giant Krupp was developing a "gas cementing" method to produce steel armor plates. This method was perfected by 1894, and in trials it proved to be twice as effective compared with Harvey plates of the same thickness.[80]

In this race between the armor and the gun, it was early on obvious that only artillery of great size could ever penetrate the ever-thickening armor plates. But it was impossible to mount other than a few of such guns onto a warship and broadside arming was not an effective method for using such ordnance. The answer came in the shape of a revolving gun turret, capable of all round fire. Two ingenious men developed their own designs on both sides of Atlantic. The first was Captain Cowper Coles, RN, who fought in the Crimean War and engineered a circular shaped artillery raft which was able to turn 360 degrees at the spot where it was moored to bombard Russian shore

[79] Tucker, pp. 158-159.
[80] Sondhaus, pp. 164-165.

positions in the Azov campaign. Upon this experimentation, Coles developed an elaborate turret design which turned on rollers below deck level.[81]

In the U.S.A, it was the ever ingenious John Ericsson who developed a turret design. This featured a circular armored box situated on deck and turning on a central steam powered spindle. Upon the start of the American Civil War, he managed to convince the Union Navy to proceed with his design of a turreted ironclad gunboat. The 987-ton craft was a vessel of shape never seen before; basically an iron raft with almost no freeboard, masts or sails. Capable of 9 knots, she was armed with only two 11-inch guns in an Ericsson turret.[82] Christened the *Monitor*, Ericksson's gunboat was barely capable of even inshore cruising but her battle experience proved decisive in the adoption of turret in world navies.

By March 1862, the Confederate navy built a mobile armored battery out of the wooden screw frigate *USS Merrimack*'s scuttled hull. Re-christened the *Virginia*, this awkward ship was expected to break the blockade of Chesapeake Bay. The *Monitor* was ordered to join and bolster the defenses of the wooden blockading squadron, but she could arrive only a few hours after the *Virginia* sortied and wrought havoc, sinking two powerful frigates with impunity on 8 March 1862. When the Confederate ship returned next day, the *Monitor* challenged her and a four hour long artillery duel between the two unusual vessels followed. This first battle between ironclads ended indecisively, with both vessels retreating at the end of the day. The

[81] Tucker, pp. 134-135.
[82] Sondhaus, p. 78.

Monitor's turret, however, proved to be far more useful than the broadside armed *Virginia*.[83]

Regardless of this ship type's strictly littoral nature, a "Monitor fever" gripped the Union navy and eventually all the fifty-one ironclads completed by the end of the war were one or two turreted monitors, improved upon Ericsson's original design. The duel of the *Monitor* and the *Virginia* also made a deep impact in Europe, especially among minor powers whose small budgets would not sustain large seagoing ironclads and for landpowers who were seeking an effective coast defense ship type.[84]

The integration of the turret was also the starting point for the disappearance of masts and sails from battleships. As the turret needed an unobstructed line of sight to be effectively used, masts and rigging were obstacles. Another reason for the incompatibility of masts and turrets was the strain to ship's the balance caused by the combined weight of these two design features. Ship designers, however, did not trust the capability of naval machinery enough to omit masts and sails altogether. But, when the new three masted turret ship the *HMS Captain*, designed by Cowper Coles, capsized and sank during a gale with very heavy loss of life in September 1870, the sombre lesson about the need for deleting masts and sails from turret carrying ships was duly learned.[85]

In 1873, the Italian navy laid down two 11,200 ton battleships, the *Duilio* and the *Dandolo*. Designed by the chief builder of the navy Admiral Benedetto Brin, they carried four 17.7-inch Armstrong guns paired in two

[83] Tucker, pp. 116-117.
[84] For a case study of the *Monitor*'s effects on minor navies, see: Jan Glete "John Ericsson and the Transformation of Swedish Naval Doctrine", *International Journal of Naval History*, Volume 2-Number 3, December 2003
[85] Sondhaus, p. 87.

turrets and were devoid of any masts and sails. The sisterships each had a very high freeboard and an all steel armor belt, with considerable speed and reliable machinery. The building of the *Duilio* and *Dandolo* marked the birth of the true battleship. These came to be called pre-dreadnought after 1905.[86]

In the two decades following the building of the *Duilio* and *Dandolo*, naval design bureaus experimented with various designs to find the best balance between speed, armor and firepower in battleships. Against the threat posed by the newly invented torpedo craft and modern cruisers, a battery of quick firing medium caliber artillery was implemented in the 1880s. Advances in boiler and machine technology raised the average speed. By 1895, as exemplified by the British *Majestic* class, a first class battleship carried a main battery of four 12-inch breechloading guns on two turrets in the centerline, a secondary battery of about a dozen 6-inch quick firing guns divided into two broadsides, all steel hull and armor with an average speed of 16-18 knots.[87]

The *Jeune Ecole*

The 1880s witnessed the rise of a new and revolutionary new school of strategy centered in France. Called "*Jeune Ecole*" (Young School) by the press, the propenents of the new strategy envisioned the future of naval warfare with the lumbering slow battleship wiped out by the swift, new and revolutionary torpedo craft and the foe being brought to his knees by a ruthless commerce raiding campaign.[88] After the Napoléonic Wars, France

[86] Tucker, pp. 144-145.
[87] Watts, p. 65.
[88] Tucker, pp. 151-152.

had given up any hopes of challenging British naval supremacy on equal terms, and instead turned to new technology to gain an advantage; pioneering the use of steam power, shell gun and armor plating. Ironically, in this new naval race against her traditional foe, France let itself down. The weakness of French industry allowed Britain to exploit the technological breakthroughs achieved by French ingenuity far more effectively. By 1880, the Royal Navy had bested the challenge of France which started with the building of *Napoléon* three decades earlier. In this psychological climate of defeat on both land (Franco-Prussian War of 1870-71) and sea, a cabal of new generation French naval officers led by Admiral Théophile Aube turned to a radical new weapon, the concept of which was even beyond the British capacity to answer in the short run: the self-propelled torpedo.[89]

The development of an underwater weapon to sink warships was not particularly new; the first ideas about them had been recorded in the seventeenth century. During the American War of Independence (1775-1783), Bostonian patriot David Bushnell made the well-acclaimed but unsuccessful attempt to sink the flagship of the Royal Navy squadron in New York harbor by placing a time fused cask of explosive under the hull from a submersible boat. It was the steamship pioneer Robert Fulton who coined the name "torpedo" for such underwater weapons, building a man-powered prototype submarine boat and blowing up a hulked ship with a contact fused torpedo towed by this craft in 1802 during a demonstration for the First Consul Napoléon of France.[90] After Fulton, the term "torpedo" came to mean

[89] Ropp, Theodore. "Kıt'ada Ortaya Çıkan Deniz Gücü Doktrinleri," in *Modern Stratejinin Yaratıcıları*, edited by Edward Mead Earle (Ankara: ASAM Yayınları, 2003), pp. 371-372.
[90] Wilson, Michael. "Early Submarines," in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), p. 147.

what we call today "naval mine." Such crude immobile "torpedoes" were used in the Crimean War by the Russians, without success. It was in the American Civil War that the "torpedo" came to its own. Especially used by Confederates, "torpedo" fields were widely used to close southern harbors and major rivers, causing the loss of dozens of Unionist ships. The first successful offensive use of the torpedo was also in that conflict. Steam launches and semi-submersible craft fitted with spar-torpedoes[91] earned widely acclaimed successes such as the sinking of the Unionist sloop *Housatonic* by the Confederate submersible *Hunley* in February 1864, and the destruction of the Confederate ironclad *Albemarle* by a Unionist torpedo boat in October of the same year.[92]

The torpedo became the self-propelled weapon as it is understood today in 1868. Four years earlier, Austro-Hungarian Navy Captain Johann Luppis had developed a compressed air propelled, cigar shaped torpedo which cruised on the surface. British engineer Robert Whitehead, who owned a workshop in the principal Habsburg naval base of Fiume, took the concept of Luppis and developed it into a weapon which cruised underwater with the help of a hydrostatic depth regulator. First bought by the Austro-Hungarian navy, Whitehead's patented weapon was quickly sold to virtually all navies of some efficiency by the end of 1870s, including that of China. However, this early Whitehead torpedo had only a speed of 7 knots with a warhead containing less than 20 pounds of dynamite, making its successful use to depend on luck as much as skill. Therefore, spar-torpedoes of greater

[91] Spar torpedo was the first offensive underwater weapon. It was a conical shaped explosive warhead fitted on a two meter long pole and exploded with a lanyard from a safe distance after being pinned to the hull of the victim. Campbell, p. 166.
[92] Sondhaus, p. 81.

explosive power remained in inventories until the mid-1880s, when self-propelled torpedo became a truly reliable and powerful weapon.[93]

After the invention of the self-propelled torpedo, the next step was to design a craft to use it in the most effective way. The answer came from the Thornycroft Company of Britain, an expert in designing swift and small yachts. In 1876, the *Lightning* was built at this shipyard, a 32-ton launch capable of 19 knots and equipped with two racks on each side launching Whitehead torpedoes. By the early 1880s, torpedoboats of modified *Lightning* design were being mass produced for various navies.[94] These early boats were barely capable of operating in the vicinity of harbors, let alone littoral capacity and soon a diversification of torpedo boats emerged for different duties. The first class of torpedo boats were around 120-200 tons, designed to accompany cruisers in the open sea forays of commerce raiding. Second class boats were of 60-115 tons, built for coast defense and third class boats were tiny 30-50 ton craft similar to *Lightning*; often carried aboard cruisers and battleships as auxiliaries.[95] With the development of the torpedoboat the question arose about the tactics to use it to best effect. Various naval maneuvers conducted in the 1870s and 1880s showed that flotillas of torpedo craft working under the cover of darkness could litteraly wipe out a squadron of battleships lying at anchor off an enemy port. The days of the close blockade were over.[96]

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[93] Sondhaus, p. 110.
[94] Watts, p. 55.
[95] Lyon, David; "Underwater Warfare and the Torpedo Boat," in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), pp. 139-142.
[96] Tucker, pp. 169-170.

Such was the state of naval technology when Admiral Aube returned to France in 1883 from colonial duty, where he had passed all his career. In conjunction with his experience, he had witnessed the ironclads rusting at anchor for years and never firing a shot except in training maneuvers, while the unglamorous cruisers assigned to far flung outposts were continually in some kind of action to defend their nations' interests. The only great novelty promising a true breakthrough was the torpedo boat. His radical new ideas about naval warfare were crystallised into two essays. When a journalist named Gabriel Charmes was attracted to his views and began penning articles to advocate Aube's ideas, the French admiral found also a speaker to the general public.[97]

According to Aube, the principal *raison d'être* of the battlefleet throughout the history of the French Navy had been the protection of an expeditionary force destined to make an invasion of Britain. As he argued, in the days when ships were dependent to the untrustworthy power of the wind, the necessity of battleship squadrons to protect transport convoys was understandable. However, everything had changed with the strategic revolution of steam power. The ships had now full freedom of movement. Considering the success of the Confederate blockade runners in the American Civil War, Britain could no longer contain suitably built French ships at ports.

But Aube was not interested much in an invasion of Britain. Such an undertaking would be over-risky and costly. Nor there was need to invade Britain anymore as ironically the Island Nation had become mortally vulnerable because of its very own wealth. For the first time in history, the

[97] Sondhaus, p. 141.

British economy was totally dependent on food and raw materials that came from aboard. Thus, once this lifeline was severed with the indiscriminate hunt of every freighter heading for the British Isles, regardless of neutrality, the United Kingdom simply could not survive. Moreover, thanks to the mine and the self-propelled torpedo, the Royal Navy should no longer dare to mount a naval assault on French ports harboring commerce cruisers. Reflecting the Social Darwinist ideas in vogue during the epoch, Aube adopted the slogan, "Attack to the weak unabatedly; run from the strong unashamedly !"[98] Against those who condemned his theories with charges of immorality and disregard of international laws, he replied "War….is a negation of law itself !" Despite Aube's radical perception, commerce raiding remained subject to severe prize rules, but these vanished into history with the brutal transformation of the commerce raiding into unlimited submarine warfare during the First World War (1914-1918).[99]

According to *Jeune Ecole* advocates, the cruiser, the ship class which was to conduct the commerce raiding operations, was to be completely redefined as a multifunctional vessel propulsed only by steam, armed with long range guns and torpedo tubes and protected by some armor. Until that time, warships rated as cruisers had been the full rigged and broadside armed frigates and corvettes not much different from those of the Age of Sail; only assisted by an auxiliary steam plant. Ironically, the pioneer of the modern cruiser was to be Britain. In 1881, Chile, which was at war with Peru, ordered an "open seas gunboat" for its navy from the Armstrong Yard of Britain. The 3000-ton ship, created by chief builder George Rendel, revolutionised the

[98] Ropp, pp. 373-374.
[99] Sondhaus, p. 142.

cruiser class. Completely constructed of steel, she had a 2-inch armored deck protecting the vital sections like engines and magazines, was armed with a main battery of two 10-inch guns in the centerline and a secondary battery of six 6-inch guns divided into two broadsides. Possessing no rigging or sails, Rendel's cruiser was equipped with powerful and reliable machines capable of providing a maximum speed of 18 knots. Completed in 1884 and named *Esmeralda*, she was the first "protected cruiser"; the design principals of which were imitated. Improved sisterships were built by her parent yard in large numbers for various navies influenced by the Jeune Ecole.[100] Always eager to keep the technological edge over its arch-enemy, the French navy introduced the armored cruiser, the *Dupuy de Lôme* of 1888, by adding an armored belt sufficient to stop medium caliber shells to the protected cruiser layout.[101]

Regardless of the context in which it was developed, the *Jeune Ecole* created a major stir in navies worldwide. In Europe, Germany and Austria-Hungary, states which had large coastlines to defend but geopolitically landpowers with an imperative to spend the majority of defense budget for the army, wholeheartedly embraced the new strategy as the perfect solution to their naval defense problem. In Germany, where both navy ministers during the Bismarck era were army generals, there was a unity of will to keep naval spending at minimum in favor of the army. German maritime strategy was built upon fortified ports which harbored squadrons of ships specifically designed to break a blockade by a superior naval power. Thus, when the torpedoboat emerged as the perfect seagoing battleship killer, it became the

[100] Sondhaus, pp. 139-140.
[101] Roberts, John. "The Pre-Dreadnought Age 1890-1905," in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), p. 128.

natural weapon of choice for the German high command. Between 1883 and 1888, the year when the bluewater navy proponent Kaiser Wilhelm II ascended the throne and Bismarck quit the office, the German navy had comissioned seventy two torpedoboats, the majority from the Schichau yard which became the world leader in designing torpedo craft.[102]

In Austria-Hungary, where the very existance of the navy itself was jeopardized after Italy joined the Tripartite Pact in 1882, the *Jeune Ecole* became a life saver. For the seventeen years between 1876 and 1893, Austro-Hungarian navy virtually abandoned battleship construction, but between 1883 and 1891 commissioned fifty three torpedoboats, six torpedo gunboats and five cruisers. Baron Maximilian von Sterneck, the Commander of the Austro-Hungarian navy, developed elaborate tactics for using torpedoboats to best effect.[103]

The Ottoman navy, due to the effect of Russian torpedoboats during the War of 1877-78, political wrangling and lack of money, also turned to the *Jeune Ecole*, while Russian and Italian navies took very different lessons from their war experiences and went in very different ways. In the United States, where the senate always hostile to defense spending had condemned the navy to ridiculous budgets after Civil War, the naval buildup which had slowly started with the "New Navy" program of 1883 included no battleships but cruisers for commerce raiding.[104] Even in Britain the *Jeune Ecole* had a tremendous effect, with a lot of questions raised over the future of battleship and building of cruisers to patrol and defend sealanes dramatically

[102] Sondhaus, p. 146.
[103] Ibid., p. 145.
[104] Ibid., pp. 152-154.

increased.[105] In East Asia, where there was an escalating naval race between China and rapidly modernizing Japan, the two countries followed different courses as well. The story of the Ottoman, Russian, Japanese and Chinese navies during the *Jeune Ecole* period will be discussed later.

The reign of the *Jeune Ecole* ended after about fifteen years, at the end of 1890s. As mentioned before, developments in machinery and boiler technology and of quick firing medium caliber guns were gradually applied to battleships as well, increasing dramatically their maneuvrability and defense capability to evade torpedo attacks.[106] Meanwhile, the Royal Navy pioneered a new type of warship to escort the battlefleet against torpedoboats in the open sea. Called "Torpedo boat-Destroyer," but soon called simply "Destroyer", this new ship type was considerably larger and far more seaworthy with a weight of 250-300 tons and an armament of a couple of quick firing guns and torpedoes.[107] Finally, during the first Sino-Japanese War of 1894-95, the Japanese warships which were built upon *Jeune Ecole* principles won victory by traditional fleet battle, practically discrediting teachings of the radical French naval circle.[108] However, two legacies of the *Jeune Ecole* proved to be long lasting: the idea of destroying battleships by using cheap and swift torpedo platforms, and defeating a foe dependent on maritime trade by ruthless commerce raiding. The first vision decisively realised with the torpedo aircraft during the Second World War, while the submarine emerged as the ultimate commerce raider during 1916-18.

[105] Ropp, p. 372.
[106] Sondhaus, pp. 156-157.
[107] Watts, p. 60.
[108] Tucker, pp. 240-241.

Mahan and the Rise of Japanese Naval Power 1887-1905

In the early 1880s, during the heyday of the *Jeune Ecole*, Captain Alfred Thayer Mahan, who commanded a U.S Navy gunboat off the Chilean coast, liked to read history, especially German historian Theodor Mommsen's *History of Punic Wars*. Upon reading about Hannibal's epic crossing of Alps, he questioned why he did not had taken the far more secure and easy maritime path. He concluded that as the Romans had controlled the sea, they were able to deny the comfort of maritime transport to the Carthaginian general. After his appointment to the U.S Naval Academy at Annapolis in 1885 as instructor, he further applied his analysis into the long struggle of France and Britain throughout the seventeenth and eighteenth centuries, to develop the theory of naval warfare in world politics. His research culminated in 1890 in the groundbreaking work: *The Influence of Seapower Upon History 1660-1783*.[109]

Considering the rather limited perception of naval power by the United States policymakers throughout the nineteenth century, the fact that the first serious theory of naval power came from a rather obscure American officer must have been surprising to many at the time. However, a closer examination of Alfred Thayer Mahan shows that he possessed the necessary blend of intellectual background and actual experience, both in war and peace. Born on 27 September 1840, he was son of the influential U.S Army historian and fortification expert Dennis Hart Mahan. Thus, it can be argued that he was exposed to historical methodology from his family. Young Mahan graduated from the Naval College in 1859 and took an active part in the

[109] Sondhaus, p. 162. Alfred Thayer Mahan, *The Influence of Seapower Upon History* 1660-1783 (Boston: Little and Brown, 1890).

American Civil War as a lieutenant. After the war he spent time both ashore and on cruising duty, witnessing various interventions of strong naval powers in different parts of the world. It is possible that his observations led him to think more seriously about seapower.[110]

In the *Influence of Seapower* Mahan put forward the idea that, it was the possession of overseas colonies providing raw materials and markets for produced goods which ensured the greatness of nations. The key to the control of overseas trade from colonies was the navy providing command of the seas. Any nation aspiring to become a world power needed a strong battlefleet composed of heavily-armored, big gun warships to ensure the freedom of its merchant fleet and to deny its foes the same.[111]

Mahan's ideas were groundbreaking in many respects. First, he became the first theorist to underline the correlation between geography, economy and naval power. Secondly, he made clear for the first time that a strong navy must rest on the coalition of various social groups in society who had an interest in having a superior naval power, like merchants, heavy industry magnates and shipping corporations.[112] However, his ideas were also fundamentally flawed in many ways. Above all, arguing that a battlefleet is needed to acquire colonies was putting the cart before the horse. Britain had not became a superpower because it possessed a colony hunting battlefleet; to defend its already existing colonial empire did Britain built a strong navy. Also, for Mahan, the armies were not of great of importance, what mattered was the naval power. But this "navalism" could not answer the success of

[110] Sprout, Margaret Tutle. "Mahan" in *Modern Stratejinin Yaratıcıları*, edited by Edward Mead Earle (Ankara: ASAM Yayınları, 2003), p. 348.
[111] Ibid., pp. 351-352.
[112] Sondhaus, p. 163.

territorial empires like those of the Ottomans, the Romanovs or the then very recent example of the Prusso-German Empire.[113]

Mahan's shortcomings are understandable considering his era and motives. Just a few years before the publication of his book, a survey of the Royal Navy's actual fighting power had been conducted to assess its ability to cope with the combined fleet of a possible Russo-French alliance. The result which exploded like a bomb in the press revealed a total scandal: let alone fight with such a coalition, the Royal Navy had barely enough power to struggle with the French navy alone. The defensive preparations of the colonies were virtually non-existent; if any enemy landed troops to Britain's overseas possessions, it could easily conquer them.

The outrage in Britain over the report led to the passing of the Naval Defense Act in 1889. With this legislation, Britain re-affirmed the "two power standard" and pledged to build ten battleships, nine armored cruisers, thirty three protected cruisers and eighteen torpedo-gunboats.[114] The scandal revealing the Royal Navy's complacency echoed worldwide. It seemed that the power of Britain was waning and it was probably a good time to prepare to raise challenges to its superiority at seas. The enormous scope of the Naval Defense Act also prompted naval officers of the newcoming industrial powers to raise their voices for a similar naval reinforcement worthy of their own potential might. From that perspective, Mahan's principal impulse in penning *Influence of Seapower* was to provide a reliable theoretical leverage to

[113] Charles London, *Jutland 1916: Clash of the Dreadnoughts* (Oxford: Osprey Publishing, 2000), p. 8.
[114] Watts, pp. 61-62.

convince policymakers and interest groups to rebuild the U.S navy as a bluewater force.[115]

Coupled with the Naval Defense Act, *Influence of Seapower* was hailed as the ultimate discourse about the role of the navy in international power politics both in the U.S.A and in Britain, where the governments were ecstatic to have a justification for the monstrous increase in naval spending to taxpayers. Mahan had an even more profound impact in Germany and Japan. With Mahan, both the over zealous pro-navy Kaiser Wilhelm II and Admiral Alfred von Tirpitz, his right hand man in the development of Imperial German navy, found the perfect pill to be swallowed by a population and an elite which had so far no idea, experience or interest in possessing a world class fleet.[116] However, the rapidly modernizing Japan's embrace of Mahan and navalism far surpassed that of even Germany and had the longest and most profound impact. This may be understood by the fact that Japanese and German were the first languages into which *Influence of Seapower* was translated (1895), and the Japanese went one step further by making Mahan required reading at their naval academy in 1896.[117]

The rise of Japanese naval power constitutes a unique case in world history. It is the only example of a global scale navy being created by a nation which was non-European, and moreover had come out of the feudal age just two decades earlier. Furthermore, neither the Japanese state nor society ever had ever seen anything like the building of a specialist warship, let alone an organized navy. Due to its unequalled story and to provide a necessary pivot

[115] Sprout, p. 352.
[116] London, p. 9.
[117] Sondhaus, p. 164.

point with which to compare the Ottoman example, a concise summary of the birth and the rise of Imperial Japanese navy will be given.

Japan was a feudal, largely introverted, autarchic nation until American "gunboat diplomacy" forced the country to open its doors to the West in 1853. The Shogunate, the military dictatorship which had ruled Japan for centuries, made a half-hearted attempt at modernization, but upon its failure to resist, the Western powers flocked to Japan with their gunboats to demand concessions. The shogunate was toppled by a coalition of powerful feudal Samurai lords who wanted a more radical strengthening of the state to restore the national power by re-establishing, at least nominally, the authority of the long since symbolic emperor.[118]

The Imperial Japanese Navy (*Dai-Nippon Teikoku Kaigun*) was formally established in July 1869 after the end of the Boshin War, a largely maritime campaign conducted to root out the last pro-shogun opposition to Emperor Meiji's restoration. It was a ragtag collection of twelve ships which had passed from the defunct Shogunal Navy and squadrons formed by feudal domains which supported the emperor. The navy had no independent administration at this stage, being directed by the Ministry of Military Affairs along with the army. Avaliable warships included four sailing vessels and the only armored ship under Japanese flag, the *Adzuma*. This small, 1360-ton, 3-gun coast defense ironclad had been built in France for the Confederate navy during the American Civil War, and subsequently sold to the Shogunate, but delivered to the restoration forces. A larger ironclad, the 1430-ton, 12-gun

[118] For a full analysis of the Meiji Restoration see Marius Jansen, *The Making of Modern Japan* (Cambridge: Cambridge University Press, 2002), pp. 33-332.

armored corvette *Ryujo* arrived from England the following year to become the flagship.[119]

1870 became a turning point in the history of the imperial Japanese navy for that year an imperial decree established the British Royal Navy as the model for the institution. Three years later, a thirty four member British naval mission under Commander Archibald Douglas was invited and stayed until 1879 to teach at the Tsukuji Naval Training Center at Tokyo, itself an institution dating back to the Shogun's own modernization program. Meanwhile, fourteen cadets were sent to Britain and two to the United States in 1871 by the Ministry of Military Affairs; including Togo Heihachiro the greatest of Japan's future admirals, and Saso Sachu, the father of Japanese ship designing.[120] The adoption of Royal Navy as role model led to the wholesale import and assimilation of British naval traditions by the Japanese navy down to the officer-rating relationships, an unparalleled experience in naval history. No other newly constituted naval power in the world achieved such a cultural shift with success. It's argued here that, Anglo-Japanese tradition transfer is one of the strongest refutations to the "take western technology but not its culture, like the Japanese did" misconception oft-cited in Islamic countries.

The 1870s also saw debates on the status of the navy in the Japanese grand strategy, and when the industrial basis of naval power really did start. First came the establishment of the navy as a fully independent institution with the instigation of the Navy Ministry in 1872. Debates about the role of navy were spurred by both the foreign and internal affairs of Meiji Japan. In

[119] Hansgeorg Jentschura, Dieter Jung, and Peter Mickel, *Warships of the Imperial Japanese Navy 1869-1945* (Annapolis: Naval Institute Press, 1986), pp. 11-12.
[120] Peattie and Evans, p. 12.

1871, the aboriginal tribes of Taiwan massacred shipwrecked Japanese sailors from the Ryukyu islands. Japan demanded indemnity for its subjects from the Chinese court, without success. As a result Japan mounted a punitive expedition to Taiwan in 1874 and only retreated after receiving 500,000 Taels from the Qing court.[121] The Taiwan expedition showed the weakness of China and opened Japanese eyes to the possibility of expanding in the maritime direction. Another consideration was the re-awakened interest in Korea, with many high-status policymakers dreaming of ultimate domination over this country. All such ambitions required a strong navy to dominate the seas around Japan for a secure passage to the coveted territories. In the same year as the Taiwan expedition, navy minister Katsu Kaishu drafted a plan for the establishment of a hundred ship navy divided into ten fleets. This over-imaginative plan was refused immediately by the Imperial government for lack of funds.[122] Eventually, the debates are brought to a close by internal affairs.

Throughout the early years of the Meiji era, the sweeping reforms which destroyed the old society and the imposition of conscription along with high taxes on the peasantry for the establishment of a modern state caused widespread dissent. Many peasant revolts erupted but the most dangerous reaction came with the Satsuma uprising of the disgruntled Samurai in 1877. The rebellion turned into a virtual civil war and could only be repressed with great difficulty.[123] The lesson to everybody was clear: a strong army was the only security of the government and the greatest of priorities should be given

[121] Jansen, p. 423.
[122] Peattie and Evans, p. 7.
[123] Hyman Kublin "The Early Meiji Army", *The Far Eastern Quarterly*, Vol. 9, No. 1. (Nov., 1949), pp. 33-34.

to its development. Therefore, an imperial defense policy was shaped according to the *Rikushu Kaiju* (army first, navy second) principle; with the navy being structured according to *Shusei Kokubo* (static defense) strategy with a priority to defend Japanese coast. Accordingly, the Japanese naval administration was organized around regional bases called *Chinjufu*, each possessing the necessary docking, victualling and command facilities. The whole fleet of sixteen ships was divided equally into two squadrons, one at Yokohama the other at Nagasaki.[124] In tune with the changes in naval policy, a far more modest fleet program was initiated. During 1870's, three moderate-sized ironclads, the 3700-ton, 12-gun frigate *Fuso*, and the 2250-ton, 9-gun corvettes *Hiei* and *Kongo* were bought from Britain. In 1883, the Japanese navy commissioned the *Naniwa* and the *Takachiho*, the first real modern warships of the fleet. Designed by Saso Sachu and built in Britain, they were 3700-ton steel-hulled protected cruisers; shielded by a 3-inch deck, armed with two 10-inch and six 6 inch guns, four torpedo tubes, with a maximum speed of 18.5 knots.[125]

The 1880s were crucial years for the Japanese navy, for it was the decade when the industrial infrastructure, doctrines and seeds for the future transformation of the Japanese navy into a truly world class fleet were sown. The first modern naval base of Japan had been established at Yokosuka in the 1860s by the Shogunate with French technical help and supervision. However, it was only after the import of the necessary machinery and employment of skilled workers from Britain in 1884, necessary for knowledge transfer, that it was able to produce iron hulled warships of small

[124] Peattie and Evans, pp. 8-9.
[125] Jentschura, Jung and Mickel, pp. 13, 95-6.

size. Further new yards were set up at Kure and Sasebo. As it will be seen in the last chapter, Chinese arsenals were already building steel-hulled armored ships. But there was a crucial difference which was just emerging: the appearance of private shipbuilding companies in Japan, with heavy state subvension. The future's industrial giants like Mitsubishi and Kawasaki were first set up as humble enterprises in the 1880s but they rapidly started to develop due to considerable governmental contracts for guns, torpedoes, machinery and spare parts.[126]

The Taiwan expedition resulted in an immediate increase in Chinese naval spending, culminating in the acquisition of two battleships from Germany in 1885. Suddenly, Japan found itself totally outclassed by its principal adversary in the region. The strengthening of the Chinese navy provided a suitable pretext for the defeated proponents of a blue water navy to rekindle the discussion about the place of naval power in Japanese imperial defense. Pro-navy spokesmen launched a propaganda campaign in various Japanese cities to promote the cause of a strong navy and the building of a large merchant fleet to free the rapidly increasing Japanese trade from foreign shipping, with the slogan *Kaikoku Nippon* (Maritime Japan). Gradually they built up enthusiastic popular support, which proved to be decisive in the transformation of the Japanese navy into an open seas fleet.[127] The *Kaikoku Nippon* campaign clearly shows why Mahan had such an immediate and lasting effect on the Japanese navy, as his main argument for the necessity of seapower was almost the same as that of the pro-navy Japanese, who also shared the same defensive position with him on internal politics.

[126] Peattie and Evans, p. 5, 14.
[127] Ibid., p. 19.

Although *Kaikoku Nippon* was to be decisive in the long run, in the 1880s it failed to press the politicians for a true battlefleet. Minds in the government were still dictated by economy measures. Not surprisingly, the *Jeune Ecole*, which was enjoying its high water mark, had instant appeal during the preparation of the first naval expansion bill in 1882. No doubt, the naval ministry term of Enomoto Takeaki (1880-85), who was the ally of France on behalf of the Shogun during the *Boshin* War, had also influenced a temporary superiority of French influence in the 1882 naval program.[128] According to this legislation, twenty-two torpedo boats and twenty six other types of warships were to be built.

The majority of these ships were built under the supervision of the famous *Jeune Ecole* naval architect Emile Bertin. The first major warships to be ordered wer the *Naniwa* and *Takachiho* mentioned above. In 1885, the surplus Chilean light cruiser *Arturo Prat* was bought and commissioned as the *Tsukushi*. The 1370-ton ship was armed with two 10-inch and four 4.7-inch guns for a maximum speed of 16.6 knots. The following year, the first native-built steel hulled warship, the 1700-ton unarmored cruiser *Takao*, was laid down, followed by the slightly smaller 1500-ton semi-sistership *Yaeyama*. They were completed between 1889-1892. The 3600-ton protected cruiser *Unebi* was ordered from France the same year, but because of faulty design she capsized in the South China Sea during transfer in 1887. Her loss raised the first doubts about the validity of *Jeune Ecole* designed warships.[129]

At the center of the 1882 naval expansion program were the four 4200-ton units of the *Sankeikan* class specialist cruisers. Ordered in 1888 and

[128] Peattie and Evans, p. 15.
[129] Jentschura, Jung and Mickel, pp. 92-93, 96.

designed by Emile Bertin, these lightly armored protected cruisers were to be equipped with a single 12.6-inch Canet monster gun, but a large secondary battery of eleven 4.7-inch quick-firing guns was also added upon the far-sighted Japanese insistence. The logic behind their design was to act as "battleship hunters" or more properly as "battleship substitutes" against the Chinese fleet by exploiting their superior 16.5-knot speed and big gun. The first two units, the *Itsukushima* and *Matsushima*, were built in France while *Hashidate* and the *Akitsushima* were laid down in Yokosuka Yard, to be the biggest and most complex warships built in Japan to that date. While the French-built ships were ready in two years, the home built units could only be completed on the eve of the war with China in 1894. In trials, Bertin's concept was found to be a dismal failure, with the Canet gun so slow to load to the point of being almost non-functional, and accuracy being very low. As a result of tests, *Akitsushima* was re-configured as a more orthodox protected cruiser with a powerful battery of four 6-inch and six 4.7-inch quick firing guns. The construction of the two *Sankeikan* units provided invaluable experience to the Yokosuka yard in the building of large warships.[130]

The failure of the *Sankeikan* class along with the loss of the *Unebi* ended the brief influence of French doctrine in Japan. Thereafter, with a few exceptions, all the foreign built warships were ordered from Britain. Japan's only "armored" unit ordered before the Sino-Japanese War was the small, 2400-ton, British built (1888) armored cruiser *Chiyoda*, armed with ten 4.7-inch quick firing guns and three torpedo tubes, protected by a 4.5-inch compound belt and capable of 19 knots. The best unit of the Japanese navy

[130] Peattie and Evans, pp. 15-17.

during the Sino-Japanese War, the 4200-ton protected cruiser *Yoshino*, was completed by the Armstrong yard in 1893. Protected by 5-inch deck armor, she carried a very powerful armament of two 6-inch and and eight 4.7-inch quick firing guns along with five torpedo tubes for a speed of 23 knots, making her the fastest warship in the world.[131]

Despite the failure of the *Jeune Ecole* cruisers, its second aspect was to have perhaps the deepest impact in Japanese battle tactics: the torpedo. The cheapness of the torpedo was appealing to the government while the torpedoboat ethos which constituted daring, speedy attacks at close range was attractive to many officers possessing the traditional Japanese warrior spirit. The Japanese navy obtained its first torpedoes in 1886 and a torpedo school was opened in Yokosuka in the same year.[132] Torpedo boats were initially 54-ton French designs, shipped in sections and assembled in the Yokosuka yard. Thereafter German Schichau designs became preferred. However, a revolutionary craft of this class was ordered from Yarrow, Britain, in 1887, the 203-ton *Kotaka*. Built to a Japanese design, the *Kotaka* was armed with six torpedo tubes and six 37 mm quick firing-guns. In trials she proved to be able to accompany large warships in the open sea instead of being limited to coastal waters. With the *Kotaka*, the Imperial Japanese navy effectively invented what was termed the "destroyer" a decade later.[133]

While the Japanese navy was under *Jeune Ecole* influence in building its ships, paradoxically its tactics and strategy were entrenched firmly in the British mentality of fleet superiority. Two men became the catalysts in this crucial intellectual transformation, Lt. Cmdr. L. P. Willan, and Capt. John

[131] Jentschura, Jung and Mickel, pp. 71-72, 98.
[132] Peattie and Evans, pp. 37-38.
[133] Ibid., 17-18.

Ingles. Willan came in 1879 and worked for six years tutoring cadets like Shimamura Hayao and Kato Tomosaburo, all of whom were destined to become the ultimate architects of the Japanese naval thought in the 1910s. He penned many treatises on naval tactics which were then translated into Japanese. Even more than him, Ingles, who came in 1887, became the intellectual father of the Imperial Japanese navy. He was appointed as instructor to the Naval Staff College, which had been established in 1887, and upon his guidance the staff college became a first class scientific education institution, with mathematics, physics and engineering skills becoming required knowledge for acceptance and topics of further study inside. He also acted as advisor to Navy Minister Saigo Tsugimichi for the fleet modernization and under his influence the Japanese navy completely abolished the sail as a "machinery", thus transforming it into a full steam navy. Ingles was also the one responsible for the adoption of the line ahead and well-drilled gunnery skill as the main battle tactic instead of the ramming and close range mêlée favored in most other navies. His lectures were published in 1894 as *Kaigun senjitsu kogiroku* (A Transcript of Lectures on Naval Tactics).[134]

The final step in the transformation of the Japanese navy from a coastal defense force to a blue water fleet came with the ascent of Yamamoto Gombei into the Ministry of Navy in 1891. This strong willed and energetic officer had three principal aims: achieving full professionalization of the officer corps, complete freedom of the navy from the army by the establishment of an independent naval general staff, and to convince the Diet

[134] Peattie and Evans, pp. 12-13.

to fund a strong battleship navy. Up to his reforms, Japanese naval officer corps had been dominated by men of the Satsuma clan, whatever their professional background. Yamamoto swept through the ranks, sending scores of old or unqualified officers into retirement while opening the navy to men of all backgrounds provided they possessed the necessary talent.[135] In the establishment of an independent naval staff, he naturally met hostility from the army, which was threatened by the possibility of losing its primary position among the armed services. Nevertheless, through the personal intervention of Emperor Meiji, a compromise independent naval staff with authority limited to coastal defense duties was established in 1893 as a first step.[136] In his final attempt to build a large open-seas navy though, he was frustrated, despite his wide-scale attempts to establish a lobby by spreading the writings of Mahan and similar-thinking other theorists, like the British John and Philip Colomb. He was to achieve success in obtaining political support for a battleship fleet only after the events of the First-Sino Japanese War in 1894.[137] For all these critical achievements, Yamamoto Gombei is known as "the father of the Japanese Navy."

Thus was the situation in the Imperial Japanese Navy when the showdown with China came in 1894 over the mastery of Korea. Since the 1870s, Korea had been able to evade Japanese attempts to gain influence over the country by using its status as a protectorate of China. In 1894, tension finally escalated to war. The course of the war will be studied in more detail in the chapter dealing with the Chinese navy. What should be said here that the Imperial Japanese Navy, well-drilled and well-prepared in the meantime

[135] Peattie and Evans, pp. 20-22.
[136] Ibid., p. 23.
[137] Ibid., p. 24.

and led by competent professionals, completely obliterated the Chinese fleet of superior ships. Japan won a great victory with the Treaty of Shimonoseki on 17 April 1895, earning Taiwan, the Pescadores Islands, Shantung Peninsula and Port Arthur along with a huge war indemnity of 200,000,000 Taels.[138] There were also very important tactical lessons. The line ahead was vindicated as the most effective and easy to control formation in battle. The Canet guns of *Sankeikan*-class ships did not score any hits while all the damage was done by medium-caliber quick firing guns raining high-explosive shells which blasted the superstructures of the Chinese ships, decimating the crews and destroying their weapons. However, the thick armor of Chinese battleships proved to be impervious to the Japanese shells; while their big guns took a heavy toll on the lightly built Japanese ships, almost sinking the Japanese flagship *Matsushima*. Yamamoto would angrily claim that the newly established (1890) Imperial Diet had sent the navy into battle "naked, sword in hand, against an enemy shielded by heavy armor."[139] At the siege of Wei-Hai-Wei, where the remnants of the Chinese fleet had taken refuge, only by a combination of heavy long-range land artillery and torpedo raids into the harbor could the armored Chinese ships be despatched. All these lessons were thoroughly assimilated in the naval college for the next and ultimate struggle which lay ahead in Japan's ascent into a world power: war with Russia.

Japan's victory at Shimonoseki was shockingly scarred when the tripartite intervention of Germany, France and Russia on 23 April 1895 forced Japan to give up Shantung and Port Arthur on threat of war.

[138] Wright, p. 106.
[139] Peattie and Evans, pp. 47-49.

Possessing neither a great fleet nor an army sufficiently equipped to cope with the ringleader, Russia, Japan was forced to comply, learning a lesson in diplomacy that it should never forget. Two years later, Russia forced the "lease" of Port Arthur for "99 years" from China, while in 1898 Germany took over Tsingtao in Shantung in retribution for the murder of German missionaries. With Russia in the ice-free Port Arthur and building a powerful new battle squadron of eight battleships to station in the Far East, while the trans-siberian railroad was stretching into Manchuria there was a very real possibility that Korea would fall under Russian domination, presenting a mortal threat for the security of Japan's own home islands.[140] To all Japanese, it was clear that a war to drive Russia out of Manchuria was inevitable. Moreover, this war ultimately would be decided by the domination Northern China Sea with a clash of two navies. Thus, the decade between 1895-1905 was to be the period when Japan restructured itself as a world class naval power to tackle Russia, the third greatest naval power on earth.

Preparations for the coming conflict were three-pronged: technological preparation, tactical preparation and diplomatic preparation. In 1896/97, the Diet finally passed a massive new naval expansion bill to establish Yamamoto's long-desired battlefleet. According to his calculations, Japan needed at least six battleships and six armored cruisers to successfully challenge the combined force of Russia's battle squadron in Port Arthur and cruiser force at Vladivostok. Hence, Yamamoto's fleet expansion plan came to be known as the "Six-Six Fleet." Ironically enough, the Japanese navy financed its expansion largely with Chinese money, using the allocation from

[140] Peattie and Evans, 52-53.

the recently paid Chinese war indemnity.[141] The first Japanese battleships, the *Fuji* and *Yashima*, were in fact not part of the 1896 bill, having been ordered from Britain on the eve of the war with China in 1894. They were powerful units at 12,500 tons, with four 12-inch and ten 6-inch guns, five torpedo tubes and an 18-inch Harvey steel armor belt. Their speed was 18 knots. Four very similar battleships, the *Shikishima*, *Hatsuse*, *Asahi* and *Mikasa* followed them, all ordered from Britain and entering service by 1902.

Of these the *Mikasa* is the last surviving battleship of her period, being preserved as a monument to the Japanese navy in Yokosuka. When completed she was the most powerful battleship in the world, weighing 15,000 tons, armed with four 12-inch and fourteen 6-inch guns with a 9-inch Krupp steel armor belt for a speed of 18 knots.[142] Four of the six armored cruisers, the *Asama*, *Iwate*, *Izumo* and *Tokiwa*, ordered from the Armstrong yard, were among the most powerful examples of their kind in the world. They weighed 10,000 tons, each carrying four 8-inch and fourteen 6-inch guns, four torpedo tubes, and a 6.9-inch steel armor belt for a speed of 20 knots. Their main armament worked with electric power, firing up to seven shells a minute. Of the other two, the *Yakumo* was ordered from Germany and the *Azuma* from France so as not to disturb the diplomatic balance but their design and statistics were the same as British-built ships.

On the eve of hostilities, the Diet approved the purchase another two powerful armored cruisers built in Italy for Argentina. Named the *Kasuga* and the *Nisshin*, these 7600-ton ships were designed to act as second-class battleships when necessary, carrying a heavy battery of one 10-inch, two 8-

[141] Peattie and Evans, pp. 57-59.
[142] Jentschura, Jung and Mickel, pp. 16-19.

inch and fourteen 6-inch guns along with four torpedo tubes.[143] To complete the fleet with the necessary scout and torpedo attack forces eight new protected cruisers, sixty torpedo boats and fifty five new torpedo boat destroyers were acquired. Three of the cruisers and sixteen destroyers being purchased from Britain while the rest were built at home, an act which boomed the Japanese shipbuilding industry.[144]

While the navy was growing into a true battlefleet, tactical preparations gained pace. Two men dominated the tactical and strategic experiments at the staff college, Yamaya Tanin and Akiyama Saneyuki. Yamaya was the foremost gunnery and torpedo specialist of the navy. Through meticulous studies of the Sino-Japanese War and the British naval maneuvers of 1901 he developed an intricate maneuver to circle around the head-on approaching enemy fleet and catch it at its weakest point, when it was in column formation and only able to use forward or rear guns while Japanese ships were arrayed in line, presenting a full broadside. Due to its resemblance to the letter "T" when both fleets were so deployed, this tactic was named "Capping the T" and became the worldwide orthodoxy in naval tactics due to its annihilating success at Tsushima.[145]

While Yamaya developed action evolutions, Akiyama introduced a vital component of success to the Japanese navy, *Semmu* or logistics. As he pointed out, a navy's success depended on the quality and suitability of its ammunition to the tactics, the avaliability of enough stockpiles, repair

[143] Jentschura, Jung and Mickel, pp. 72-75.
[144] Peattie and Evans, p. 62.
[145] Ibid., pp. 75-77. This maneuver became a Turkish proverb as "Tiye almak", meaning utterly humiliating somebody.

facilities and the critical issue of fuel.[146] In the field of ammunition the Japanese naval industry achieved an important breakthrough when chemist Shimose Masachika developed in 1892 a new and powerful derivative of smokeless powder named after himself. To take full advantage of Shimose powder's blast effect, Admiral Ijuin Goro designed a thin-skinned new shell, called the *furoshiki*, with a special impact fuse, which was specifically tailored for the Japanese preference of blasting the upperworks of enemy ships.[147] Meanwhile, a frantic effort was made to obtain and home produce the latest optical devices for range finding and the wireless telegraph, which ushered a revolution in communications, vital for Yamaya's accuracy and strict fleet discipline required for the "T" tactic. With the declaration of the Russo-Japanese War in February 1904, the Japanese navy was the first fleet in the world fully equipped with wireless sets.[148]

Final and perhaps the most vital aspect of the Japanese preparations for war was the diplomatic one, culminating in the Anglo-Japanese Alliance of 1902. The Anglo-Japanese Alliance is greatly important not only in the history of the Far East, but in the diplomatic history of the twentieth century as a whole. It was Britain's official admission that it could no longer sustain naval superiority against combined adversaries alone, ending its "splendid isolation" of the nineteenth century.[149] The immediate reason for the Anglo-Japanese Alliance was the common fear of Russia's growing ambitions in the Far East and its increasing naval buildup in the region. However, the long-term expectations of Britain and Japan were greatly different. Britain's aim

[146] Peattie and Evans, p. 72.
[147] Ibid., p. 63.
[148] Ibid., p. 79, 84.
[149] Sprout, p. 352.

was to minimize the Royal Navy's Far Eastern commitments through an ally to gather all available major units in the North Sea against an alarmingly growing Imperial German Navy, while Japan expected Britain to keep a squadron at least equal to Russia's in the region. Although these incompatible demands was to undermine the alliance in the long run, in the short run the treaty proved to be vastly advantageous to Japan. It brought prestige through connection to the world's leading naval power thus deterring a possible intervention by a third country and provided critical support in technology transfer and solved the navy's critical fuel problem. The Japanese islands are devoid of any good quality coal and the poor lump coal extracted required a complex processing to make it suitable for use in warships. In 1904, as the Japanese industry was unable to produce high calorie coal, the navy's only option was to import good Cardiff coal from Britain. With the conclusion of the alliance, Britain leased half a million tons of coal to supplement Japan's still insufficient stockpile of 650,000 tons, thus ruling out any possibility of a fuel shortage during the war.[150]

Following the escalating tensions over the status of Manchuria, Japan severed diplomatic relations on 6 February 1904. Two days later, The Japanese fleet under command of Admiral Heihachiro Togo, made a pre-emptive strike to the Russian Far Eastern Squadron of seven battleships and three protected cruisers at Port Arthur by raiding the harbor at night with torpedo craft. Although most of the torpedoes missed, three found their mark, heavily damaging the two most powerful units of the fleet, the battleships *Retvizan* and *Tsesarevitch*, along with the cruiser *Pallada*. Togo attempted a

[150] Peattie and Evans, pp. 65-67.

bombardment of ships laying in the inner harbor, but was repulsed by shore batteries. At the same time, the escort squadron covering the troops of the Korean expeditionary army forced the Russian cruiser *Varyag* to scuttle herself at Chemulpo.[151]

In March, the energetic and able admiral Stepan Makarov took command of the Russian Far Eastern Fleet, revitalizing morale and improving discipline. The aggressive Makarov was intent on waging battle on Togo as soon as his damaged units were repaired. However, disaster struck the Russians on 13 April. Makarov's flagship the *Petropavlovsk* hit a Japanese mine laid to the harbor's entrance and sank, while the Russian Admiral rushed to support a destroyer flotilla. Makarov went down with his ship and took Russian hopes for a successful engagement with himself. After Makarov's death, his replacement Admiral Vilhelm Vitgeft, chose to stay in the harbor and wait for the relief force of the Baltic Fleet warships under preparation to be dispatched to the Far East. For Togo, the situation was becoming increasingly dangerous as he lost two of his irreplaceable battleships to an offensive Russian minefield on 15 May. If the Baltic Fleet was able to complete its odyssey and link up with the Far Eastern fleet, the situation of the Japanese would become critical against a much larger force.[152]

In this critical moment, the Army came to the rescue. Field Marshal Nogi Maresuke's Third Army was landed on 1 August to lay siege to Port Arthur. In order not to be destroyed in port, Vitgeft attempted to break the blockade and escape to Vladivostok on 10 August only to be intercepted by

[151] Wilson, p. 250-264.
[152] Ibid., pp. 273-279.

Togo in what later was called the Battle of the Yellow Sea. The Japanese opened fire from an unheard distance of 11,000 meters by fully exploiting their long range precision gunnery tactics. Togo attempted to "cap the T" more than once, but by skillful maneuvering Vitgeft managed to evade him and almost made his escape. But using his superior speed Togo caught him once again. This time a lucky hit found the bridge of the Russian flagship *Tsesarevitch*, killing Vitgeft and all his staff. The death of its commander threw the Russian fleet into such confusion that it dispersed thereafter: the damaged flagship, two cruisers and four destroyers steamed to neutral ports to be interned, while the remaining ships returned back to Port Arthur, where they were sunk at anchor by the Japanese army siege guns in December. With the surrender of the Port Arthur garrison on 2 January 1905, the first phase of the war ended.[153]

While Togo was busy with the elimination of the Port Arthur fleet, the Vladivostok Cruiser Squadron of three armored and one protected cruiser conducted a successful raiding campaign on the Japan Sea, sinking three Japanese army transports and eighteen merchantmen. Initially frustrated by bad weather, a Japanese armored cruiser squadron of four ships under Admiral Kamimura Hikonojo finally caught the Russian raiders on 14 August, sinking the *Rurik* and damaging the rest. The Vladivostok cruisers thereafter were bottled in their port and did not take an active part in the war.[154]

On 15 October 1904, the main body of the Baltic Fleet, now renamed the Second Pacific Squadron, weighed anchor from Libau to start its epic

[153] Wilson, pp. 286-297, 311-314.
[154] Ibid., pp. 301-308.

journey to the Far East. Commander of the fleet Admiral Zinovy Rojhestvensky rounded the Cape of Good Hope and arrived at Madagascar on January 1905, where he learned the news of the fall of Port Arthur. The older and smaller units of the Baltic Fleet were summarily sent via the Suez Canal under Admiral Nebogatov to compensate for the lost ships of the Far Eastern Fleet. The two squadrons met in April off Vietnam and proceeded towards the Japan Sea with the intention of breaking through into Vladivostok. Rojhestvensky had nominally eleven battleships, three armored cruisers and five protected cruisers; but in reality only the four new 13,500-ton units of *Borodino* class and the 12,700-ton *Osliabia* were of fighting value, the rest of the fleet was a worthless collection of antiquated ironclads from the 1880s and coast defense ships.[155] After the destruction of the Port Arthur Squadron, Togo used his time to the best effect; repairing his ships, resting and drilling his crews. The Japanese were constantly informed about the whereabouts of the approaching Baltic Fleet thanks to their British allies and their own widespread spy network. Through the information he received, Togo concluded that Rojhestvensky would attempt to cross from the Tsushima strait and took position accordingly. He was proved right when the Japanese cruisers spotted the Russians on 26 May 1905.

What ensued the following day became the greatest naval battle of history since Trafalgar a full century earlier; and proved to be equally decisive. Togo twice "capped the T" of the Russian Fleet with almost textbook precision and the accurate Japanese gunnery with *furoshiki* shells obliterated three of the four *Borodinos* along with the *Osliablia* during a

[155] Sondhaus, p. 190.

battle, which lasted into nightfall. Through the night Japanese torpedo craft hunted the remnants of the Russian Fleet, the battle ending with Admiral Nebogatov's surrender aboard the only remaining *Borodino* class, the *Orel*, and three old battleships in the morning. The badly wounded Admiral Rojhestvensky was captured aboard a Russian destroyer.[156]

Tsushima came as the result of a three decades-long period of intelligent decisions, resolute will and dedicated professionalism on behalf of Japanese policymakers and naval officers. The single-minded import and assimilation of the British naval professionalism, correct investments to create a steadily developing naval framework and encouragement of innovative thinking had resulted in a fleet which erased the greatest landpower of the earth from the list of first rank naval powers for the next fifty years, suffering 110 dead and wounded while inflicting 5000 dead and and 6000 prisoners in doing so.

The war itself ended in October with the Treaty of Portsmouth with U.S meditation. Japan achieved all its war aims, repulsing Russia from Manchuria and Korea and added the unexpected prize of South Sakhalin, conquered following Tsushima.[157] The triumph of the Imperial Japanese Fleet had profound implications in the world, with Japan achieving great power status, displacing Russia as the fourth greatest naval power and becoming the premier power in the Far East. The ensuing decade witnessed a skyrocketing of Japanese industrial production and overseas trade. The Japanese merchant navy became the third greatest in the world by 1914. Similarly, while Japan was barely able to produce enough high tensile steel for small warships and

[156] Wilson, pp. 331-360.
[157] Peattie and Evans, p. 124, 133.

importing almost all big caliber guns along with sophisticated equipment from aboard in 1901, by 1915 some of the biggest and most powerful dreadnought type battleships in the world were being fully produced by Japanese means. Tsushima was the ultimate vindicator of battlefleet's role in establishing the status of an expansionist maritime state as well. Japan's ascendancy and ambitions in the Pacific, however, was to increasingly bring it into conflict with a similarly expansionist United States in the region, leading to a cataclysmic showdown with the superpower in 1941.[158]

When the the nineteenth century started for the Ottoman Navy with the end of the War against Russia in 1829, the age of the Industrial Revolution was dawning for all naval powers in the western hemisphere. First to come was the revolutionary effect of steam power with the unprecedented freedom of mobility and tactical flexibility it provided. The effect of steam power in international relations was to be partly sobering: previously unnavigable shores and waterways were now open to European aggression and exploitation, as seen by the French conquest of Algeria (1830), Anglo-Burmese (1824-26) and Anglo-Chinese Wars (1839-42).[159]

On continental Europe, the effect of naval steam power was no less revolutionary as the Crimean War demonstrated. It was due to the limitless freedom of movement provided by their steam powered fleets that the allies were able to threaten the vast Russian Empire at their chosen locations, thus preventing the Czar from concentrating his forces and leading to the eventual

[158] Peattie and Evans, pp. 185-187.
[159] Daniel Headrick "The Tools of Imperialism: Technology and Expansion of European Colonial Empires in the Nineteenth Century", *The Journal of Modern History*, vol. 51, no. 2, Technology and War (Jun.,1979), pp. 235-248,

Russian defeat.[160] In the American Civil War, the Union with its superior navy was able to divide the Confederate heartland in two along the Mississipi River axis, thus dooming the Southern cause, while the blockade it applied slowly strangled Confederate economy.[161] Examples can be multiplied, only to show more elaborately the profound impact of the strategic mobility revolution provided by naval steam power.

Accompanying the propulsion revolution was the revolution in firepower. At the Battle of Navarino, warships were still firing roundshot from cast iron smoothbore guns as they had been doing for three centuries. Twenty-seven years later, off the Crimean Peninsula, it was the explosive shell which decided the duels between Russian fortifications and the Allied fleet.[162] Clearly, the wooden warship was defenseless against a foe properly equipped with incendiary ammunition. Before the end of the Crimean War, the warship protected by metal armor entered the scene and shortly after the peace of Paris (1856), the oceangoing armored ship made its debut. The introduction of the ironclad triggered a race between gun and armor, which resulted in the abandonment of wood altogether as a warship construction material and its replacement by iron and steel, the adoption of large caliber artillery to penetrate ever thickening armor; installation of those large guns into revolving armored turrets for efficient use and the disappearance of masts and sails both to clear turrets' line of sight and to ensure the stability of the hull. In the meantime, the naval mine and self-propelled torpedo appeared

[160] Lambert, Andrew. "Introduction" in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), p. 10
[161] Sondhaus, pp. 77-86.
[162] Jonathan Grant "The Sword of the Sultan: Ottoman Arms Imports 1854-1914", *The Journal of Military History*, no.66, (Jan 2002), p. 10.

as a deadly threat to the armored capital ship and the radical French naval strategy, the *Jeune Ecole*, influenced navies worldwide with its propagation of torpedo boat warfare and commerce raiding using the modern cruiser instead of the traditional fleet battle. In the end, the battleship emerged triumphant with the application of improved machine technology and quick-firing artillery, and with the integration of the torpedo boat-destroyer into the battlefleet. By the early twentieth century, the battleship was the pinnacle of all industrial revolution technologies, including communication in form of the wireless telegraph. The natural result of the naval transformation was the monopolization of naval defense and power projection ability by the industrialized Western nations.

For the first time in history, being a naval power was equal to being a great power. Without the necessary industrial framework and know-how, it was impossible to build and man modern warships. States outside the Western world were left with two options: either investing in naval industry infrastructure or developing a dependence on the armaments market of industrialised nations. This redefinition of naval self-sufficence demonstrates its dramatic and crucial effect nowhere better than the opposing cases of China-Japan and the Ottoman Empire-Russian Empire. From the 1860s, Japan and Russia followed the "infrastructure first" approach and after suffering an initial but short term technological disadvantage against their opponents, they quickly closed the gap with their soundly funded native industries and overwhelmingly surpassed them by the 1890s; when the investments started to bear full fruit. By contrast, the Ottoman Empire and China built expensive fleets of the latest model ironclads at European yards

from the 1860s to the 1880s and funded them mostly with foreign debt. The superiority they enjoyed was short-lived. With the catastrophical global financial collapse of 1873, the already shaky treasuries of each country was crushed under the weight of the previous years' debt and lost their ability to maintain effective naval forces.

CHAPTER III

THE OTTOMAN QUEST FOR NAVAL RENOVATION 1830-1897

The modernization of the Ottoman navy went as far back as the reign of Sultan Selim III (1789-1807) and the *Nizâm-ı Cedîd* reform initiative. Selim III's plans to upgrade the technology of the navy extensively and to increase the building capacity of the fleet were upheld by his successor Mahmud II (r. 1807-1839). Nevertheless, the Napoléonic Wars, which continued almost uninterruptedly from 1798 to 1815, the 1807-1812 Russian War, as well as the Greek Revolt, prevented these reforms from yielding rapid results. The simultaneous battles culminated in the loss of lives, particularly among sailors who were trained in the course of these wars. Finally, following the demobilization of non-Muslim sailors of Greek origin during the Greek Revolt, the Ottoman navy suffered gravely from the loss of manpower.[163] The Ottoman State's reconsideration of the naval modernization program coincided with the period following the Edirne Treaty of 1830. The changes that occurred in the ensuing years were to determine the basic outlines of the approach to the modernization of the navy during the reform age.

The fundamental trends in this period were: technological or "hardware" modernization, manpower or "software" modernization, and administrative reorganization.

[163] Ersan Baş, *Çeşme Navarin, Sinop Baskınları ve Sonuçları* (İstanbul: Piri Reis Araştırma Merkezi, 2007), pp. 118-122, 150.

Technological innovation was given the top priority initially. In fact, the lion's share of the naval budget was allocated to the renewal of technological material. This trend reached its zenith during the reign of Abdülaziz (1861-1876). Openly undermining the training of specialized personnel, this policy would eventually end in a fiasco for the Ottoman fleet's campaign in the Russian War of 1877-78. Coupled with the financial difficulties in Abdülhamid II's reign, the legacy of this war would lead Abdülhamid II to pursue the opposite policy in his naval undertakings.

The modernization of naval personnel was a twofold problem, solving the manpower crisis at once and training a new generation of officers and mechanics with the skills necessary to use the newest technology. Only with the implementation of conscription in the 1840s that the manpower problem was somewhat alleviated. Meanwhile, the Ottoman navy's initial approach to the question of qualified technicians was traditional; in fact, a method similar to the recruitment of European military engineers and gunners to the army in the classical era. However, the extent of the disadvantages of this system was observed clearly in the fiasco of the 1877-78 war and consequently, Abdülhamid II would choose to focus on schools that could train technicians.

The third and final trend was the reorganization of the navy within the bureaucratic chain. Traditionally, since the centuries prior to the Tanzimat reforms, the Ottoman Imperial Navy had been marked by a combination that convened seasonally with ships from *Garp Ocakları* (Barbary States)*, Bey Gemileri* –ships locally built or equipped by governors of Kapudan Pasha Provinces in the Aegean Archipelago– and the *Sefine-i Hümayûn* (Sultan's ships) stationed in İstanbul. After a long period of trial and error, the Ottoman

Imperial Navy was finally transformed into a unified fleet administered from a single centralized unit under the auspices of the Ottoman Ministry of Marine in İstanbul in 1867.[164]

Thus, although a considerably large fleet was created in line with the vision to re-dominate the seas during the reign of Abdülaziz, the naval rebuilding program, which played a significant role in the collapse of the Ottoman treasury, ended with the dethronement of Sultan Abdülaziz. During the reign of Abdülhamid II, the assignments of the navy were largely circumscribed and through the influence of the *Jeune Ecole* strategic school, which marked the 1880s, its tasks were redefined in terms of coastal defense.[165] In a complex web of financial crisis, a dilemma of land and naval armament priorities, corruption and stagnation; the Ottoman Navy ended the the nineteenth century in a far different situation than just two decades earlier.

A Navy in a State of Chaos 1827-1847

By the end of the Greek Revolt, the Ottoman Navy had been defeated in the last momentous battle of the Age of Sail and had greatly suffered from the loss of material and manpower. During the Battle of Navarino (27 October 1827), three ships-of-the-line, thirteen frigates, seventeen corvettes and four brigs of the Imperial Navy (*Donanma-i Hümayûn*) had been sunk. The majority of the 6000 sailors that were killed were mostly members of the Ottoman fleet.[166] In the 1828-29 Russian War that soon ensued, the Russian Navy had absolute superiority over the Ottoman fleet, which was

[164] Gencer, pp. 15-16.
[165] Şakir Batmaz, II. Abdülhamid Devri Osmanlı Donanması (Ph.d diss., Erciyes University, 2002), p. 44.
[166] Baş, p. 145

immobilized due to lack of crew, and the Russians were able to send reinforcements to the armies in the campaign in the Balkans without disturbance.[167] Following the war, which ended in disaster for the Ottomans, while Mahmud II sought to create a new army, he also took measures to revitalize the navy. There were three major aims standing in the way of the program he initiated and was upheld during the Tanzimat period: First, building new units that paralleled the technological level of the great powers, especially that of Russia to replace lost or old ships; second, to restructure the crew pool that had entirely collapsed; and third, to revive the Naval College. The implemented methods and ideas yielded various consequences.

Technological Renewal

Technology transfer was the most easily resolved problem. During the reign of Sultan Mahmud II, various fleets across the world were comprised of wooden and sail propelled ships-of-the-line that were armed with muzzle loading guns at various levels of decks; on broadsides, a system that traditionally had been upheld in the last three hundred years. The 120, 74 and 80-gun ships-of-the-line, the plans of which were brought particularly by French shipbuilders during the *Nizâm-ı Cedîd* era and designated as the standard at the Imperial Arsenal, were considered to be some of the best existing warships of their kind.[168] The resources required for the shipbuilding that were available to the Empire were famed across Europe, both in terms of quality and quantity. In fact, in his memoir-cum-travel journal *A Residence at*

[167] Sondhaus, p. 17
[168] Zorlu, Tuncay; "Selim III and Ottoman Seapower" in *Logbook of the Ottoman Navy: Ships, Legends, Sailors*, edited by Emir Yener and Ekrem Işın (Istanbul: Pera Müzesi, 2009), pp. 37-38.

Constantinople, R. Walsh, chaplain to the British Embassy, who visited the Imperial Arsenal in 1821, observed the arrival of high-quality timber from the shores of the Black Sea and the Anatolian provinces near the capital, resin and tar from island of Negroponte (Eğriboz) and a number of other provinces, flax from Samsun for the production of ropes and sails, and gunpowder from Salonica and Gallipoli. According to Walsh, plenty of metal necessary for cannon founding was extracted across the entire Empire and that both the arsenal and the foundries rivaled those of Portsmouth and Woolwich. More than 500 workers and foremen, including the prisoners at the Arsenal dungeons, constituted the workforce.[169]

Considering the numerous dissertations that point to the critical momentum that arsenals of the Royal Navy, as the largest industrial complex of the period, brought to the Industrial Revolution in Great Britain, the kind of potential that the Imperial Arsenal held for the Ottoman Empire might make room for some interesting future research in terms of the Ottoman industrialization.[170] In fact, this large industrial complex in Istanbul gave birth to the 128-gun ship-of-the-line *Mahmudiye*, which was built in 1829 and held the title as the largest battleship in the world over the remaining 25 years of the Age of Sail. In terms of both her place in collective memory and her significance as a singular example of the construction and equipment trends in the reform-age Ottoman battleships, the *Mahmudiye* has been the subject of numerous articles and monographs. In this work, the she will be scrutinized briefly, yet in comparative perspective with the Russian reports.

[169] Gencer, pp. 110-111.
[170] For a thorough history of the Royal Navy dockyards and their role in Industrial Revolution, see Jonathan Coad, *The Royal Dockyards 1690-1850* (Aldershot: Scolar Press, 1989).

The *Mahmudiye* was a member of the largest battlefleet unit, known in European naval terminology as "First Rate" (fr. *Premier Rang*, it. *Primo Rango*). As such a classification did not exist in the Ottoman navy, First Rate ships-of-the-line were referred to as "*Üç Ambarlı*" or three-decker, due to the presence of three complete gundecks below the main deck. During battles, the three-decker ships-of-the-line functioned as a floating fortress and as the admiral ships, they served as the rallying point for other ships of the fleet.[171] There were three three-decker ships-of-the-line for the traditional ranks that corresponded to that of admiral in the Ottoman Navy in the Age of Sail: *Kapudâne* (Admiral of the Fleet), *Riyâle* (Vice-Admiral) and *Patrona* (Rear-Admiral).

At the time of the Greek Revolt (1821), the three-deckers of the Ottoman Navy included the 47-meter long, 122-gun *Selimiye* (launched in 1798) built during the *Nizâm-ı Cedîd* era by French chief engineer Lebrun and the slightly shorter, 110-gun *Mesudiye* (launched in 1798), as well as the gigantic, 130-gun *Mahmudiye* launched in 1814.[172] However, the *Mahmudiye,* which impressed chaplain Walsh while the Ottoman Navy campaigned against the Greek rebels in 1821, had a faulty construction and was thus unstable and not fit for duty. Hence, after having remained in service merely for eight years, she was decommissioned and dismantled in 1822.[173] Following the Battle of Navarino, a decision was made to construct a longer flagship equipped with heavy guns to supplement the rapidly aging *Selimiye* and *Mesudiye.* The new battleship was to bear the name of her predecessor.

[171] Tucker, p. 3-4. Hacer Bulgurcuoğlu (master's thesis, Mimar Sinan University, 2004), p. 9.
[172] Bostan, p. 200.
[173] Bulgurcuoğlu, pp. 40-41.

Launched on Sunday, 31 December 1828, the new *Mahmudiye* was the work of two Muslim shipbuilders, Chief Engineer Mehmet Efendi and Architect Mehmet Kalfa, who had been trained under French engineers responsible for the modernization of the navy during the reign of Selim III.[174] The admiralty model of the ship currently preserved at the Istanbul Naval Museum reveals that a rounded stern and bow form were used in its design to provide resistance against raking fire.[175] Hence, the new *Mahmudiye* had a much higher durability in comparison with the two other three-deckers at hand. Yet what made the ship truly spectacular were its dimensions. The ship had an overall length of 214.8 *kadem* (feet), a breadth of 59.8 *kadem*, a hold of 29 *kadem*, a draught of 28.3 *kadem*, as well as a deep load of 5553 tons. The crew consisted of 1280 officers, seamen and marines divided into eleven companies.[176] Considering the three-deckers of other fleets of the period, which were built at a maximum overall length of 50-55 meters, the overall length of the *Mahmudiye,* which corresponds to roughly 67 meters in the metric system, is rather striking. The length and breadth were used to support the unconventionally designed battery of 128 guns. According to a Russian intelligence report of the period, rather than a mixed battery comprised of 32- 24- and 18-pound long guns, she was armed with a homogenous gun battery composed entirely of 32-pound long guns.[177] This meant that compared with its Russian and other European counterparts, *Mahmudiye* had twice the broadside weight.

[174] Zorlu "Selim III and Ottoman Seapower", p. 42.
[175] This model is registered to Istanbul Naval Museum inventory as Db. No. 1991.
[176] Hacer Bulgurcuoğlu, *Efsane Gemi Mahmudiye Kalyonu* (İstanbul: Piri Reis Araştırma Merkezi, 2009), p. 44.
[177] *Morskoy Sbornik*, Saint Petersburg 1851.

The armament of *Mahmudiye* can be regarded as the epitome of a trend that the Ottoman navy developed in the Age of Sail. The trend in question, on the other hand, can be evaluated as the consequence of the poor marksmanship of Ottoman naval gunners. Throughout the eighteenth century, Ottoman ships-of-the-line were equipped with four or eight immense 112-pounder guns that would often throw granite cannonballs. In the course of a battle, poor marksmanship could be compensated for the destruction caused by these guns even with a few hits.[178] Considering the past Ottoman gunnery practices, it would thus be plausible to argue that the embarrassing state of Ottoman gunnery during the Greek Revolt and the Russian War may have instigated the radical method in the armament of *Mahmudiye*.[179]

Another theory that I would set forth is closely linked with institutional mentality. Epitomized by *Mahmudiye,* the proclivity to construct gigantic ships took root in the Ottoman Navy and reached its zenith through the commissioning of the largest battleships of the period, such as the ironclad *Mesudiye* during the monumental navy building program in Sultan Abdülaziz's reign. The mentality that commissioned such vessels with complete disregard to the problems of cost or infrastructure would soon backfire once the naval campaign in the War of 1877-78 ended in fiasco, and would consequently lead to extreme advocacy for the commissioning of small craft.

Among the ships-of-the-line built as part of Mahmud II's naval program the *Mahmudiye* was the first and most significant one. However, the real weight did stay in the rebuilding of the cruiser force necessary to execute

[178] Daniel Panzac "Armed Peace in the Mediterranean, 1736-39: A comparative Survey of the Navies", *Mariner's Mirror*, 84, (1998); pp. 44-45.
[179] Adolphus Slade, *Kapdan Paşa* (İstanbul: Boğaziçi Yayınları, 1973), p. 68.

patrolling duties that constituted the major task of the navy. Between 1823 and 1839, a total of thirteen frigates and three corvettes were added to the fleet.[180] The search for technical support in the reconstruction of the cruiser force triggered an interesting development in Ottoman diplomacy: it opened the doors of the Ottoman world to a new state, the United States of America.

With the retribution campaigns against *Garp Ocakları* during the Napoléonic Wars, the United States had entered the Mediterranean world and particularly into the seas under Ottoman dominance.The Americans were willing to operate on Ottoman soil; however, the Sublime Porte had not taken their enthusiasm into consideration until the Battle of Navarino. Once the political ties with two traditional allies, Britain and France, came to a breaking point due to that battle, good relations with the Americans suddenly gained importance.[181] In fact, the impressive victories of the heavy frigates and corvettes of the U.S.A. against the "invincible" Royal Navy during the 1812-15 British-American War had indicated the superior level the American naval industry. Surely enough, this technology could be advantageous for the Ottoman navy as well.

Finally, following a long series of deliberation and negotiation, the Ottoman-American Treaty of Trade and Navigation was signed on 7 May 1830. Comprised of nine open articles, as well as an epilogue, the true significance of the treaty was in a separate and secret article. Accordingly, this article granted the Ottoman State the right to buy battleships from American arsenals; the Ottoman state would not pay more than the amount the U.S. Navy paid for similar vessels. Furthermore, the internationally

[180] Bulgurcuoğlu, *Efsane Gemi Mahmudiye Kalyonu*, p. 43.
[181] Gencer, p. 125.

recognized, high-quality shipbuilding materials of the U.S. would be sold to the Ottoman navy and technical support would be provided for the construction of American-style ships at the Imperial Arsenal.[182] However, though much anticipated by Sultan Mahmud II, this secret article was not ratified by the U.S. Senate on the premises that it conflicted with American foreign policy.

In view of the disappointment on the part of the Ottomans and eager not to jeopardize the new treaty because of possible tension, the U.S.A. agreed to sell the two corvettes that carried the chargé d'affaires to Constantinople and granted the American shipbuilders the right to enter Ottoman service at their will.[183] Hence, entering the service of the Ottoman navy, three Americans served for an extended period of time and made a significant impact on both the finalization of the Ottoman technology in the Age of Sail and the integration of steamships into the Ottoman naval power. These individuals were Henry Eckford, Charles Ross and Foster Rhodes.

As one of the highly renowned shipbuilders of New York, Henry Eckford recognized the offer of the Ottoman Empire as an opportunity to get himself out of a financial crisis. In 1831, he traveled aboard the 16-gun corvette *United States,* which he personally had built, to join the U.S. mission to Constantinople.[184] Upon arriving, the *United States* was sold to the Ottoman Navy and the name was changed to *Mesir-i Ferah* as Eckford handed the letter of trust to the *Reisü'l-küttâb* (foreign secretary). Unfortunately, since Eckford had to return to the States due to the illness that would lead to his death in November 1832, the Empire could not benefit

[182] Gencer, p. 126.
[183] Ibid., p. 127.
[184] Langensiepen and Güleryüz, p. 1.

sufficiently from his skills. Still, during his service in Constantinople, he was able to build one schooner and had begun the construction of a 74-gun ship-of-the-line as well as a large frigate. British traveler Charles McFarlane, on the other hand, argues that Eckford was insulted by the Ottoman bureaucracy and was not paid his dues.[185]

When Eckford returned to his country, he sent his friend and talented shipwright Foster Rhodes of Long Island to the Ottoman state as a replacement. As noted in the memoirs of McFarlane, Rhodes was a cunning man with a strong will; he had quickly learned that the only way to survive the intrigues of the Mahmud II era Ottoman bureaucracy was to be in direct contact with the Sultan himself. He would uncover the frauds of the pashas who tried to impede his work, and by threatening to divulge their secrets to the sultan and blackmailing them, he would prevent these men from meddling in his business. Furthermore, he had the full support of the formidable *Kaptan-ı Derya* Çengeloğlu Tahir Pasha.[186]

Rhodes had a lasting impact on the Ottoman naval technology and added the best cruisers, namely the American-type frigates and corvettes, to the inventory of the Arsenal. The five 64-gun "super frigates" built during Rhodes' time were designed in compliance with the U.S. blueprints. These vessels had a length of 175 feet between perpendiculars, a breadth of 45 feet, a hold of 14 feet and 4 inches, a drought of 22 feet, and a weight of 1700 tons. Equipped with thirty four 32-pound long guns on the gundeck and thirty 30-pound short guns on the main deck, a good example of these versatile warships is the *Nizamiye,* which was built in 1837 and sunk during the Battle

[185] Gencer, pp. 128-129.
[186] Ibid., p. 129. Langensiepen and Güleryüz, p. 1.

of Sinop.[187] Throughout Çengeloğlu Tahir Pasha's post as Kapudan Pasha (1831-37) and until Mahmud II's death, Rhodes had the opportunity to work productively. However, following Sultan Abdülmecit's accession to the throne and the proclamation of the Tanzimat, the "British Party" led by Mehmet Reşit Pasha came to power. Thus, possibly through the influence of the British foreign policy, which still had cold relations with the U.S., the Ottoman-American naval collaboration came to an end. Left without a patron, Rhodes soon had to resign; the qualified American workers and foremen employed at the Arsenal followed suit. Although attempts were made to revive the bilateral relations after 1848, not much was accomplished.[188] Despite all, the process of the American-Ottoman technology transfer that took place between 1830 and 1839 opened a new door in Ottoman diplomacy and generated a significant leap in the technological reinforcement of the navy.

A new element that was added to the Ottoman Navy in the course of Mahmud II's naval program was steam power, which would yield revolutionary results in the long run. Closely pursuing the technological innovations of the period at an institutional level had become the rule of thumb since the *Nizâm-ı Cedid* era. At the time, steam power was merely beginning to be noticed in Europe, yet Sultan Selim III had attempted to import steam engines from Great Britain to pump the waters at the docks.[189] In light of his double-sided experiences with steam warships during the Greek

[187] Mark Lardas, *American Heavy Frigates 1797-1826* (Oxford: Osprey Publishing, 2003), p. 36
[188] Gencer, p. 130
[189] Danışman, Günhan. "Anadolu Enerji Teknolojileri Tarihçesi ve 18. Yüzyıl Sonunda Osmanlı Yönetiminin Sanayileşmede Kaçırdığı Fırsatın Yeniden Değerlendirilmesi" in *Türk Teknoloji Tarihi*, edited by Emre Dölen and Mustafa Kaçar (İstanbul: Türk Bilim Tarihi Kurumu Yayınları, 2003), pp. 100-103.

Revolt, Çengeloğlu Tahir Pasha supported the purchase of auxiliary steamers that would supplement the sailing battle line in particular. However, it was impossible to pursue a planned steamship project amidst the ongoing state of war and chaos. Exactly at this juncture, the *Swift,* a small British steamship, arrived in Constantinople on 20 May 1828. Thirty-two meters long, this small ship was originally built as a sailer in 1801 and in 1822, she was equipped with a single cylinder engine and paddle wheels to be converted into a 139-ton steamer that could cruise at 5 knots.[190] The official version of its acquisition relates that, sold to a consortium of Armenian merchants by her Captain Mr. Kelly, the ship was offered to Sultan Mahmud as a gift. However, a more probable explanation is that the ship was sent as a gift to the sultan to soften British-Ottoman relations, which were on the verge of collapse after the Battle of Navarino.

Duly named the *Sür'at* (Speed), *Swift* became the first steamship of the Ottoman Navy. Though unarmed at first, she was later armed with two small salute guns and was put into service as the sultanic yacht.[191] The following year, Tahir Pasha purchased the Scottish built *Hylton Joliffe* from his own purse and added the vessel to the fleet. Renamed *Sagir*, the ship was 38-meters long, weighed 300 tons and could navigate at a speed of 6 knots. She was also armed with two small salute guns.[192] Used as a tug for ships-of-the-line in the last stages of the Russian War, *Sagir* was the first vessel to be propelled by steam in the Ottoman Navy.

Two individuals strongly supported the modest beginnings of the steam age in the Ottoman Navy: Çengeloğlu Tahir Pasha and Foster Rhodes.

[190] Gencer, p. 116. Langensiepen and Güleryüz, p. 232.
[191] Langensiepen and Güleryüz, p. 3.
[192] Ibid., p. 232.

However, according to Rhodes' observation during a conversation at the launch of the frigate *Nusretiye* on 26 May 1836, steamships were regarded as little more than "amusing toys" in the eyes of Sultan Mahmud II, who directed the naval program. This view was to change the following year when, while the Sultan was aboard, the frigate *Feyziye* was saved from running ashore in a storm in the Marmara Sea when two steamers, one British and one Austrian, came to the rescue at the last minute. Sultan Mahmud, who witnessed firsthand the potential of steam power, ordered the construction of "a series" of steamships.[193]

The first steamship to be built in the Ottoman shipyards, *Eser-i Hayır*, was launched on 24 November 1837 from the Aynalıkavak shipyard. The vessel was 39 meters long and weighed 285 tons; the Scottish built boilers allowed the ship to navigate at 6 knots. Except for two salute guns, she was unarmed. In 1838 and 1839, two more steamers, the *Mesir-i Bahri* and *Tahir-i Bahri* were launched respectively. The 48 meter-long 275-ton *Mesir-i Bahri* could cruise at 8 knots, while the 56 meter-long, 529-ton *Tahir-i Bahri* could navigate at 6 knots. Both vessels were armed with six guns each and their boilers had been manufactured in Scotland.[194] All three Ottoman-made vessels were designed by Rhodes and Charles Ross, who at the time, was the director of the Aynalıkavak shipyard. All the building material was provided from the local Ottoman sources. However, the insufficiency of the Ottoman industry had required the engines to be imported from Great Britain. Rhodes had founded a workshop for the maintenance of engines at Aynalıkavak in 1835 and had even manufactured boilers. However, the rapidly growing

[193] Langensiepen and Güleryüz, p. 1.
[194] Ibid., pp. 232-233.

complexity of engine technology soon outpaced the speed that the Empire could follow.[195] Consequently, the first seeds of foreign technological dependency –with Great Britain in particular– were sown.

Rather than functioning as real warships, the first steamers built for the Ottoman Navy served as Imperial yachts or merchant ships. The integration of steam power into the battle fleet would take place only after 1847. Nonetheless, these five ships, which we can define as "experimental," provided the opportunity for both the navy and the public to get accustomed to the new technology.

Reorganization of Personnel

While the replacement of lost materials was an easier task, the loss of specialized personnel constituted a much bigger and unavoidable problem. As early as the Greek Revolt, a serious manpower problem had emerged due to the dismissal of the Greek-Ottoman sailors who traditionally had constituted the navigation specialists of the navy. During the revolt, the Ottomans largely had relied to press-gang, a method traditionally used also in Europe to provide personnel for the navy. However, the efforts to draft personnel by raiding seamen's coffees in Constantinople did not bear much fruit. Since hardly anything existed in the name of an Ottoman merchant fleet, there were very few experienced sailors available. Though an attempt was made to draft seamen from among the boatmen (*kayıkçılar*), their strong resistance and the Janissary status that most possessed made this attempt

[195] Langensiepen and Güleryüz., pp. 1-2.

unfeasible.[196] According to a detail from the memoirs of Chaplain Walsh, the absence of sailors, which became increasingly critical, seems to have triggered a radical change in Ottoman military mentality: appointment of foreign sailors to the navy. While the Ottoman state was quite reluctant to use this kind of manpower, it was nonetheless accepted out of despair. Gathered from the taverns near Galata, sailors of Genoese, Ragusan and Maltese origin, as well as other nationalities, were added to the naval personnel in large numbers.[197]

Still, throughout the reform period, the government was determined to train Muslim seamen. Newly restructured as a modern autocracy, the Ottoman Empire's numerous other institutions already were staffed predominantly with Muslim personnel and the navy was to follow suit.The first applicants were Muslim residents of the Marmara, Black Sea and Aegean regions. However, the crews recruited from these regions were inadequate in number, and they lacked the traditional habit of naval service of the Greek personnel and their disciplining constituted yet another important problem.[198] As early as 1824, Arsenal director Hüsnü Bey created a "school ship deck" in the garden of the Arsenal and initiated the training of enlisted Muslim soldiers.

Another source of Muslim crews was the *Garp Ocakları* personnel dispatched by the beys of the North African provinces. An attempt was also made to train naval personnel from recruits drafted for the *Asâkir-i Mansûre-i Muhammediye* (Victorious Soldiers of the Prophet) army; however, none of

[196] Gencer, p. 111.
[197] Ibid., p. 112.
[198] Tobias Heinzelmann, *Cihaddan Vatan Savunmasına: Osmanlı İmpratorluğunda Genel Askerlik Yükümlülüğü 1826-1856* (İstanbul: Kitap Yayınları, 2009), p.

these initiatives bore fruit. Incidentally, it became necessary to supplement the navigation personnel with Christian subjects again.[199] Meanwhile, although the Ottomans made an effort for the first time to recruit crew members from among the Arab subjects living in the coastal areas of Syria and Lebanon, this reluctant group of soldiers, who were described as "hopeless and useless in terms of discipline and trainability," were soon let go.[200]

The draft of Christian Ottoman subjects into the navy under the term *Mariner* is part of an ongoing debate regarding the development of both compulsory military service and modern notion of citizenship in the Ottoman Empire. What should be taken into consideration, above all, is that the recruitment of soldiers from among the Christian subjects was not a decision made with the state's own volition, but rather the imposition of the numerical disparity between the Muslim and Christian subjects of the Empire.[201] Following the establishment of the Greek Kingdom in 1830 and the normalization of the relations between the two nations, the political environment necessary to re-recruit Greek-Ottoman soldiers to the navy began to emerge. In fact, the non-Muslim naval personnel policy, which entailed the recruitment of the Armenian community in Anatolia prior to 1835, began to target the Ottoman-Greek population after that date. As of 1845, a considerable number of Greeks had returned to the navy, though they were fewer in number with respect to the period prior to the Greek Revolt.[202]

[199] Gencer, p. 117, 119.
[200] Heinzelmann, pp. 207-208.
[201] Ibid., pp. 222-225.
[202] Gencer, pp. 249-250.

While the recruitment of adequate personnel was a concern, the coexistence and transformation of these individuals from incompatible backgrounds into a consistent battle force constituted a much bigger problem. Foreign naval officers who visited the Ottoman navy in the early years of the nineteenth century noted with bewilderment the huge discrepancy between first-rate construction quality of vessels and the ignorance and wretched state of the crews manning them.[203]

While the dismissal of the Ottoman-Greek personnel and the annihilation of trained personnel after disastrous battles such as Navarino are all acceptable explanations, the great difficulty in handling the enemies, such as the Greek rebels, which were similar to pirate gangs at best, points to a grave and chronic problem in education and discipline. Although the comprehensive reforms of the *Nizâm-ı Cedid* era had a positive effect on the development of technology, it is evident that no progress had been made in the training of the crew and officers. Reportedly, the hastily assembled, hybrid crews were demobilized without any record after the campaigns and, ironically enough, caused great damage by ransacking the provisions and equipment of their ships as they were disbanded.[204] It was only after the firm establishment of compulsory military service in the 1840s that the naval personnel were subjected to an organized system of conscription, as well as training.

[203] Slade, pp. 98-99.
[204] Gencer, p. 119.

The Naval College

The third and perhaps most important problem that Sultan Mahmud II addressed in his naval programme was the rejuvenation of the *Mühendishâne-i Bahr-i Hümayûn*, the Ottoman Naval College. This first educational institution of Western science, the establishment of which constituted a turning point in Ottoman modernization, had a tumultuous past. Founded by Cezayirli Gazi Hasan Pasha and his aide Baron de Tott in a room of the Arsenal in 1773 to augment the competence of naval officers particularly after the Disaster of Çeşme (1770), the *Mühendishâne* moved to a new building in Camialtı in 1784 with increased capacity. However, as the Russo-Ottoman War of 1788-92 revealed, the desired results had not been attained.[205]

In the course of the *Nizâm-ı Cedîd* program, the reformation of the Naval College constituted one of the most important topics: French, Swedish and British officers, who were recruited to modernize the navy under Kapudan Pasha Küçük Hüseyin, taught in addition to foreign languages (French), basic naval sciences including modern navigation methods, cartography, mathematics, astronomy, and shipbuilding.[206] However, following the end of *Nizâm-ı Cedîd* in 1807, the Naval College underwent a period of deterioration. When the school building was destroyed in the 1821 Kasımpaşa fire, the classes were distributed to various other buildings to continue education. It was only in 1838 that the school was moved to the

[205] Fahri Çoker, *Bahriyemizin Yakın Tarihinden Kesitler* (Ankara: Deniz Kuvvetleri Komutanlığı Karargâh Basımevi, 1994), pp. 120-121.
[206] Zorlu "Selim III and Ottoman Seapower", p. 33.

Kaptan Pasha pavilion on the hill where the present-day Naval Hospital is located and it was finally housed in a permanent building.[207]

As can be understood from the *Mekteb-i Bahriye* by-laws written on 2 February 1825, there were not enough faculty members to teach classes and due to lack of financial resources and staff, students were forced to make a living through other jobs. The Naval College, which was expected to teach Western sciences, was almost transformed into a madrasa in which no textbooks, other than religious books such as *Kara Davut* and *Mızraklı İlmihâli,* were available.[208] The social trauma that occurred a year later with the abolition of the Janissaries and the ongoing Greek Revolt at full force prevented the state from taking concrete measure to revive the Naval College in the ensuing years. Serious and lasting reforms in this respect were initiated only after the proclamation of the Tanzimat.

The first individual to undertake the reform of the Naval College was the British naval officer Sir Baldwin Wake-Walker (1802-1876), who was known by the nickname "Yaver Pasha" due to his post as "*yaver*", or aide-de-camp to Sultan Abdülmecit. Having served the Ottoman state between 1839 and 1845, Walker presented, after a meticulous review, a plan that he had drafted for the reformation of the Naval College to Kapudan Pasha Mehmet Sait on 10 February 1840. When the Naval Council approved his plan, the report was put into effect with an Imperial decree dated 9 April 1840.[209] Quite possibly, however, due to the ongoing Egypt Problem and the Straits Crisis, Walker's reform program was not followed in due course and the Naval College failed to reach the desired level. It was only after the reestablishment

[207] Gencer, p. 122.
[208] Safvet, *Bahriyemiz Tarihinden Filasalar* (İstanbul: Donanma Matbaası, 1328), pp. 13-14.
[209] Gencer, pp. 262-262.

of peace in the Empire (1841 Treaty of London) and the appointment of Patrona Mustafa Pasha as the Minister of the Naval College in 1847 that lasting changes would take place.

Steam, War and Iron: The Transformation of the Ottoman Navy 1847-1877

The year 1847 marks the true start of the Ottoman steam navy, for that year the first steam warship squadron was formed. The units of this squadron were the paddle frigates *Taif*, *Mecidiye*, *Saik-i Şadi* and *Feyza-i Bahri*. Laid down at the Imperial Arsenal in 1845, they were large examples of their kind at 1600 tons. The machinery and the armament of thirty 32-pounders and two 10-inch Paixhans guns were imported from Britain. The first Ottoman screw warship was commissioned two years later, when Khedive of Egypt Abbas Pasha donated the Alexandria built *Şarkiye* to Sultan Abdülmecid. Renamed the *Muhbir-i Sürûr*, the 1500-ton steam frigate was armed with twenty two 60-pounder guns and British built machinery.[210] Those five ships were the steam component of Ottoman Navy when the Crimean War began.

In 1852, a diplomatic squabble erupted between the new French emperor Napoléon III, and Russian Czar Nicholas I over the guardianship of shrines in the Holy Land. The tension rapidly escalated by heavy handed diplomacy on both sides and soon the Ottoman Empire was drawn into what originally was a prestige competition between the Catholic and Orthodox churches. Nicholas I used the Ottoman involvement as a pretext to re-invoke Russian ambitions in the "Eastern Question" and spurred an agressive

[210] Langensiepen and Güleryüz, pp. 130-131.

diplomacy backed by military threat to demand concessions which effectively meant meddling into the Ottoman internal affairs.[211] The Russian aggression backfired and the Sublime Porte firmly rejected the demands. When Russian troops invaded the Danubian Principalities to force the issue; an alarmed Britain and a grudging France gave full support to Ottoman Empire and war was declared on 19 October 1853, upon the refusal of the Russian government to evacuate the principalities.[212] What was to become the first post-Napoléonic conflict involving European great powers had thus begun.

At the start of the war, the Ottoman navy had six ships-of-the-line, eleven frigates, eight corvettes, thirteen brigs, five schooners and five steam warships fit for duty; with 20,000 personnel. Egypt sent three ships-of-the-line, three frigates, three corvettes and one paddle corvette as reinforcements.[213] The Ottoman strategy in Black Sea was fixed primarily as the defense of communication lines with the armies on the Caucassus front. The Ottoman naval commanders were typical products of the Mahmudian age, mostly ex-rankers who embraced the reform program and promoted due to their loyalty to the new order. However, crew efficiency was low, the majority of ships being manned by recently mobilized conscripts.[214]

Facing the Ottoman navy, was Russia's Black Sea Fleet under the command of Vice-Admiral Vladimir Kornilov, and his chief subordinate Vice-Admiral Pavel Nakhimov. Both men were first class professional officers who learned their trade under the great seaman Admiral Mikhail Lazarev. Due to Kornilov's vigorous training program in the preceding years;

[211] Ponting, pp. 1-8.
[212] Sondhaus, p. 57.
[213] Çoker, p. 109.
[214] Baş, p. 187.

the fleet of fourteen ships-of-the-line, six frigates, four corvettes, twelve brigs, six large paddle frigates and a host of auxiliary ships enjoyed perhaps the highest level of efficiency in its history.[215] A high degree of integration between men and officers was achieved and morale was high. Although Kornilov and Nakhimov favoured an aggressive strategy, including an assault on the Bosphorus, the Commander General of the area, Prince Menshikov, was not supportive, and eventually the Black Sea Fleet assumed a more defensive position.[216]

The Crimean War was the first conflict of the industrial age. For the first time incendiary shell guns and steam warships were to be commonly used and pitted against each other.[217] Thus, on 5 November 1853 happened the first clash between two steam warships in naval history. The swift and powerful Russian paddle frigate *Vladimir*, under the command of Captain Grigoriy Butakov, encountered the 10-gun Egyptian paddle corvette *Pervaz-ı Bahri*. In a duel lasting three hours, Butakov outmaneuvered the Egyptian ship and raked her from both bow and stern, inflicting 58 casualities. The *Pervaz-ı Bahri* surrendered and was towed to Sevastopol, where she was repaired and added to the Russian Navy as the *Kornilov*.[218]

In this increasing pace of naval activity, the first major battle of the war was fought at sea and became one of the most spectacular naval battles of the nineteenth century. Since the start of the war, the Ottoman squadrons had been patrolling on the Black Sea, both to train freshly mobilised crews and to ferry reinforcements into the Caucassus. A squadron of seven frigates, five

[215] Baş, pp. 199-200.
[216] Sondhaus, p. 48.
[217] Ponting, p. 335.
[218] Baş, pp. 202-203.

corvettes and two steamers under Vice-Admiral Osman Pasha was ordered to proceed into Sinop, the best Ottoman harbor in the Black Sea.[219] However, Osman Pasha was strongly against this decision. Sinop was just 180 miles away from Sevastopol, the base of Russian Black Sea Fleet, while Constantinople was as far as 280 miles. With raw crews manning ships, basing an isolated squadron at Sinop would invite disaster. The Ottoman naval command sought to reinforce Osman Pasha's force with ships-of-the-line, but Viscount Stratford de Redcliffe, the infamous British ambassador at Constantinople, objected and eventually convinced the Porte to give up this idea, despite the protests of Osman Pasha.[220] Taking advantage of stormy seas and autumn fog, Admiral Nakhimov was able to make a successful reconnaissance of Sinop without being detected, and after receiving reinforcements, attacked on 18 November 1853. The Russian squadron of six ships-of-the-line, two frigates and three auxiliary steamers carrying a total of 710 guns destroyed the isolated Ottoman squadron in just one hour. Ottoman casualities were 3000 dead, wounded, missing and prisoners, including Osman Pasha who was wounded and taken captive. Russian casualities were 266 dead and wounded. Only the paddle frigate *Taif* escaped and brought news of the disaster back to Constantinople.[221]

After destroying the Ottoman squadron, the Russian ships turned their guns to the land batteries guarding the harbor, but their indiscriminate shelling of the town in the engagement caused great destruction and civilian losses. This proved to be a fatal mistake, for it provided a suitable pretext of

[219] Besim Özcan, *Sinop Deniz Felaketi* (İstanbul: Deniz Basımevi, 2008), pp. 55-56.
[220] Baş, pp. 188-189.
[221] Sondhaus, p. 58.

"Russian atrocities" to Britain and France for declaring war.[222] Apart from its political significance, Sinop was a remarkable naval battle. It was the last major clash between wooden sailing warships. As will be remembered, the effect of Russian shell guns over Ottoman frigates was the leading factor in the building of the first ironclad warships at the end of the war. From the Ottoman side, apart from the terrible naval and civilian casualities, Sinop was a sobering demonstration of the still insufficient Ottoman sailing skill. While Admiral Nakhimov was perfectly able to navigate and recon inside enemy waters at bad weather, the Ottoman warships failed to patrol their own area of operations and were taken by complete surprise.[223] Sinop became also the last large scale Ottoman naval activity during the Crimean War. The Porte was happy to leave the task of establishing naval superiority to the grand allied armada of Britain and France, which entered into Black Sea following their formal declaration of war in March 1854.Thereafter, the Ottoman naval contribution was limited to providing two ships-of-the-line, including the fleet flagship *Mahmudiye*, for the blockade and bombardment of Sevastopol.[224]

The crushing allied naval superiority forced the Russian Black Sea Fleet into Sevastopol, and finally led to their scuttling. With the fall of Sevastopol on 9 September 1855, after an arduous siege by an allied expeditionary force, the Crimean War came to an end, and peace was signed at Paris on 30 March 1856. The Russian Empire, despite possessing the largest army on earth, was unable to react to allied seaborne assaults due to its primitive internal communications. In this respect, the Crimean War was the

[222] Özcan, pp. 83-86, 135-143.
[223] Ibid., pp. 70-71.
[224] Langensiepen and Güleryüz, p. 4.

victory of seapower.[225] Among the keen students of this strategic lesson was the Ottoman crown prince Abdülaziz, who once ascended to the throne in 1861, would set out to create the largest navy that the Ottoman Empire had seen since the days of Suleyman the Magnificent. It was also to be the period during which the Ottoman navy would complete its transformation into an industrial iron and steam navy.

The move toward the mechanization of the Ottoman navy did in fact start before Crimean War ended. Although plans were also made to have the venerable old flagship *Mahmudiye* converted to the screw system in Britain, she was found to be much too rotten and was duly taken out of service.[226] The first screw ship-of-the-line was the 78-gun *Peyk-i Zafer*, converted in Britain in 1856. Two years later, the Imperial Arsenal launched the 68-gun screw ships-of-the-line *Şadiye* and *Fethiye*. The last Ottoman screw ship-of-the-line was the 96-gun *Kosova*, which was converted in Britain in 1864, along with the 50-gun frigates *Ertuğrul*, *Hüdavendigâr* and *Nasr-ül Âziz*.[227] The last screw frigate of the Ottoman Navy, the 52-gun *Selimiye*, was launched in 1870 at the Imperial Arsenal and was among the biggest of her class in the world. Until 1870, seven 12-gun and six 8-gun screw corvettes were also added to the fleet.[228]

With the advent of ironclad warship in 1861, Sultan Abdülaziz ordered the assembly of a naval council to make necessary preparations for appopriating armored ships into the Ottoman navy. According to the plan prepared by Kapudan Pasha Ateş Mehmed and head of the naval council

[225] Ponting, p. 336.
[226] Bulgurcuoğlu, *Efsane Gemi Mahmudiye Kalyonu*, pp. 97-98.
[227] Langensiepen and Güleryüz, pp. 128-129, 131-132.
[228] Ibid., p. 132, 134-136.

Besim Pasha, the first Ottoman ironclads were ordered from Britain in 1864.[229] The Ottoman Navy's decision to order only iron hulled ships proved a fortunate one: in the later budget-tight years, all the Ottoman armored ships would be modernised with varying degrees of success instead of just rotting away as the wooden hulled ironclads of all other navies did in a relatively short time.[230] The first Ottoman armored ships were the four ironclad frigates of *Osmaniye* class, all entering into service by 1868. Of 6400 tons, they were smaller yet powerfully armed derivatives of the *HMS Warrior*, carrying fourteen 150 pdr. and two 300 pdr. Armstrong muzzle loading rifled guns. They were protected by a 10-inch wrought iron armor belt and could make a maximum of 14 knots.[231] Meanwhile, five armored gunboats of the *Feth-ül İslâm* class were ordered from France for the Danubian Squadron. Weighing 408 tons, each carried two 32 pdr. guns and was protected by a 3-inch wrought iron belt.[232]

Following the first order to Britain, the 5600-ton central battery ironclad *Âsar-ı Tevfik* was ordered from France in 1867. This powerful ship carried six 250 pdr. Armstrong guns in a specifically armor reinforced battery section at the amidships and two 200 pdrs in two barbettes[233] right above this central battery. Protection was an 8-inch wrought iron belt and the speed was 13 knots.[234]

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[229] Fevzi Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları* (İstanbul: Deniz Matbaası, 1935), p. 59.
[230] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, p. 185.
[231] Tony Gibbons, *The Complete Encyclopedia of Battleships and Battlecruisers* (London: Salamander, 1983), p. 49.
[232] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, p. 59.
[233] Barbette or Sponson is a derivative of the turret, where the guns are placed on a circular turntable inside an armored "bucket" with an open top or light splinter shield. Tucker, p. 146.
[234] Gibbons, p. 75.

The second batch of Ottoman ironclads from Britain was ordered in 1869. These were the 2400-ton armored corvettes *Avnillah* and *Muin-i Zafer*; carrying four 250 pdr. Armstrong guns and a 6-inch armor belt. The *Feth-i Bülent*, which was ordered a year later, was of the same layout and armament but carried a 9-inch wrought iron belt for a weight of 2800 tons.[235] A sistership, *Mukaddeme-i Hayır*, was laid down in Imperial Arsenal to become the first native built ironclad.[236] The third and final order to Britain was made in 1874, which included the legendary *Mesudiye*, along with her intended sistership, the *Memduhiye*, and the armored corvettes, *Peyk-i Şeref* and *Burc-u Şeref*.[237]

Designed by the foremost warship designer of the era Sir Edward Reed, as a modified *HMS Hercules*, the *Mesudiye* was built at the Thames Blackwall yard. At 10,000 tons she was the biggest central battery ship ever built. Her armament of twelve 400 pdr. Armstrong guns was protected by a 12-inch wrought iron belt. She had the unusual feature of a 1.5-inch deck armor and carried two 150 pdr. Armstrong guns on this armored deck; the speed being 12 knots. Upon her arrival in 1876, she became the fleet flagship, a role she was to perform for the next thirty five years.[238] Other ships in that order were still on slips when the War of 1877-78 erupted, and were bought by the Royal Navy to reinforce the numbers during the Russian war scare of 1878.[239]

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[235] Gibbons, p. 62, 77.
[236] Langensiepen and Güleryüz, p. 114.
[237] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, p. 61.
[238] Gibbons, p. 87. For a detailed monography of *Mesudiye* see Eda Gülşen Gömleksiz, *Mesudiye Zırhlısı* (İstanbul: Piri Reis Araştırma Merkezi, 2007)
[239] Sondhaus, pp. 124-125.

The only Ottoman ironclad which was not ordered from Britain or France was the Austrian-built *İclâliye*. Completed in 1870, this 2266-ton armored corvette was protected by a 6-inch wrought iron belt with a speed of 11 knots. Her armament was four 9-inch Krupp muzzle loading guns on broadsides and one 6-inch Krupp in a barbette on the deck.[240]

Apart from armored ships ordered by the Porte, the Ottoman navy added a further four French-built ironclads which originally had been ordered by the Khedive of Egypt, but transferred to Constantinople due to the suspicions of Abdülaziz and his British allies over this increase in the Egyptian armament program.[241] The *Hıfz-ı Rahman* and *Lütf-ü Celil* were 1771-ton double turreted monitors protected by a 3-inch wrought iron belt, each turret carrying one 250 pdr. and one 150 pdr. gun. The *Âsar-ı Şevket* and *Necm-i Şevket* were 2000-ton armored corvettes protected by a 6-inch wrought iron belt. They carried four 250 pdr. and one 120 pdr. guns in a layout similar to that of the *İclâliye*.[242]

Accompanying this dramatic increase in Ottoman naval power was a conscious effort to develop the industrial framework of the Imperial Arsenal between 1861-76. One immobile stone and one floating wooden drydock were built, along with a new stone slipway at Aynalıkavak. By the 1870s, the British had established a modern foundry and a machine tools factory at Yalıköşkü, where the armour plates, boilers, ship machinery and high tensile iron necessary to cast rifled guns were being produced.[243] At the modernized rifle factory, Snider and Martini-Henry rifles of the latest design were

[240] Gibbons, p. 75.
[241] Sondhaus, p. 90.
[242] Gibbons, p. 62.
[243] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, p. 127

assembled and repaired, along with a production of 10,000 cartridges per day at full capacity work.[244] The clothing factory, which produced naval uniforms, was similarly modernized with steam powered looms. Over two hundred British foreman and skilled workers were employed to help the functioning of these factories.[245]

As a result of the two decades long shipbuilding and modernization efforts, the Ottoman navy had thus became the fourth greatest naval power of the world, with twelve first-class ironclads by the end of Abdülaziz's reign. The Imperial Arsenal had become the largest industrial establishment in the Ottoman Empire, but both the navy and its framework had taken a very heavy toll from the unstable Ottoman finances. This was a price which would prove catastrophic in years following the 1873 global financial collapse.[246]

Institutional Framework: Recruitment, Command and Education

To man its warships, the Ottoman Empire continued the rather ecclectic method of old-style volunteer recruitment and partial conscription until 1849, when the *Kur'a Kanunnamesi* (Conscription Law) was initiated. According to the new law, regular service in the navy was to be ten years (this decreased to eight years in 1851) and liability for naval reserve was to be five years. It was planned to conscript 3000 men for naval service each year. A major revision was made in 1865, when the non-comissioned officer class was initiated and both regular and reserve services were fixed at six years

[244] Grant, p. 14.
[245] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, p. 128.
[246] Sondhaus, p. 103. Batmaz, II. Abdülhamid Devri Osmanlı Donanması, p. 129.

each.[247] With the increasing pace of naval mechanization, foreign nationals under contract started to be employed in increasing numbers. At first, these were mainly machinists and engineers whose tasks were limited to the running and upkeep of steamship machines. Theoretically, as the native Ottoman machine skills developed, they were to be discharged but in practice it happened in the opposite way. In the 1870s, there were ships which were fully manned by mercenaries.[248] Similarly, foreign naval officers started to be appointed to actual command posts. British adventurer Charles Augustus Hobart-Hampden became the first Christian to reach the rank of *Müşir-i Bahri* (Great Admiral).[249]

The bureaucratic re-organization of the Ottoman navy was a process which started after the edict of the Tanzimat, and through a slow, largely experimental process, culminated in the establishment of the *Bahriye Nezareti*, The Ministry of Marine, in 1867. The greatest challenge facing Ottoman naval authorities was the professionalization of the navy as an institution. After a short-lived attempt in 1840-41, the *Meclis-i Bahri* (Naval High Council) was established in 1845 to direct naval modernization, develop a naval strategy compatible with the Imperial defense policies and oversee the professionalization of personnel.[250]

The Meclis-i Bahri made an important step in 1853 by completely re-organizing the traditional rank system of the Ottoman navy which hitherto reflected an essentially land-based organization. The new regulations formalised the status of warship commanders as professional officers. The

[247] Çoker, p. 109.
[248] Sondhaus, p. 31, 90.
[249] Çoker, pp. 168-169.
[250] Gencer, pp. 142-145.

traditional three flag-rank offices of *Kapudane*, *Riyale* and *Patrona* were retained, but raised to Pasha level. Battleship (ship-of-the-line) commanders were called *Miralay* (Captain), Cruiser (frigates and corvettes) commanders became *Kaymakam* and *Binbaşı* (Commander and Lieutenant-Commander), while captains of small craft (Brigs, Schooners, etc.) became *Sağ Kolağası* (Lieutenant). The new rank of *Komodor* (Commodore) was initiated as a flotilla commander.[251] The final turning point came on 12 March 1867, with the unification of the Imperial Arsenal and Navy administrations as a new ministry, the Ministry of Marine and the abolition of the *Kaptân-ı Derya*'s office, which was replaced by Bahriye Nazırı, the Minister of Marine.[252]

The education of naval officers possessing the necessary knowledge became a topic to which the Meclis-i Bahri gave great importance. After presenting a treatise about the modernization of naval education on 27 April 1847, the accomplished organizer Patrona Mustafa Pasha was appointed as the director of the Naval College; which was renamed the *Mekteb-i Bahriye-i Şahane* (Imperial Naval Academy).[253] Under his command, the Mekteb-i Bahriye found its final location at the restored Heybeliada navy barracks in 1852, where it continues to function today.

Initially the school had four classes and 120 cadets. At the third class, the deck (battle) and shipbuilding divisions were separated, and those who are destined for sea service were drilled aboard a training ship. At the same time, English became the primary foreign language, reducing French to second choice. During the reign of Sultan Abdülaziz, accompanying the naval buildup, the Mekteb-i Bahriye was again expanded. The numbers of cadets

[251] Çoker, p. 109.
[252] Gencer, pp. 316-317.
[253] Safvet, pp. 21-23.

was increased and a third "steam" division was opened to train machinists. A naval staff school was established in 1864. During the directorship of Sait Pasha (1869-1874), who had been educated at Edinburg University in mathematics and engineering, many handpicked British instructors were employed, who raised the school to a high level of efficiency.[254]

The Prisoner Fleet: Abdülhamid II and the Ottoman Navy, 1877-1897

In 1875, the last year of Sultan Abdülaziz's reign, a young Ottoman lieutenant by the name of Süleyman Nutkî was assigned to the ironclad frigate *Aziziye*, along with his friend Tekirdağlı Arif. He left a vivid description of the conditions aboard this powerful unit of the Ottoman Navy:

> …on the day we arrived, there was no sign of the order and dignity that we expected. In the chamber that was given to us, there wasn't any furniture and as if that was not enough, officers had to provide their own rations. This both disturbed the necessary discipline and the sense of camaraderie [among the officer corps]. This disturbance was caused by the lack of a money allotment to ships for providing rations. Although the deck officers were more than fifteen in number, only one-third of them were college graduates and the rest were ex-rankers (*alaylı*). Due to the great difference of habits and mentality, there was a great hatred between the two groups, which dissolved the unity of spirit. The crew was below strength and the daily drill was limited to the keeping of basic order aboard, without proper training.[255]

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[254] Çoker, p. 121.

[255] Bal, Nurcan., ed. *Süleyman Nutkî Bey'in Hatıraları* (İstanbul: Deniz Basımevi, 2003), pp. 23-24. "*Arkadaşım Tekirdağlı Arif Efendi ile beraber atandığımız bu firkateyne geldiğimiz gün ümit ettiğimiz düzen ve yücelikten eser görülemedi. Bize ayrılan kamarada mobilya namına bir şey olmamakla beraber subaylar kendi yemeklerini kendileri tedarik etmek mecburiyetinde idiler. Bu durum, gemilerde hem düzeni bozmaya ve hem arkadaşlıkta pek gerekli olan ahbaplık ve yakınlığı yok etmeye vesile olur. Bu yalnızlığa başlıca sebep, subay lokantaları için yemek parası adıyla bir ödenek verilmemesindendir. Firkateyn mürettebatından güverte subayları on beş kişiden fazla olduğu halde bunlardan üçte biri okulda yetişenlerden olup geri kalanı askerden yetişenlerden (alaylı) olduğundan ve bu iki kısım arasında görgü kuralları açısından çok zıtlık olduğundan ve birbirlerinden çok nefret*

Süleyman Nutkî's account is clear and informative about the true conditions behind the imposing image of ironclads. Tremendous amounts of money were spent to build the fourth greatest fleet of the world, but there were critical deficiencies in training, discipline and regulations, which seriously undermined the real power of the navy. Although the *Mekteb-i Bahriye* had recently undergone a serious reform, the institution was too immature to turn out enough numbers of decently educated officers. The upper ranks were thus still dominated by ignorant ex-rankers who were totally insufficient to cope with the necessities of modern warfare. Patronage and corruption were also the usual compatriots of the administration; and Süleyman Nutkî noted disturbing instances which badly sapped the morale.[256] These were not apparent to the public in peacetime, but were to be painfully obvious at the test of war in a couple of years.

Since 1871, a combination of developments in world politics and internal difficulties were spiralling the situation of the Ottoman Empire from bad to worse. First, with the defeat and humiliation of France in 1871, Russia was freed from its greatest continental check to her ambitions. Then came the catastrophic 1873 financial crisis, which brought the Ottoman economy to the brink of collapse due to the large amounts of foreign loans taken after the Crimean War. A lengthy drought added much to the plight of the peasantry, leading to rebellions in Bosnia in 1875. The Bosnian rebellions spread like wildfire in the Balkans; Montenegro and Serbia joined in 1876. The wave of insurrection culminated with the April 1876 uprising of Bulgarian nationalists

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ettiklerinden bu da düşünce birliğine yegâne engeldi. Askerî mürettebatın sayısı gerekli olandan noksan olmakla, günlük hareketler düzeni sağlamakla sınırlı olup eğitimlere önem verilmemekte idi."

[256] Bal, pp. 24-25.

which was accompanied by a horrendous attempt at the ethnic cleansing of Bulgarian Muslims.[257]

As the regular troops were busy with the pacification of Bosnia and Serbia, the Porte made the disastrous decision to unleash the *Başıbozuk* irregulars, the majority of whom were Circassians and Tatars who had suffered great tragedies at the hands of Russians in the preceding decades and were thus burning with desire for revenge. Ottoman officials lost control over the *başıbozuk*s, who indiscriminately massacred Bulgarian civilians. These events echoed throughout Europe, and the resulting outcry effectively isolated the Porte in the diplomatic arena, sweeping away the traditional British support as well. It was exactly the opportunity that Russia had been seeking since the Crimean War to settle the debts with the Ottoman Empire.[258]

Amidst this ongoing chaos, Sultan Abdülaziz was dethroned on 30 May 1876 by a clique of liberal ministers headed by the grand vizier Midhat Pasha, and supported by the commanders-in-chief of both the army and the navy. Coup leaders had his nephew Murad V ascend the throne while Abdülaziz was found dead on 4 June, supposedly by suicide, but possibly he was murdered. Murad V was never mentally very strong and upon hearing Abdülaziz's death he lost his sanity altogether. Due to his mental unstability, he stayed on the throne only for ninety three days and was replaced by his brother, Abdülhamid II, on 31 August 1876. Abdülhamid II was to be the last "real" sultan who would influence the fate of the Empire during a long reign

[257] Dumont, Paul. "Tanzimat Devri" in *Osmanlı İmparatorluğu Tarihi v. 2*, edited by Robert Mantran (İstanbul, Adam Yayınları, 1999), pp. 129-130.
[258] Stanford Shaw and Ezel Kural Shaw, *History of the Ottoman Empire and Modern Turkey: v.2 Reform, Revolution and Republic: The Rise of Modern Turkey 1808-1875* (Cambridge: Cambridge University Pres, 1977), p. 162

of thirty three years. This was to be a decisive effect for both the future of the peoples under Ottoman rule, and that of the Ottoman navy.[259]

Upon his accession to the throne, Abdülhamid II found an empire in a most dire crisis. Russia was intent on exploiting the diplomatic isolation and turmoil of the Porte. A surge of nationalism, unseen since the days of Napoléon's invasion of Russia in 1812, surged through Romanov territories. Thousands of volunteers, spurred by the "Pan-Slavism" ideology, flocked to to the Russian army, which was expected to move into the Balkans to "liberate" Bulgaria. Russians further secured their position by reaching an agreement with the Austrians and by pressing their demands to the Porte through an international conference which gathered in Constantinople. The Ottomans made an unexpected maneuver by declaring a constitution on 23 December 1876, hoping to stave off great power intervention into Ottoman internal affairs. However, Russia was not to be appeased and following further futile negotiations, war was declared on 24 April 1877.[260]

In the previous wars with the Ottoman Empire, the Russian Black Sea Fleet had played a critical role for fire support and logistics. However, because of the Treaty of Paris, Russia had not had a naval force other than a coast guard in the Black Sea for twenty years. What Russians devised for offensive naval operations was a makeshift force of merchant vessels converted into auxiliary cruisers and mother ships for small torpedo launches. Against them was arrayed a formidable ironclad fleet which enjoyed complete command of the sea. However, the results of action turned out to be

[259] François Georgeon, *Sultan Abdülhamid* (İstanbul: Homer Kitabevi, 2006), pp. 53-61.
[260] Dumont, pp. 134-138.

a complete source of embarassment for the Ottoman Navy and deeply influenced its future.

The greatest danger for the Russians was to be interdicted at the most delicate moment, when their army was crossing the Danube. In the river, there was a strong Ottoman squadron which comprised of the powerful monitors *Hıfz-ı Rahman*, *Lütf-ü Celil* and five smaller armored gunboats, along with some wooden vessels. Russians mined the mouth of the Danube and erected powerful coastal batteries on the northern bank of the river. While all these preparations were going on, the Danubian squadron did absolutely nothing to interfere. On 11 May *Lütf-ü Celil* was hit by one of these coastal batteries and blew up with only two survivors. Two weeks later, a torpedo lauch sank the armored gunboat *Seyfi*. After this attack, the Ottoman squadron surrounded itself with a floating boom and was driven into full passivity. On July 16, Russians captured two Ottoman armored gunboats and after this loss the Danubian squadron was driven out of the river, with only two ships left undamaged.[261]

In the Black Sea operations, the Ottoman navy initially seemed to be more successful. The powerful Ottoman Black Sea Fleet under the command of Vice-Admiral Bozcaadalı Hasan Hüsnü Pasha had eight ironclads and six sizeable wooden warships. On May 14, the Black Sea Fleet executed the only Ottoman offensive naval operation in the war by shelling Sohumkale and by landing troops, which secured the town of Sochi. If it had been executed by something more than a token force, the Sochi landing would have turned into a serious diversionary assault which could have gravely impeded Russian

[261] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, pp. 90-100.

operations. Even then, the Ottoman landing showed its immediate effect by inciting revolt among the Tatar population. Russians assigned the majority of their torpedo forces into the area, making repeated assaults on the Ottoman ships. However, Ottoman safety measures proved to be useful. The only Russian success was detonating a spar-torpedo under the ironclad *Asar-ı Tevfik* on the night of 23 August but the ship did not suffer serious damage. The operations in Crimea came to an end when a superior Russian Army approached; the landing forces along with 40,000 Tatar refugees fearing from Russian reprisals were evacauted by 1 September.[262]

After the evacuation of Crimea, the Fleet was occupied mostly with ferrying reinforcements to the Caucassus front. Especially the disarmed old screw ships-of-the-line *Kosova*, *Şadiye* and *Fethiye* proved to be suitable for carrying large numbers of troops. The main base of operations was Batum and Russian torpedo operations moved into that region. In the last months of 1877, the Russians brought self-propelled torpedoes to the front and made many attacks on the ships in the harbor. The wooden gunboat *Intibah* became the first victim of this weapon in naval history on the night of 25 January 1878.[263]

The Ottoman Mediterreanean Fleet, which also included the brand new flagship *Mesudiye* along with four other ironclads and the big wooden frigate *Selimiye*, stayed mostly inactive in the war, but proved to be useful as a deterrent to keep Greece out of the war. During the pell-mell retreat of the defeated and dissolved Ottoman armies in the Balkans, elements of the

[262] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, pp. 101-104.
[263] Ibid., pp. 104-112.

Mediterrenean Fleet, especially the *Selimiye*, did great work by evacuating many troops trapped on the Thracian coast.[264]

The war ended with the armistice on 31 January, the Russian Army having advanced within striking distance of Constantinople. This was too much for Britain, which could never accept Russia seizing the Turkish Straits, and to prevent a total Ottoman collapse, a powerful "flying squadron" along with an expeditionary force was dispatched summarily to the Bosphorus; arriving on 13 February. In response, the Russian Army advanced to San Stefano (Yeşilköy), just six miles from the Ottoman capital and braced itself for a new Anglo-Russian war. The other great powers intervened and at the Congress of Berlin, with the brokerage of the German Chancellor Otto von Bismarck, a new peace was re-written with considerably softened terms compared with the original treaty imposed by Russians on 3 March.[265]

The War of 1877-78 was the most disastrous defeat ever suffered by the Ottoman Empire since the repulsion of the second assault to Vienna in 1683. It marked the effective end of the Ottoman Empire as a great power. Serbia and Romania which, albeit nominally, had been autonomous princedoms of the Empire officially gained their independence. Northern Bulgaria became a nominally autonomous, de-facto independent princedom. Southern Bulgaria became the autonomous province of Eastern Rumelia under a Christian governor, only to be annexed by the Bulgarian Princedom in 1885. Austria-Hungary occupied the rebellious Bosnia-Hercegovina to "administer it in name of the Sultan". Even the non-belligerent Greece

[264] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, pp. 115-120.
[265] Sondhaus, pp. 124-125.

snatched territory by annexing Thessaly in 1882 under the clauses of treaty. In the Caucassus, the key fortresses of Batum, Kars and Ardahan are lost.

In addition to the territorial losses, one of the greatest demographic catastrophes of history took place in the Balkans with the repulsion or massacre of hundreds of thousands of Muslims. A crippling war indemnity was also to be paid to Russia.[266] The last and perhaps the ugliest loss was the ceding of Cyprus to a "British protectorate" as a price of its involvement in the last stages of the conflict. Britain was no longer hopeful that the Ottoman Empire could stop another Russian onslaught on the Straits and desired Cyprus as a safe naval base in the Eastern Mediterranean, close to the Suez canal.

The forced concession of Cyprus marked the effective end of the Anglo-Ottoman Alliance. The fate of this old co-operation was sealed in 1882, with the British occupation of Egypt. In the new geopolitical situation, Britain no longer needed the Ottoman Empire to guard the route to India while the Ottomans were deeply resentful of British opportunism. Thereafter, the Ottoman Empire gravitated more and more toward Germany, which was rapidly emerging as the foremost rival to both Russia and Britain, culminating in the Ottoman-German Alliance in the First World War.[267] The new geographical, political and diplomatic situation also altered the fate of the Ottoman navy.

The virtual collapse of Ottoman naval power in the two decades which ensued the War of 1877-78 was the subject of continuous investigation after the proclamation of the Second Constitution in 1908. The prevailing idea

[266] Dumont, pp. 141-142.
[267] Georgeon, pp. 255-265.

among both the public and intelligentsia was that Abdülhamid had left the navy to rot because of the institution's share in the dethronement of Abdülaziz and he feared that the same should be done to him as the navy was the most liberal branch of all armed forces.[268] More recent scholarly studies have focused either on the reversion of modernization priority to the army during the Hamidian era[269] or to the financial impossibility to support the great sums required for the upkeep of a sizeable fleet in the chronic financial crisis following the 1875 moratorium.[270] Şakir Batmaz argues that the Sultan never stopped his interest in maintaining the fleet, constantly ordering the modernization of ironclads, but was misled by the corrupt and inefficient bureaucracy of the Ministry of Marine.[271] According to my opinion, all these arguments have some truth, but rather than looking for a single cause it is more productive to search for the reasons behind "the melting" of the Ottoman navy from a mixture of all the arguments cited above.

Thus, through a complex web of political unwillingness, financial difficulty, shift in defense priorities and administrative incompetence, the Ottoman navy, which had been strenghtened into a world class naval power in two decades, collapsed into oblivion within a same amount of time. The Imperial Arsenal was especially hard hit by the eclipse of the Anglo-Ottoman Alliance, as it was Britain which had provided the majority of technical help. By 1881, except for a token advisor group, more than two hundred British workmen who had provided the necessary know-how to the Ottoman navy

[268] Enver Ziya Karal. *Osmanlı Tarihi: I. Meşrutiyet ve İstibdat Devirleri 1876-1908 v. 17* (Ankara: Türk Tarih Kurumu Yayınları, 1962), p. 369
[269] Albert Griffiths, The Reorganization of the Ottoman Army under Abdülhamid II (1880-1897), (Ph.d diss., UCLA, 1966)
[270] Kaori Komatsu, "Financial Problems Of the Navy During the Reign Of Abdülhamit II", *Oriente Moderno*, XX(LXXXI), 1, 2001, pp. 209-219.
[271] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, pp. 291-292.

were discharged. The pace of naval construction immediately lapsed; the 6600-ton ironclad *Nusretiye* (renamed *Hamidiye*) which had been laid down in 1874 could be only completed in eleven years, totally obsolete in design and with defective armor and machines.[272] The workshops set up at great expense to roll armor and produce ship machinery fell into disrepair. Only the gun foundry and the small arms factory were kept alive as they reverted to the production of the army's needs. With the deactivation of the ironclads, the only initiative undertaken in the Arsenal for the battlefleet was the re-armement of ships with new Krupp guns, both imported and produced under licence.[273]

As the Ottoman battlefleet was mothballed in the Golden Horn, the rule of the day became coast defense. The Ottomans' recent experiences with torpedo craft in the Russian War and the effects of the *Jeune Ecole* prompted the Sultan into acquiring torpedo boats as the principal naval weapon system. The key figure in the Ottoman torpedo boat program was the British naval officer Sir Henry Felix Woods (1842-1929). Woods was a close subordinate of Hobart Pasha, who made a deep impact in the creation of the Ottoman ironclad navy. Upon Hobart's death in 1886, Woods replaced him as Sultan's aide-de-camp and advisor in naval affairs. However, possibly due to his war experience in 1877, when he had fought in the Danube and witnessed the most successful Russian mine and torpedo operations, he became a proponent of the torpedo craft. Surprising for the career of a Hamidian era high ranking

[272] Edwin Pears, *Forty Years in Constantinople 1873-1915* (New York: D. Appleton, 1916), pp. 170-171. Gibbons, p. 128.
[273] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, pp. 161-166.

officer, he remained a close confident and trustee of Abdülhamid II until the Sultan's deposition in 1908.[274]

Under Woods' supervision the Ottoman Empire acquired twenty five torpedo craft between 1882-1897. Of these, three were built in France, three in Britain, six were constructed in the Imperial Arsenal and the rest came from Germany. The first two boats were the 40 ton, French built *Burhaneddin* and *Tevfik*. Capable of 17 knots, they were armed with a spar-torpedo and two 35.5 cm locomotive torpedoes along with two machine guns. Four copies were built in the Imperial Arsenal as the *Mecidiye* class between 1886-1893. The British built 83-ton boats *Mahabet* and *Satvet* entered service in 1887. Capable of 21 knots and armed with two 35.5 cm torpedo tubes along with two machine guns, they so rapidly deteriorated that both were decommissioned in 1892. The twelve German built units of the *Gilyum* (five boats) and *Nasır* (seven boats) classes formed the backbone of the Ottoman torpedoboat force. Ships of both classes weighed 90 tons, were armed with two 42.8 cm torpedo tubes along with two machine guns and were capable of 21 knots. The largest units of the Ottoman flotilla were the German built *Ejder*, her two enlarged native built half-sisters *Berkefşan* and *Tayyar*, and the German built torpedo gunboats *Peleng-i Derya* and *Nimet*. The 140-ton *Ejder* was armed with two 42.8 cm torpedo tubes and five 37 mm quick firing guns for a speed of 24 knots. Her two half-sisters weighed 230 tons for a speed of 21 knots and the same armament. The torpedo-gunboats weighed 750 tons with a speed of 18 knots and an armament of three 35.5 cm torpedo tubes, two 10.5 cm quick firing guns and six machine guns. The smallest

[274] Çoker, pp. 169-170.

Ottoman torpedo craft were the tiny 30 ton launches *Timsah* and *Şemşir-i Hücum*, built respectively in France and Britain. Both weighed 30 tons for a speed of 15 knots and were armed with two 35.5 cm torpedo tubes.[275]

The most interesting sequence in the torpedo-centered reorganization of the Ottoman navy was the acquision of two prototype submarines from Britain. These two 100-ton craft were the brainchild of reverend George Garret, a British clergyman and inventor. He had designed a 60-ton prototype in co-operation with the Swedish weapons manufacturer Thorsten Nordenfelt and sold it toGreece in 1886 during the Greco-Ottoman war scare over the crisis of Eastern Rumelia-Bulgaria unification. In response, the Ottoman navy ordered two larger units from Nordenfelt, which were produced in Britain and shipped in sections to Constantinople to be assambled in the Imperial Arsenal. Christened *Abdülhamid* and *Abdülmecid*, the boats made a trials in the Golden Horn in 1887, where they sank an old hulk with the first submarine-fired locomotive torpedoes in naval history. However, the submarine technology was too immature at the time, the Nordenfelt boats' pressurised steam machine could provide power only for five minutes underwater and the craft were dangereously unstable during torpedo launching. As a result, both were deemed useless and decomissioned, only to be left to rot.[276]

The largest ship built in the Imperial Arsenal during Hamidian era was the 2000-ton composite corvette *Heybetnüma*. When finished in 1895, her machines proved to be so defective that she became a stationary school ship at Heybeliada. In the building of smaller ships the Arsenal was more

[275] Langensiepen and Güleryüz; pp. 160-167, 174-175.
[276] Konstantin Zhokov and Aleksandr Vitol, "The Origins of the Ottoman Submarine Fleet", *Oriente Moderno*, V. XX (LXXXI), No. 1, 2001, pp. 221-232.

successful, completing two wooden and five steel gunboats up to 1897 to replace the rapidly deteriorating gunboats built in the 1860s. The steel hulled units proved to be quite successful and were only decommissioned at the end of the First World War, after arduous convoy escort duties.[277]

In an inactive fleet where there is no drill and pay is both cut and in arrears, a decrease in discipline is inevitable. In violation of regulations, the officers who were assigned to duty outside Constantinople brought along their families and usually employed naval personnel for their personal needs. Among the ranks, disrespect towards superiors was increasingly becoming commonplace, and sailors were deserting their ships or spending their time in the Kasımpaşa coffeehouses. Regulation of uniforms was disregarded. Because of insufficient salaries, all officers were occupied with jobs other than the military profession. Although many edicts and decrees were issued to alleviate the rapidly increasing problem of undiscipline, none became something more than saving the day.[278] The morale of both officers and cadets slumped during the era.

Süleyman Nutkî, who was assigned as instructor to the school frigate *Hüdavendigâr* in 1886, soberly remembered the drunkardness among the cadets and related an event which took place in the Suda Bay, Crete. During a visit to one of the latest model British battleships which was visiting the port, he had to quickly evacuate his pupils without receiving the traditional sailor's toast between the crews, as he feared that the cadets would get drunk and start

[277] Langensiepen and Güleryüz, pp. 137-138, 188.
[278] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, pp. 99-103.

to protest the Abdülhamid government openly to the foreign naval personnel due to their exasperation and hardships.[279]

The stagnation of the Ottoman naval assets included also the Mekteb-i Bahriye. No great novelties were introduced during the period and even there was some deterioration for in 1897, a reorganization of the curriculum was ordered. Nevertheless, altogether twenty three cadets were sent to foreign countries for training –twelve to Britain, six to France and five to Germany.[280] However, one activity in the Mekteb-i Bahriye is of interest and requires closer examination. This activity is the establishment of the *Torpido Mektebi* (the torpedo school).

The initiative to establish a torpedo school started in 1882 and the following year the old screw frigate *Muhbir-i Sürûr* was allocated to house the school, with twenty instructors and forty cadets. In 1886, two officers were sent to Germany and two to France to study torpedo technology, but because of the torpedo factories' uncooperativeness, they were not of much help. Similarly, efforts to hire technicians to start torpedo production in the Imperial Arsenal fell off due to the financial difficulties. By 1889, as the Ottoman torpedoboats were entering service, the need for further torpedo officers increased and a torpedo class was opened in the Mekteb-i Bahriye, with the *Muhbir-i Sürûr* operating as drill ship. However, the excessive importance given to torpedo training caused the neglect of gunnery standards

[279] Bal, pp. 105-106
[280] Batmaz, II. Abdülhamid Devri Osmanlı Donanması, pp. 112-116, 95-98.

and, as a result, the priority was reversed once again. However, the torpedo traning in the *Muhbir-i Sürûr* continued until at least 1904.[281]

In the Hamidian era, the only active parts of the Ottoman navy were the gunboat squadrons of Basra and the Red Sea. The old wooden screw gunboats assigned to these outposts were often unable to catch the speedy local *dhow* type sailing boats used by Arabs for smuggling. Neverthless, an extensive mapping effort of these regions was made, providing a detailed survey of the region for the first time in Ottoman history.[282] Two other important events are symbolic of the Hamidian era naval activities and the condition of the Ottoman navy. The first was the disastrous cruise of the frigate *Ertuğrul* to Japan in 1890 and the second was the scandalous cruise of the Ottoman navy during the Thessalian War some seven years later.

In 1887, Emperor Meiji's uncle made a visit to Constantinople during a circumnavigation of the world with two of the Imperial Japanese Navy warships. Abdülhamid was very interested in establishing relations with this rapidly modernizing Eastern country and decided to send an ambassador ship to Japan in 1889. The cruise was also intended to provide long-range sailing experience for cadets. The ship selected for the voyage was the old wooden screw frigate *Ertuğrul*, a thirty year old unit with worn out machines. Mr. Harty, an Englishman who was her chief machinist, protested the selection and openly declared that sending such a dilapidated ship to Japan would be murder. The Minister of Marine Bozacaadalı Hasan Hüsnü Pasha came under assault of his political opponents for selecting the *Ertuğrul* and he became

[281] Batmaz, Şakir. "An Example of the Efforts to Train Naval Personnel during the Reign of Sultan Abdülhamid II: The Torpedo School" in *Logbook of the Ottoman Navy: Ships, Legends, Sailors*, edited by Emir Yener and Ekrem Işın, (İstanbul: Pera Müzesi, 2009), pp. 65-75.
[282] Bal, pp. 63-94.

fearful of attracting the wrath of Sultan and losing his office. To silence the opposition, he fired Mr. Harty and selected his own son-in-law Osman Bey as the *Ertuğrul*'s commander to make an open show of his trust to the ship. The *Ertuğrul* weighed anchor with 550 picked sailors and 57 officers (mostly cadets) on 14 July 1889. After a year long voyage beset with lack of funds, accidents and an outbreak of cholera which claimed twelve members of the crew, the *Ertuğrul* arrived to Yokohama on 7 June 1890. During the cruise, Osman Bey had been promoted to Pasha. After a visit of three months and handing out Abdülhamid II's gifts to Emperor Meiji, Osman Pasha set sail on 15 September 1890 for Constantinople. At that time, he was warned that cruising around the Japanese Islands would be a great risk for an incapable old ship like *Ertuğrul* as the typhoon season had come. However, Osman Pasha was under constant pressure by Hasan Hüsnü Pasha, always concerned about revealing any clue to the Sultan about the unsoundness of the *Ertuğrul*, to return according to the schedule. Without option, Osman Pasha complied; only to be caught by a typhoon on the same night the *Ertuğrul* set sail. After a three day long hopless battle against the waves, the old frigate disintegrated on the coast of Oshima Island (18 September 1890). 533 of the crew perished, including Osman Pasha. In the words of Süleyman Nutkî, who later wrote a history of this disaster, the cream of the Ottoman Navy was sent to their deaths only to hide the truths about the Ottoman Navy by a corrupt naval administration fearful of losing their posts.[283]

[283] Süleyman Nutkî Bey, *Ertuğrul Fırkateyni Faciası* (İstanbul: Bahriye Matbaası, 1897) is a contemporary monography and perhaps still the best account of the *Ertuğrul*'s cruise. Among the recent studies of the incident, the noteworthy are: Esenbel, Selçuk. "Alacakaranlık Diplomasisi: Japonların Osmanlı İmparatorluğuna İlgisi", *Tarih ve Toplum* Cilt: XXXVII, Sayı: 218, Şubat 2002 and Kaori Komatsu, *Ertuğrul Fırkateyni: Bir Dostluğun Doğuşu* (Ankara: Turhan Kitabevi, 1992)

The case of the *Ertuğrul* was hidden behind the power of the waves and the wind, but the true condition of the Ottoman navy was to be revealed not only to the Sultan, but to all the world in the 1897 re-activation scandal of the battlefleet. In 3 February1897, the Ottoman Empire declared war on Greece, which was stirring the population of Crete to insurrection in order to annex the island. The Ottoman army which had been reformed in recent years under the supervision of the able German General Colmar von der Goltz, won a lightning style victory in a campaign which lasted just a month. The ironclad fleet under the command of Hasan Rami Pasha was re-activated to attack the small Greek navy, but what resulted was a virtual "self-destruction" of the Ottoman ships.

On 20 March, the fleet of eight ironclads, fourteen torpedo craft and four transports set sail from Constantinople towards Dardanelles. In full view of Istanbulites who gathered along the shores to watch the sailing of the navy for the first time since two decades, the three boilers of the flagship *Mesudiye* burst. The fleet barely made to Lapseki, where Hasan Rami Pasha and the German Admiral von Hofe, who was the supervisor of shore fortifications, started an intensive training and repair program to bring the ships into basic working condition. During the firing excercises, the runners of Armstrong guns stuck, the hydraulic pistons of Krupp guns were bent and it was discovered that the breech blocks of many small quick firing guns were stored in depots at Constantinople. None of the torpedoboats were seaworthy, their condensers and boilers having terribly deteriorated. Not one ship was able to make over ten knots speed. Both Hasan Rami Pasha and von Hofe reported that if the Ottoman Navy looked for a fight it possibly would be sunk by the

numerically fewer but technically and administratively much superior Greek navy.[284] The scandal of fleet re-activation shook all of the Empire. As one British observer noted: "the Turks had no navy left."

Following the war, even the reluctant Abdülhamid II agreed for a sizeable naval modernization program, but in the end scarce funds were wasted in the tenders to modernize the hopelessly antiquated ironclads. The collapse of the navy, which was in so stark contrast with the effective performance of the army during the Greek War, prompted even more hostility towards the fleet. Lieutenant-Colonel Süreyya from the Ottoman general staff perhaps summed up the ideas of his many contemporaries, both civilian and military, in his polemical treatise "*Donanma mı Şimendifer mi?*" (Navy or the Railroad?):

> ….In the last Russian War our navy ranked third in the world but Russians hadn't any navy. What we could do? [Nothing] Because the Russian army was stronger than ours. In the last Greek War, the Greeks had a navy but we didn't had anything. What did they achieve? [Nothing] Because the Ottoman army was stronger. The result: when the army is stronger a navy can do nothing ….An excellent army does not leave any weak spots in the country. If weak spots are in the interior it fortifies them, if they are on the coast it erects coastal fortifications, creates minefields; all in all it shapes them into a reinforced area and such fortifications doesn't have any fear from enemy navies; even if the British Navy come!….If the aim is to keep and defend our homeland, we don't need a navy….I'm sure that each military train that moves on the railroads is worthy of a dreadnought. I'm sure that thanks to the railways, this poor homeland shall quickly enrich as the internal and external security will be assured and time will be found to work for the greater wealth..[285]

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[284] Hasan Rami Paşa, *Hatıralar v.1* (Ankara: Deniz Kuvvetleri Komutanlığı Karargâhı Matbaası, 1997), pp. 2-34.

[285] Süreyya, *Donanma mı Şimendifer mi?* (İstanbul: n.p., 1327), pp. 7-13. "*Geçen Rusya seferinde bizim donanmamız dünya üzerinde üçüncü derecede idi. Halbuki Rusların hiç donanması yok idi. Ne yapabildik! Çünkü Rus ordusu bizim ordudan daha kuvvetli idi. Geçen Yunan seferinde Yunanlıların donanmaları var idi. Halbuki bizde hiçbir şey yok idi. Ne yapabildiler. Çünkü Osmanlı ordusu daha kuvvetli idi. Netice ordu kuvvetli olunca donanma bir şey yapamaz….Mükemmel bir ordu memleket dahilinde zayıf noktalar bırakmaz. Zayıf noktalar dahilde ise onu tahkim eder. Sahilde ise etrafına sahil istihkâmatı yapar. Torpiller kurar velhasıl bir mevki-yi müstâhkem haline onu ifrağ eder. Bu gibi mevki-yi müstâhkemenin de düşman donanmalarından hiç korkusu olmaz. İsterse İngiltere*

Ideas like these only would be falsified with the loss of Western Thrace and the Aegean Islands to the Greeks in the Balkan War (1912-13) and the resulting surge to buy the latest system dreadnoughts for naval reconstruction would constitute one of the main causes of the Ottoman entry into the First World War.[286]

The Ottoman navy entered into the nineteenth century in a state of chaos. Years of war, rebellion and the disastrous destruction at Navarino had seriously depleted the manpower pool and worn out the ships. As the Empire had a vast maritime geography spanning from the Adriatic and the Black Sea to the Red Sea and the Indian Ocean seapower was a vital component of Ottoman imperial defense. Acutely conscious of the navy's importance, Mahmud II initiated a naval rebuilding program which managed to replace most of the ships destroyed in the decades of conflict. In terms of quality, the new ships were world class vessels. There was a noticeable trend to gigantism in this building program, exemplified by the ship-of-the-line *Mahmudiye*. In an interesting parallel to the Imperial Japanese Navy's "big ships with big guns" obsession, the Ottoman warships in the twilight of the fighting sail era tended to be massively built and overloaded with ordnance. It may be concluded that, as the Ottoman Navy's only battlefleet adversary was the Russian Black Sea Fleet, it was possible to mobilize the Empire's vast

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donanması karşısına gelsin!...Maksad; memleketimizi muhafaza ve müdâfaa ise, donanmaya lüzum yoktur…. Eminim ki; demir yolları üzerinde hareket eden her askeri tren bir dertnota muadildir. Eminim ki şimendiferler sayesinde şu zavallı vatan pek çabuk zengin olacaktır. Çünkü asayiş-i dahili ve harici bu sayede temin gelinecek, vatan zenginliğe doğru çalışmak içün zaman, vakit bulabilecekdir."

[286] Güvenç, Serhat. "The Ottoman Navy in the Age of Dreadnoughts, 1909-1914" in *The Logbook of the Ottoman Navy: Ships, Legends, Sailors*, edited by EmirYener and Ekrem Işın (İstanbul: Pera Müzesi, 2009), pp. 45-63.

shipbuilding resources to produce a relatively small number of overlarge ships sufficient to operate in a rather restricted area of operations. For its patrol commitments, the Ottoman navy focused on large frigates built with American technical help, which was provided following Navarino. In the same period, the newly burgeoning naval steam power started to be applied by the Ottoman naval administration, and following the Crimean War mechanization of the fleet gained pace. The accesion of pro-navy Sultan Abdülaziz in 1861 became a turning point in the fortunes of the Ottoman navy. Upon his full support, in the decade between 1864-1874, the Ottoman navy completed its transformation from a wooden and sail dominated force into a fleet of steam driven ironclads.

Along with the technological change, the naval framework was also thoroughly restructured. The greatest problem of the Ottoman navy in the early nineteenth century was the losses suffered by the manpower pool. The intermittant struggle since the Napoléonic Wars, defeats and the purge of Greek sailors following the Greek Revolt wreaked havoc in cadres. The mixture of press-gang, conscription and voluntary enlistment failed to alleviate the problem. The re-recruitment of Christians had to restart by the late 1830s, but only after the initiation of the Conscription Law in 1849 was a more satisfactory result obtained. Despite this, the quality of the crews remained low. Although the navy was a popular institution among the scions of elites who aspired to be officers, the concripted rank and file remained of rather low efficiency. Naval personnel were a technical class which required professionalisation, and in the absence of a merchant navy and its skilled

sailors it was difficult to train efficient crews out of conscripted peasants. To put it otherwise, the Ottoman navy simply lacked a sufficient social basis.

The bureaucratical and intellectual modernization of the Ottoman navy was reflected in the establishment of a Naval Council in 1845; and the administrative unification of the Imperial Arsenal, and the Navy as the Ministry of Marine in 1867. The reorganization of the ranks contributed to the professionalization of the officer class while the establishment of the Ministry of Marine improved the overall administration of the navy by centralising command.

The educational initiative had always constituted a critical issue in the Ottoman navy all through the reform age. The *Mühendishane*, which had been established even before Nizam-ı Cedid era, had became defunct over time; until it became almost non existant during the 1820s. After abortive attempts to reform and re-establish it during the initial Mahmudian reform era, serious renovation only started with Patrona Mustafa Pasha's directorship of the Naval College in 1847. Largely to his and to Sait Pasha's efforts in the 1870s, Ottoman Naval College was transformed into an effective modern school.

Impressive as they are, the naval reforms encountered in the end the greatest obstacle common to all other state institutions of the Ottoman Empire: money. The Ottoman tax collection system was still largely pre-modern and unable to levy enough funds for the intimitading sums required by the modern state. Overburdened during the Crimean War, the Ottoman Treasury resorted to foreign credit for the first time in its history.[287] Foreign

[287] Gencer, p. 230

indebtment continued in the victorious and optimistic aftermath of the Crimean War through the 1860s. However, the great financial collapse of 1873 dragged the world economies into a sudden crisis and when the interest holders of Ottoman foreign debts demanded their repayment, the Ottoman Empire had no means to comply. The Ottoman moratorium of 1875 was a national catastrophy, but no other institution would suffer from it as much as the navy which had to drink gold to remain a credible force.[288] The costly ironclad fleet could achieve little in the Russian War of 1877-78 to justify its existence and was promptly made a prisoner in its own base in the Golden Horn through a combination of political suspicion, financial difficulty and re-adoption of an "Army first" approach. The 1880s were a time of tight finances which badly affected both the condition of mothballed ships and the status of naval officers. The avaliable funds were spent to torpedo boats for building a coast defense force, but even these were not properly maintained and rapidly deteriorated. When the navy went out of its berth for war in 1897, all of its ships were practically reduced to scrap iron status. In twenty years, the Ottoman navy had seen both the summit of power and the depths of oblivion.

[288] For a detailed study of Ottoman Moratorium see Mehmet Hakan Sağlam, *Osmanlı Devletinde Moratoryum 1875-1881 Rüsûm-u Sitte'den Düyûn-u Umumiyye'ye* (İstanbul: Tarih Vakfı Yurt Yayınları, 2007)

CHAPTER IV

THE IRONCLAD STEAMS EAST: THE RUSSIAN AND CHINESE NAVIES

The evolution of the Ottoman Imperial Navy from a wooden and sail-powered naval force into a fleet composed of armored ships driven by steam power is illustrative of the difficulties in keeping technology's sharp edge during the industrial era for a state which rested still on a pre-modern economy. However, the Ottoman navy was not alone in this. The late modernising maritime states with pre-modern economies, akin to the Ottoman Empire, faced the same difficulties in their attempts to build and maintain effective modern naval forces. In this chapter, the story of the Imperial Russian and Imperial Chinese Navies up to 1905 will be analysed briefly to provide an opportunity for comparative study. The question of why these three particular states are chosen is answered with three arguments.

First, both the Russian and Chinese empires had strategic maritime geographies notably similar to that of the Ottoman Empire. While the Ottoman navy controlled four different maritime areas (the Black Sea, the Eastern Mediterranean, the Red Sea and the Adriatic Sea), the Russian Imperial Navy oversaw three maritime areas which were separated by the Eurasian landmass (the Baltic Sea, the Black Sea and the Pacific Ocean), each demanding very different requirements. The Chinese Imperial Navy was similarly structured according to a strictly regional character. In fact, it is

possible to speak not about a single Chinese Imperial Navy, but about three separate Chinese Imperial Navies. In the North China Sea and in the South China Sea were based two fleets of open sea capability, while at the Yangtze river was a gunboat flotilla to patrol the main economic artery of the country. Each of these fleets was independently financed and administered by provincial viceroys.

Second, the economic framework of the Ottoman Empire, Russia and China were broadly similar until the end of the nineteenth century. The Ottoman, Russian and Chinese states depended on the taxation of peasant masses to fill their coffers, with a feeble middle class.[289] This social situation meant that the Ottoman, Russian and Chinese navies were totally dependent to the state's will for their existence. Lack of a merchant middle class whose welfare was reliant to the naval power meant that the navy lacked a social base which could exert pressure on the administration on its behalf. Lack of a merchant marine also left these three navies largely devoid of the natural manpower pool from which came officers and seamen.

Third, the critical dichotomy of army priority versus navy priority plagued both three states. The shifts in international relations were thus decisive upon the fate of their navies. It can be argued that for the Ottoman, Russian and Chinese navies the status disadvantage versus the army was inescapably permanent, as both three empires were primarly landpowers, having their primary strategic commitments on the continent.

[289] Ronald Grigor Suny, *The Soviet Experiment: Russia, the USSR and the Successor States* (Oxford: Oxford University Pres, 1998), pp. 6-11; Jonathan D. Spence, *The Search for Modern China* (New York: W. W. Norton, 1991), pp. 74-85; Rifa'at Ali Abou-El-Haj, *Modern Devletin Doğası* (İstanbul: İmge Yayınevi, 2000), pp. 40-44.

With an analytical framework for a comparative study laid, a more detailed description of each navy is now to follow.

The Imperial Russian Navy 1822-1878

At the accession of Nicholas I to the throne in 1822, the Imperial Russian Navy was resting upon the laurels it had earned during eighteenth century. As an institution which owed its existence only to the will of Russian sovereigns, it had made a most impressive progress since its creation by Peter the Great a century earlier. With an awesome power projection capability that had been extended gradually from the Baltic and the Black Sea to the Mediterranean and the Pacific during the Ottoman and Napoléonic Wars, it had became the third greatest navy of the world by 1815. Unlike the Baltic Fleet, which was demobilised following Napoléonic Wars, the Black Sea Fleet remained active in the period between 1815-1853, providing vital logistical and fire support to the Russian armies operating in the Balkans during the Russo-Turkish War of 1828-29 and in the conquest of Caucassus during the 1830s. However, the social and military stagnation which typified the reign of Nicholas I was to affect the Russian navy as well, resulting in a seriously obsolete fleet by the outbreak of the Crimean War.[290]

The first experiments with steam power in the Russian navy started during the reign of Czar Alexander I, with an experimental steamboat being built at St. Petersburg in 1815, and the navy's purchase of the small paddle steamer *Skorij* in 1817. Both these two ships were small river craft. However, little was done to develop the native industry and the Russian navy was

[290] Sondhaus, p. 17.

totally dependent tono foreign capital and mechanical expertise, a liability which was largely to continue for most of the the nineteenth century. According to a British intelligence report from 1852, there were thirteen steam warships in the Baltic and twenty one in the Black Sea Fleets; however, only eight of the Baltic and six of the Black Sea ships were considered steam frigates, the rest being small despatch craft. Large or small, all of the Russian steamers had either foreign-built machines or had been entirely bought from aboard. The largest steamer in Baltic was the *Olaf*, while the best steam warship of all the Russian navy was the 1500-ton *Vladimir*, attached to the Black Sea Fleet. Built in 1848 in England, she had an armament of five 8-inch shell guns, with a speed of 11 knots.[291] There was not one screw warship in the Russian Navy by the start of hostilites.

As was seen, the Crimean War opened with the greatest victory in the history of Russian Black Sea Fleet, at Sinop. However, once the vastly superior allied fleet entered the Black Sea, there was nothing for Admiral Kornilov to do but to retreat to the safety of the Sevastopol fortifications. Apart from periodic sorties by paddle steamers, the Russian ships-of-the-line and frigates remained idle in the port and eventually they were all scuttled to block the harbor after their guns and crews were removed to bolster the defense of the besieged city.[292] In the Baltic, the situation was the same, though the fleet of twenty five ships-of-the-line, which constituted the bulk of Russian naval force, was saved due to the great strength of Kronstadt fortifications.

[291] Andrew Lambert, "*The Introduction of Steam*" in *Steam, Steel and Shellfire: The Steam Warship 1815-1905*, edited by Andrew Lambert (London: Conway Maritime Press, 1992), p. 27.
[292] Ponting, pp. 106-107.

During the war, the Russian navy pioneered the use of naval mines, sowing primitive examples of those weapons in the approaches to St. Petersburg. In the meantime, a modernisation program initiated by the Czar's brother, Grand Duke Constantine, added two screw ships-of-the-line, the *Orel* and the *Vyborg*, and twenty three heavily armed screw gunboats to the Baltic Fleet by 1855.[293]

Suffering eventually defeat in the Crimean War, Russia was allowed to own only a coast guard force in the Black Sea, the largest ships of which would not be greater than 800 tons; and Sevastopol could not be fortified. Accordingly, the *Sinop* and the *Tsesarevitch*, the two screw ships-of-the-line which had been being built in the Black Sea, were transferred to Baltic.[294] The lessons of the war were clear: without an adequate railway network linking the fortified bases of Russian Navy, it would be impossible to make a successful defense against such a maritime alliance again. Thus, the Russian government started to rebuild its coastal defenses in the years following the war.

Naturally, the first priority was given to bolster the fortifications of Kronstadt. Even before the death of Nicholas I in 1855 and the accession of Alexander II, 200,000,000 francs were spent to develop the defensive works of the base, with some 3000 guns deployed to five redoubts and a fortified ring around the naval complex. The new Czar had the walls of redoubts[295] covered by metal armor and guns of the biggest caliber installed.[296]

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[293] Sondhaus, p 63.
[294] Ibid., p. 64.
[295] Redoubt is a reinforced fortification with short, thick and angled walls to resist heavy cannon fire. It's main function is to act as a firebase for heavy artillery.
[296] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, p. 73.

In the Black Sea, as Sevastopol could not be fortified, efforts were made instead to deploy batteries at the entrance of the Azov Sea, and to the mouth of the Bug River to protect the main shipyard of Nicolaev. Kinburn and Kertch were given top priority, 1,000,000 francs alone being spent on the Kertch earthworks.[297]

Efforts were made to develop shipbuilding facilities as well. The biggest ones were the Baltic Shipyards on the Neva river, with some factories established by British entrepreneurs. Each of these yards had between 1000-5000 workers, with the navy depots on the New Holland point on Neva storing iron, tar, sailcloth, clothing and ammunition. The military prisons at the same place allowed the employement of convicts as supplementary labour.[298] Nicolaev shipyards also were updated with hydropowered machines to roll armor for ironclads. However, as the development of the base was proceeding slowly, temporary workshops were built to complete the light warships allowed in thr Black Sea. There were three naval barracks, each able to hold 2000 personnel along with huge victuals and ammunition depots and a naval apprenticeship college. A most important development was the layout of a vast railway network from Finland to Crimea, linking the fortified naval bases with fortress cities of Warsaw, Modlin, Ivanogorod and Brest-Litovsk on the western land frontier[299]

Integral to the fortification of the naval bases was an early program of coast defense ships. One of the results of the Crimean War was the remarkable approachment of the United States and the Russian Empire against Britain. The Russian navy obtained plans of the U.S navy's monitors

[297] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, p. 74
[298] Ibid., pp. 73-74.
[299] Ibid., p. 74.

as a result of this co-operation and by 1870 had completed ten single turreted, four double turreted and two triple turreted monitors for the Baltic Fleet.[300] Larger seagoing ironclads included the British built 3340-ton, 25-gun armored frigate *Pervenetz*; her native-built copies, the *Ne Tron Menya* and the *Kreml*; 6130-ton, 25-gun wooden hulled armored frigates *Sevastopol* and *Petropavlovsk*; the iron-hulled, 5000-ton, 12-gun armored frigates *General Admiral* and *Gerzog Edinburgski*, the 5000-ton, 8-gun armored corvette *Knyaz Pojharski* and her sister *Minin*, which was completed as a masted turret ship. All were stationed in the Baltic.[301] By 1876, the Russian navy also had added the 10,000-ton *Pyotr Veliky*, armed with four 12-inch guns paired in two turrets and armored with 14-inch compound plates on her broadsides, making her one of the most powerful battleships to that date.[302]

As the Black Sea Fleet effectively had been sundered as a fighting force, in order to defend the mouths of Don and Volga rivers, the Russian navy commissioned two floating batteries, which were among the most curious ship designs in history. Called the *Popovka*s after Admiral Popov, who had designed them, the 2500-ton *Novgorod* and the 3550-ton *Popov* were circular in shape, respectively, 101 and 120 feet in diameter and each carrying two 27-ton guns. Great advertisement of them was made, but it was soon revealed that they were barely able to move at 7.5 knots and tended to spin because of their shape when maneuvering, making them useless as warships.[303]

[300] Ponting, pp. 244-249. Sondhaus, pp. 89-90.
[301] Gibbons, p. 34, 50, 63.
[302] Ibid., p. 85.
[303] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, pp. 81-82.

To defy the crushing Ottoman naval superiority in the Black Sea, the Russian navy turned to the cutting edge of technology and adopted the torpedo as its main weapon in that theater of operations. Nineteen fast merchant ships between 1000-1500 tons were acquired to be fitted as tenders for small steam launches, which in turn were covered with a light turtleback iron deck to protect the crew and armed with both spar and self-propelled torpedoes.[304] At the start of the War of 1877-78, the total muster roll of the Russian Navy in both the Baltic and the Black Sea was ten open sea and twenty coast defense ironclads, five wooden screw frigates, twenty two *kliper*s (wooden steam corvettes), hundred screw gunboats and fourteen yachts.[305]

Russian naval tactics in this early phase of the steam and iron era was a curious mixture of backward and futuristic features. The foremost tactician of the navy was Admiral Grigory Butakov, the successful former commander of the *Vladimir* during the Crimean War. He was a proponent of close range tactics, favoring especially ramming and torpedo attacks. This was partly due to the deadlock between gun and armor in this phase of naval warfare and partly reflective of the fact that Russian gunnery standards were quite bad. However, this reliance on ramming was more dangerous for friend than for foe, a number of accidents happening during maneuvers. The worst was the accidental sinking of the wooden frigate *Oleg* by the ironclad *Kreml* during excercises in 1869.[306]

[304] Lyons, p. 141.
[305] Kurdoğlu, *1877-78 Türk-Rus Harbinde Deniz Harekâtları*, p. 83.
[306] Ibid., pp. 78-79.

The Russian Battlefleet 1878-1905

The effects of the torpedo strategy during the War of 1877-78 and how it ultimately influenced the emergence of the *Jeune Ecole* during was discussed in the previous chapters. However, the Russian navy and leadership took very different lessons from its experience. The first lesson was, however incompetent it was, that a foe possessing command of the sea would have the ability to destabilise the country by threatening landings anywhere along the coast. Second, the lack of logistics and gunfire support by the sea seriously had hindered the operations of the Russian army in both the Balkans and Caucassus, eventually rendering the situation of the army camped out of Constantinople vulnerable to the threat of the British Fleet.[307]

As a result of the lessons learned, a fleet program was initiated in 1882, with a particular focus on the Black Sea. Up to 1902, a total of twenty battleships and twenty four cruisers were to be built upon a budget of 242 million rubles. This program made Russia an anomaly in the period when world navies were being swept by the effects of the *Jeune Ecole*.[308] The first battleships built for the Black Sea Fleet after its dismantling with the treaty of Paris (1856), were the five 10,000-ton units of the *Ekaterina II* class, completed between 1883-87. They were armed with six 12-inch Krupp guns and seven 6-inch guns; the armor being 16-inch compound. The smaller *Dvyenadsat Apostolov* was completed between 1888-90. Armed with four 12-inch guns and four 6-inch guns, she carried 14-inches of compound armor.[309] The first true pre-dreadnought battleship in the Black Sea was the *Tri*

[307] Sondhaus, p. 147.
[308] Ibid., p. 148.
[309] Gibbons, p. 122, 125.

Svyatitelya, completed between 1891-93. At 13,500 tons, she carried four 12-inch and six 6-inch guns, along with an 18-inch Harvey steel armor belt. The *Rostislav* was a lighter version, at 8800 tons, with four 10-inch and eight 6-inch guns and 14-inch Harvey steel armor. The last pre-dreadnought built in the Black Sea before the war against Japan was the notorious *Knyaz Potemkin Tchavritcheskii*, of 12,500 tons, with four 12-inch, sixteen 6-inch guns; with a 9-inch Krupp steel armor belt.[310]

The battleships built for the Baltic Fleet were a less homogenous lot, ranging from the 10,000-ton *Sissoi Velikiy*, carrying four 12-and six 6-inch guns with a-16 inch Harvey steel belt, to three units of the 4000-ton *Admiral Ushakov* class coast defense battleships with a battery of four 10-inch and four 4.7-inch guns and 10-inch Harvey steel armor.[311] The naval program of 1882 provided a remarkable boost to the industrial development of Russia, along with the vast railroad programs like the Trans-Siberian railway. Although it was dependent on foreign licences, Russian naval industry was at least able to produce the necessary material at home. Until the 1890s, it was Krupp which provided necessary expertise for Russian territorial and naval artillery. With Bismarck's retirement in 1888 and Russia's termination of the Three Emperors' League two years later, German investments in Russia retreated. Meanwhile, France, always looking for a continental ally against Germany after 1871, approached Russia and the Franco-Russian Alliance was concluded in 1894. Thereafter, French investment flowed into the Russian naval framework, with the Schneider and Canet companies establishing

[310] Gibbons., p. 138, 144, 158.
[311] Ibid., p. 142, 130.

foundries in St. Petersburg; replacing Krupp as the main technological advisor for the Russian navy.[312]

Another important development in Russian diplomacy was the ever growing interest in Manchuria and Korea. With the "leasing" of Port-Arthur (Lüshun) from China in 1897, the third Russian battle squadron came to fore: the Far Eastern Fleet. In 1898, a new seven-year naval program was approved, prescribing the building of eight battleships, seventeen cruisers and over fifty light warships. This building pace surpassed the capacity of the Russian shipyards and as a result foreign yards were asked to support the program. Some of the best warships which participated in the war with Japan were such foreign built units. The 12,900-ton *Retvizan*, which earned the reputation of being the soundest unit in the Far Eastern Fleet, was built in the Cramp shipyard of Pennsylvania. The "lucky ship" *Tsesarevitch*, of similar size and tonnage, was French built and served as the model for the *Borodino* class of four units, the core of the fleet that went to the reckoning at Tsushima.[313]

In the category of smaller warship classes, cruisers, auxiliaries, torpedo boats and later destroyers, there was equally lively work. The first modern steel cruiser of the Russian navy was the French built, 3000-ton *Pamiat Merkuria*. With an eye to commerce raiding against British trade in the Pacific, extremely powerful armored cruisers carrying a large battery of 8 and 6-inch guns were commissioned throughout the 1880s and 1890s, with speeds varying around 18 knots. By 1905, there were eight such vessels in service. The successful operation of auxiliary cruisers during the War of

[312] Sondhaus, p. 167.
[313] Sondhaus, p. 167. Gibbons, pp. 157-158.

1877-78 prompted the Russian Navy to form a "Volunteer Fleet" of merchantmen suitable for conversion into cruisers with 8 and 6-inch guns stored in Sevastopol and Vladivostok. By 1898, there were twenty five such British built liners had been acquired for the Volunteer Fleet. The first modern torpedo boat of the Russian navy was the 43-ton *Batum*, built by the British Yarrow company in 1880. By 1904, there were eighty six torpedo boats in service, built in Britain, France and Germany as well as in Russia.[314]

In this era of the "true battleship," Russian naval tactics followed the technology from behind. The outmoded column, instead of the battle line, was given priority during maneuvers. Gunnery standards left much to be desired. However, the Russian navy maintained its edge in one field which would later prove to be critical: mine technology. The successful results of mine and torpedo warfare during the War of 1877-78 had given impetus to many innovations by the Russian navy, including mine-triggering mechanisms and offensive mine laying tactics. These were to be put to good use during the war with Japan in 1904-05.[315]

As a result of a two decades-long program of naval construction, by 1904 Russia kept her status as the third greatest naval power in the world. However, the navy was not without problems, the most serious being with the personnel manning the ships. The officer corps was of very mixed quality. Officers of the middle rank were mostly professional, competent men. Aleksandr Kolchak, who was to gain fame during the First World War and the Russian Civil War, was a good example of these middle rank officers. He had participated in some famous polar expeditions in the years preceding

[314] Sondhaus, p. 148.
[315] Ibid., pp. 189-190.

Russo-Japanese War, excelling in navigational skills. During the war, he commanded the destroyer *Serditiy*, and by a skillful use of mines he succeeded in sinking the Japanese heavy cruiser *Takasago*. His leadership was always from the front, earning the respect of his men.[316]

In the upper echelons however, the picture was different. For sure, there were competent and dedicated officers of flag rank, like the legendary Stepan Makarov, but the majority were men of aristocratic background, owing their promotions to court connections rather than skill. Admirals like Oskar Stark, commander of Port Arthur and Nebogatov, second in command of Baltic Fleet at Tsushima were greatly responsible for the most colossal defeat ever suffered by a naval force in history.[317]

The situation of the rank and file presented an ever growing problem to the naval command in the decades preceding the Russo-Japanese War. A main cause of the problem was the always draconian nature of naval discipline and bad living conditions. In the age of sail, when crews had been conscripted from the peasantry, the conditions had been stoically accepted by *mujhik*s (russian peasant) manning the ships. However, with the mechanisation of the fleet, sailors increasingly were drawn from the urban lower classes with some industrial skill. This was a period when anarchist and socialist ideologies were spreading among that emerging working class. By the time of the Russo-Japanese War, there was serious unrest among the crews of many ships. At Port Arthur and Tsushima, rank and file did their utmost, but were let down by the inept command. News of the disaster, coupled with the long-standing tensions due to living conditions and

[316] M.I Smirnov "Admiral Kolchak", *The Slavonic and East European Review*, 11, no. 32 (Jan., 1933), pp. 373–387.
[317] Wilson, pp. 244-245.

bolshevik propaganda among sailors resulted in the notorious rebellion of the Black Sea Fleet in June 1905, led by the battleship *Potemkin*.[318] Material destruction aside, it was obvious that the personnel manning the navy were no longer reliable. In the last decade of Tsarist rule, the question was how to keep that unreliable force together as a coherent entity.

The Birth and the Death of the Imperial Chinese Navy, 1862-1895

Imperial China under the rule of Qing or Manchu Dynasty was a realm in turmoil at the start of the nineteenth century. Coming under the direct assault of European imperialism, China suffered perhaps most severely from the naval superiority of her western enemies. The humiliations that China had to endure during the two Opium Wars (1839-42 and 1858-62) were largely due to the complete freedom that the British and French enjoyed in selecting where and when to strike on the more than 2000 mile-long Chinese coast, which stretched from Korea to Vietnam.[319] With the establishment of formal relations with Western powers with the treaty of Tientsin, a naval defense fund was initiated by the newly created *Tsungli Yamen*, or foreign office at the Qing court, in 1862.Thus begin the formation of an organized navy in China for the first time since the voyages of Admiral Cheng Ho in the early fifteenth century.[320]

The first attempt to form a naval force composed of modern ships had the modest aim of providing a maritime customs squadron to assist in collecting taxes and intercepting smugglers. Called the Lay-Osborn Flotilla,

[318] For a detailed account of the Black Sea mutiny see Richard Hough, *The Potemkin Mutiny* (London: Bluejacket Books, 1961)
[319] Sondhaus, pp. 35-36.
[320] Wright, pp. 13-14.

after the two English naval officers appointed to command this squadron by Prince Kung, head of the Tsungli Yamen, this force consisted of two paddle and four screw corvettes purchased from Britain. However, due to the refusal of Chinese provincial authorities to be commanded by foreign officers, the flotilla existed less than a year, and the ships were laid up in Shanghai until 1865, when they were sold to various countries.[321] After this fiasco, a fresh start was taken in 1867, with the establishment of the Canton Flotilla. Its four ships were all British built, small screw corvettes under 500 tons. This tiny force took root, paving way to the naval modernisation of Quing China.[322]

At the foundation of the Chinese naval modernization, was the development and fortification of bases which were to harbor purchased ships and hopefully would contribute to native shipbuilding. The Chinese coastline was basically divided between the North China Sea, or the Yellow Sea as it was often called, from theYalu River to Shanghai; and the South China Sea stretching from Shanghai to Vietnam. Shanghai was also the entrance to the Yangtze river, the main artery of the Chinese Empire.[323] Due to its great commercial and strategic importance, Shanghai was the first base to be developed. The Kiangnan Arsenal at this city was set up in 1864 and soon grew to employ 1300 workers. The first ship built there was a paddle steamer completed in 1868. In 1875 an experimental ironclad was finished, followed by a small steel gunboat in 1881. However, the Shanghai-built ships were deemed unsuccesful and the Kinagnan Arsenal instead focused on producing great quantities or ordnance. Almost all the native cast guns –licence produced European models- arming coastal fortifications and warships were

[321] Wright., pp. 15-18.
[322] Ibid., p. 20.
[323] Ibid., p. 11.

products of the Kiangnan Arsenal. Meanwhile, a dockyard was built in 1872, thus transforming Shanghai into the base of Yangtze gunboat fleet.[324]

The Southern Fleet's base was set up at Foochow. A 120-acre area was selected near the mouth of River Min, close to the Pagoda anchorage and building work started in 1867 with French expertise and finance. Three building slips with the attached workshops are built, followed in 1871 by an iron foundry. The first ship completed at Foochow was a 1450-ton armed transport launched in 1869. The Foochow Arsenal was not sufficient to build armored ships, thus the building executed was wooden or composite. Despite its more ambitious beginnings and direct foreign investment, Foochow never managed to fulfill expectations and its functions were gradually taken over by the Kiangnan Yard.[325]

Increasing tensions with the Meiji government following Japan's Taiwan expedition of 1874 led to the establishment of the Northern or Peiyang Fleet as the most important squadron of the Imperial Chinese Navy. It was planned that the Peiyang Fleet would comprise high tonnage modern units bought aboard, thus requiring not only a dockyard and arsenal but also a fortified anchorage. The location selected to become the dockyard was the small, shallow inlet of Lushun on Liaotung Peninsula in Manchuria, called Port Arthur by the Europeans. By 1881 work started on Lushun. The harbor was dredged, a torpedo boat depot, dockyard and assorted repair and maintenance facilities were installed. All of the construction took nine years to complete. The Bay of Wei-Hai-Wei, some 100 miles southeast of Port Arthur, was selected as the fortified anchorage. Meanwhile, to serve the

[324] Wright., pp. 21-22.
[325] Ibid., pp. 23-24.

smaller units of the Peiyang Fleet, a fortified arsenal was set up in Taku, at the mouth of Peiho River.[326]

The construction of a navy then requires men to crew the ships. China had an enormous coastal population with traditional seamanship knowledge; however, transforming picked members of this maritime society into an effective modern naval personnel was another matter. To train naval officers, each regional fleet set up its own college in its base, employing French and British instructors who tought foreign languages, navigation, gunnery and engineering. In 1877, twelve cadets from Foochow were sent to Britain to continue their training aboard Royal Navy ships. Almost all of these select men, such as the famous admiral of the future Sah Chen-ping, reached the top echelons of the Chinese navy in the last years of Qing rule and throughout the Republican era.[327]

Up to 1877, the Kiangnan and Foochow yards together completed twelve wooden warships and twelwe wooden armed transports. Of these, the largest units were the screw frigates *Hai-an* and *Yu-yuen*, completed at Kiangnan in 1872-73. They were 2630-ton warships carrying twenty six muzzle loading guns. The first ironclad built in China was the small 195-ton gunboat *Chin-ou* completed in 1875 at Kiangnan. She carried a single 17-cm muzzle loading Krupp gun.[328] Following the Japanese expedition to Taiwan, the Qing court decided to increase the scope and pace of naval armament. From Britain, six iron and six steel gunboats were ordered. These ships, weighing between 256 and 440 tons, were armed with a single large and two smaller calibre guns. All arrived by 1881.

[326] Wright, pp. 26-27.
[327] Ibid., pp. 30-32.
[328] Ibid., pp. 34, 36, 38-39.

At the same time, the *Chao Yung* and the *Yang Wei*, 16 knot fast, 1350-ton small cruisers armed with two 10-inch and four 40-pounder guns were built in Armstrong Yard. Native building was concentrated at Foochow yard, where five 1300-ton composite sloops and the 2150-ton composite cruiser *K'ai Chi* were completed up to 1885. Meanwhile, the Kiangnan yard achieved a notable success by laying down the 1477-ton crusier *Pao Min* in 1883, the first native steel warship of China. She was completed a few months after the end of the Sino-French War.[329] The Qing court sought to acquire armored cruisers and battleships to constitute the striking force of the Peiyang Fleet; however, Britain was unwilling to sell such large ships out of the fear of upsetting Russia, which had a growing interest in the Far East during that period. As a result, Li Hung-chang, the viceroy of Chihli who was responsible for the Peiyang Fleet, sent envoys to other European countries and found a willing seller in Germany. 7144-ton steel battleships *Ting Yuen* and *Chen Yuan*, and the 2300-ton protected cruiser *Tsi Yuen* were ordered from the Vulcan shipyard, while Howaldt Works completed the 2200-ton steel cruisers *Nan Shui* and *Nan Ch'en*. In the class of torpedo craft, the Chinese navy acquired eight second class and fourteen third class torpedoboats from the Vulcan and Schichau yards.[330]

Completed in 1885, the *Ting Yuen* and the *Chen Yuen* were the most powerful warships in Far Eastern seas. They were armed with a main battery of four 12-inch Krupp breechloaders in two barbettes amidships and a secondary battery of two 5.9-inch Krupp breechloaders in two small turrets at each end of the deck. There were three torpedo tubes and two 15-ton satellite

[329] Wright, pp. 42-47.
[330] Ibid., pp. 50-53, 181-182.

tropedo boats stowed on the deck as well. The armor was compound, being 12-inch on barbettes, and 8-inch on belt. Their speed was 10 knots.[331] With their arrival following the end of Sino-French War, China established regional naval superiority.

Chinese steam navy's first baptism of fire came in 1884, during the Sino-French War over the domination of Vietnam. The area of operations was the responsibility of the Southern Fleet, composed of three wooden warships, three wooden armed transports, two British-built ironclad gunboats and a motley collection of worthless armed junks; in total twenty two ships. Commanding the fleet was Chiang Peilung, a court bureaucrat and member of the "hawk" faction, which advocated war against France. Despite his warmongering, Chiang proved to be a most lilylivered and incompetent military leader once the action began. Facing the Southern Fleet was the French Far East Squadron composed of four ironclads, four cruisers, three gunboats and two torpedo boats under the command of the able Admiral Amadée Courbet.[332] Having neither stomach nor hope to give an equal fight against the qualitatively much superior French force, Chiang retreated his ships to the shallow waters of Foochow where the large French ironclads could not navigate. However, the determined Courbet managed to pass his three gunboats, two torpedo boats and one ironclad from the River Min and attacked the Chinese fleet on 23 August 1884. The result was a disaster for the Chinese, with 1085 casualties, nine ships sunk, ten damaged and the arsenal bombarded. More disasters followed when French torpedo boats sank the large frigate *Yu Yuen* and the composite sloop *Teng Ch'ing* on 14

[331] Gibbons, p. 105.
[332] Wilson, pp. 122-124.

February 1885 at Shipu Bay. War ended with Chinese defeat in April 1885. The Southern Fleet never recovered from the losses it suffered.[333]

The less than encouraging results of the war with France did not stop the Chinese naval program. The ships that had been lost were all obsolete wooden ships of very low fighting value, the modern units ordered from Germany were detained by their builders due to neutrality laws and were thus kept out of harm's way.[334] Once the peace was signed, battleships, cruisers and torpedoboats arrived one by one while the native construction resumed. During the decade leading to the war with Japan in 1894, the repaired and improved Foochow yard launched three composite cruisers weighing between 1296-2100 tons; four 500-ton wooden gunboats and three 1000-ton steel torpedo gunboats.[335] The most striking native built ship of that decade was the 2067-ton steel armored cruiser *Ping Yuen*, built in the Foochow yard in a very noteworthy three years (1886-89). Her 8-inch armor belt and the armament of one 10.2-inch and two 5.9-inch Krupp breechloaders were imported from Germany but the rest of her construction was executed by local resources. She had a speed of 11 knots.[336]

Considering that the fledgling Imperial Japanese Navy of the period was only able to assamble small torpedo boats imported from France in sections, Chinese naval industrial achievement sounds impressive.[337] The last foreign built major units to join the Imperial Chinese Navy were the 2300-ton, 18 knot fast Armstrong protected cruisers *Chih Yuen* and *Ching Yuen*, and the 2900-ton, 15 knot fast Vulcan built armored cruisers *King Yuen* and

[333] Tucker, p. 170.
[334] Sondhaus, p. 152.
[335] Wright, pp. 68-70.
[336] Ibid., p. 78.
[337] Sondhaus, p. 131.

Lai Yuen. Completed in 1887, Armstrong cruisers carried a powerful battery of three 8.2-inch and two 6-inch guns with four torpedo tubes; while the armored cruisers completed same year had two 8.2-inch and two 5.9-inch guns with four torpedo tubes.[338] All joined the Peiyang Fleet upon arrival. More torpedo boats were also added to the flotilla, with one first class and six second class units being completed in Britain and Germany before 1895.[339]

Two decades of increasing tensions with Japan over the domination of Korea and Taiwan finally exploded into full war in July 1894. Numerically, the fleets were an even match with ten first-class warships, but technically the Chinese navy had absolute superiority over its adversary. Against its five armored warships, included two battleships, the Japanese had not one armored unit.[340] However, the critical difference was in the less glamorous, but much more decisive details: command and logistics. Admiral ItoYuko, who commanded the Japanese Fleet, was an accomplished professional with long years of sea experience and training, little different from his European peers in personal record.[341] In stark contrast, Admiral Ting Ju-ch'ang commanding the Peiyang Fleet was a cavalry officer who had been transferred from the army. He was personally brave but totally clueless about naval warfare. He relied to the expertise of Philo MacGiffin, a former US Navy ensign hired to act as his counsellor and *de-facto* second in command aboard the flagship *Ting Yuen*. Their subordinate officers mirrored the two commanders both in character and capability.[342]

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[338] Wright, p. 73.
[339] Ibid., p. 182.
[340] Wilson, pp. 137-140.
[341] Peattie and Evans, p. 40.
[342] Wright, p. 46, 82.

The Logistics of the Chinese navy was hiding a disaster which was to show itself in the fine hours of combat. During the battle of Yalu, most of the 12-inch shells fired by Chinese battleships were discovered to be lacking their explosives or had been filled by concrete and even sawdust due to the fraud and corruption at the arsenals.[343] Chinese naval operations also lacked a clear directive. Admiral Ting was initally ordered to escort troop movements between Korea and mainland China; thus he dispersed some of his smaller units for this task. Later, he received orders to seek and destroy the Japanese navy for naval domination; but in the intervening actions some of his detached ships had been already lost. In contrast, Admiral Ito was given the general directive to ensure the safety of Japanese troop movements as first priority, and if the opportunity arise, gain naval domination as a secondary objective. The clarity of his orders and the freedom he was given for tactical considerations ensured advantage of planning and flexibility over the enemy.[344]

The first action of the war occured on 22 July 1894. The cruiser *Tsi Yuen* and the torpedo-gunboat *Kuang Yi* which were going to meet and escort three troop ships encountered the Japanese flying squadron consisting of the cruisers *Yoshino*, *Naniwa* and *Akitsushima* to the west of Asan. Japanese warships opened fire from close range, heavily damaging the *Tsi Yuen* and sinking the *Kuang Yi*. The *Naniwa*, then under command of Togo Heihachiro, caught the British flagged troop ship *Kowshing* while pursuing the fleeing Chinese cruiser and sank her after six hours of fruitless negotiations, with heavy loss of life. The sinking of a British flagged ship created an

[343] Wilson, p. 138.
[344] Ibid., pp. 141-142.

international incident, but the case was closed in the favor of the Japanese after investigations.[345]

The next month passed with naval inactivity as both sides were busy with convoy duties. But when Admiral Ting received a change of orders to seek and destroy the Japanese Fleet the major battle of the war was fought on 17 September 1894 at the mouth of the Yalu River. The Battle of Yalu was the first naval action fought between modern battleships. Admiral Ting arranged his ships in line abreast, imitating the formation of the Austrian fleet at the Battle of Lissa[346] 28 years earlier. Against him, Ito placed his ships in line ahead. During the six hour-long action, the well-manned Japanese ships easily evaded the head-on charge of the Chinese formation and circled around the Chinese warships until dusk, battering them mercilessly with their quick firing guns from close range. The Chinese lost four cruisers and a sloop; the rest of the ships were badly damaged for a total of 1350 casualities. Japanese casualities were 290 with four damaged ships.[347]

Ting took his mauled squadron back to Port Arthur while Ito declined to pursue him due to his own damage. For a month, Ting repaired and readied his remaining ships as best as he could and went to sea again in October, when a Japanese army had landed on Liaotung Peninsula to take Port Arthur. Ting brought his ships to Wei-Hai-Wei where he was blockaded by the Japanese fleet, while two Japanese army divisions were landed to besiege the

[345] Wilson. pp. 142-147.
[346] Battle of Lissa was an inconclusive naval action fought on 20 July 1866 during the Seven Weeks War, between an Italian fleet of sixteen and an Austrian fleet of eleven ironclads. Austrian admiral Wilhelm von Tegetthoff arranged his fleet in an arrowhead formation and charged to the Italian line which was virtually stopped because of poor leadership. The Italian flagship was rammed and sunk by the Austrian flagship while a smaller ironclad blew up when her magazine caught fire. This confused mêlée erroneously led most of the naval tacticians around the world to give a precedence to close range tactics and ramming instead of fire discipline and sailing in line. Sondhaus, p. 94-96.
[347] Tucker, pp. 240-241.

harbor. Japanese torpedo boats made several raids during winter, eventually sinking the *Ting Yuen*, but only with the fall of forts guarding the anchorage did the situation became hopeless for the Chinese. Admiral Ting comitted suicide on 12 February 1895, and on 16 February what remained of the Peiyang Fleet surrendered, namely the cruisers *Tsi Yuen* and *Ping Yuen*, the battleship *Chen Yuan*, six gunboats and a torpedo boat.[348] Peace was signed on April 1895 at Shimonoseki, Japan.

The Treaty of Shimonoseki was the worst defeat ever suffered by China in modern history. What remained of the once great navy, built in two decades at great cost, was a handful of gunboats and torpedo boats. Following the war a feeble attempt was made to reconstruct the navy on more modest lines but due to the financial collapse caused by war indemnity, and the internal unrest fueled by the anger and desperation of the defeat frustrated these intentions.[349] The Chinese revolution of 1911 and the following spiral of destruction (political fragmantation, civil war and the Japanese invasion of 1937) was to continue until the victory of the communists in 1949, effectively ruling out any possibility to own other than a flotilla of gunboats to patrol the Yangtze River. China only started to rebuild a navy of open sea capability in the 1970s. Thus, the First Sino-Japanese War marked the effective end of the Chinese steam navy.

When assessed, the short but tumultuous story of the Imperial Chinese Navy constitutes an exemplary vindication of the fact that an assembly of warships do not necessarily make a navy. Imperial China failed miserably in the three critical backbone elements of an efficient naval force: framework,

[348] Wright, pp. 99-105.
[349] Sondhaus p. 173.

personnel and command. Corruption on naval bases was endemic, as in almost all other late Qing institutions. Warships were carefully painted and polished to color the eyes of local mandarins and foreign visitors, but when more closely examined by expert eyes, they were fully revealed to be lacking discipline and often in bad state of repair.[350] The naval colleges were haphazard institutions; with no unity of curriculum and practically little tactical training. The number of cadets was always low to man all of the ships. A regulated promotion system was non-existent; appointments were executed according to patronage and court intrigues. The result was bureaucrats like Chiang Peilung and army officers like Ting Ju-ch'ang commanding fleets and leading them to destruction.[351] To provide the necessary expertise the Qing government resorted to hiring mercenary European officers to act as advisors for the captains and as drillmasters aboard warships from the early years of the Chinese steam navy; sometimes with notable improvements. However, once they resigned from their posts; generally due to the chronic shortage of money which plagued the late Qing military system, every improvement they had brought went with them.[352] In short, the Imperial Chinese Navy was an institutional failure and eventually was destroyed by the smaller and technically weaker, but institutionally much superior Japanese Navy. Perhaps the most positive effect of the Chinese

[350] When the Peiyang Fleet visited Yokohama in 1891, Togo Heihachiro who inspected the *Ting Yuen* was shocked to see trash on the decks and laundry hanging from the guns. He likened the Chinese fleet to "having the appearance of a fine sword but being no sharper than a kitchen knife." When the famous British Admiral Lord Charles Beresford visited Chefoo in October 1898 and examined the Chinese warships present, including four brand new training cruisers, he had "bluntly told to leave the defense of the country to the army and sell off the ships, including those under construction." Wright, p. 84, 112.
[351] Ibid., p. 30, 95.
[352] Ibid., p. 83.

Imperial Navy was its pioneering of a modern military industry in China; with important consequences in the later years of the twentieth century.

Throughout the nineteenth century, seapower was the primadonna of international power politics. Although land armies possessed increasingly improved weapons, the advantages they provided were incremental rather than decisive. Armies were still composed of foot slogging infantry, horsed cavalry and artillery. The European contingents of imperialism, however well armed they were, were always in danger of getting defeated by the native peoples of Asia, Africa and Americas.[353] But against the destruction that an armor clad battleship with big caliber guns could inflict, native peoples had no answer. This is why the nineteenth century is called the era of "Gunboat Diplomacy." The building or the purchase and upkeep of such vessels required no less than a total re-organisation of the state, and eventually society, along modern lines. Being a first-rank naval power equalled the status of great power according to the requirements of a battlefleet.[354] The second half of the nineteenth century witnessed both spectacular demonstrations of mechanised navies and a head spinning pace of technological change which often left battleships obsolete even before they were launched to the sea. In that context, the Ottoman, Russian and Chinese Empires, the three major landpowers of Eastern Eurasia, struggled to build and maintain credible battlefleets with varying results. The story of the Ottoman navy was examined in the previous chapter. Comparing Russian and

[353] Vandervort, Bruce. "1815-1960 Sömürge Savaşları" in *Dretnot, Tank ve Uçak: Modern Çağda Savaş Sanatı 1815-2000*, edited by Jeremy Black (İstanbul: Kitap Yayınları, 2003), pp. 164-170.
[354] Headrick, p. 243. Sondhaus, pp. 227-228.

Chinese steam navies with the Ottoman battlefleet provided interesting perspectives about the limits of modernization in each empire.

Despite its long standing position as one of the primary great powers, Russia was essentially an un-industrial, pre-modern society in early the nineteenth century. By the time the Crimean War had begun, there was no railroad in the Romanov territories beyond Moscow. The capability of producing any kind of steam machinery was non-existent. The traditional weakness of Russian naval power, the need to maintain three separate fleets in regions as far and unconnected as the Baltic Sea, the Black Sea and the Pacific Ocean, greatly exacerbated any attempt at a thorough modernization. Due to the weakness of native industrial base, Russia had to depend on foreign markets for steamship machinery, or often for the ships themselves in the initial period of the steam battlefleet. However, after their traumatic defeat against the mainly naval-industrial power of allied Britain and France, Russia moved to establish a sound industry and an integrated rail network to never suffer paralysis in the face of an enemy again. The Russian railway program culminated in the epic Trans-Siberian Railway (1889-1917), one of the greatest feats of industry and engineering of the nineteenth century.[355]

The great role that the lack of sufficient internal communications played in the 1877-78 catastrophy was to play a similar invigorating role in the Ottoman railroad program during the 1880s. However, the Ottoman Empire never managed to develop its industrial basis, unlike Russia. Russia, spending the money to raise and develop factories instead of buying weapons, initially suffered a disadvantage in war technology against the Ottoman

[355] For a monography about Trans-Siberian Railway, see Steven G. Marks, *Road to Power: The Trans-Siberian Railroad and the Colonization of Asian Russia, 1850-1917* (New York: Cornell University Press, 1991)

Empire, which had laid huge sums from its already overburdened treasury into the international arms markets for the latest weaponry. However, once Russian industry took root and gained impetus by the 1880s, it rapidly re-established technological superiority over its Ottoman rival.[356]

Using various foreign licences, Russian shipyards rapidly launched modern battleships while the Ottoman Fleet, prisoner in the Golden Horn, rapidly collapsed out of neglect and lack of means to maintain it. In the area of personnel and training, the Russian Fleet relied on conscripted peasants like the Ottomans. However, the big difference was in the institutional ethic of officer corps in both states. As a participant of the eighteenth century military revolution, despite the widespread malign by its western peers, Russian officer corps had by and large became a dedicated caste of professionals by the mid-nineteenth century. By contrast, the Ottomans were a full century late in the establishment of a professional officer corps and, as a result, they always remained deficient in command and drill compared to the Russians.[357]

The colorful story of the Chinese steam navy is very educative about the impossibility of establishing a naval force in a pre-modern state. The Imperial Chinese Navy bore the curious distinction of being the only "feudal" steam fleet in the world. It was totally outside a centralised administration and was devoid of any strategic notion; each provincial fleet was caring for itself, left to its own regional means. Totally unlike the Ottomans, who made

[356] For an overview of the Russian military industry development see Jonathan Grant "Tsarist Armament Strategies 1870-1914," *Journal of Soviet Military Studies* 4 (March 1991), pp. 141-149.
[357] About the effects of the eighteenth century military revolution on the Russian army see Virginia Aksan's remarks about the Russian Army in the 1768-1774 Russo-Turkish War in Virginia H. Aksan, *Ahmed Resmi Efendi: Savaşta ve Barışta bir Osmanlı Devlet Adamı 1700-1783* (İstanbul: Tarih Vakfı Yurt Yayınları, 1997), pp. 126-128.

conscious and determined efforts to establish a professional officer corps, the Chinese never made more than a token effort to train proper naval officers. The very large coastal population that China possessed was never transformed into a naval reserve pool. China acquired the latest system warships, but these were only a collection of vessels, not a navy. However, the industrial aspect of Chinese naval effort requires closer examination. China did not possess any practice or experience of building modern warships before the 1870s but by the 1880s its shipyards were able to complete vessels as large and complex as a steel armored cruiser in a relatively short amount of time. Compared with this performance, the Ottoman Imperial Arsenal required eleven years to complete the medium-size ironclad *Hamidiye*, laid down in 1874. The fraud within Chinese and Ottoman bureaucracies paralleled each other, but obviously the Chinese did not allow it to impede their shipbuilding effort as much as the Ottomans did. Whatever its industrial achievement the Chinese steam navy never seriously possessed an organised basis and support, and once encountered a well-prepared and determined foe, it rapidly collapsed. In turn, despite the financial difficulties, governmental neglect in the later part of the nineteenth century, and a weak industrial basis, the Ottoman steam navy managed to develop a core of professional officer class, which kept it alive for better times.

CHAPTER V

CONCLUSION

By the end of the Napoléonic Wars, Britain had emerged as the undisputed sovereign of the seas, the premier naval power. Its defeated longtime rival, France, still had the second, but Russia emerged with the third greatest battlefleet of the world, eclipsing the devastated Spain and Holland. The rise of Russian naval power was due not to any change in the Russian maritime trade or a surge of colonialism. The Russian navy had become an indispensable part of the imperial defense, as Finland was added to the Empire and the Russian position in the Black Sea had been firmly entrenched during the decades of war. As Russian imperialism moved into the Caucassus, the indispensable mobility, logistics and fire support missions of the Black Sea fleet became increasingly important. In other words, the Russian Navy had assumed the role of commissariat and siege train in addition to its original purpose of providing a shield to the coastal possesions against seaborne Ottoman assaults. In the meantime, Ottoman seapower was emerging from a time of technological innovation and reorganization. In numbers of ships-of-the-line, the Ottoman navy ranked fourth in the world in 1830, and was the foremost among the second rank naval powers. This change was due to a new understanding of naval power by the Ottomans.

As part of the coalition against Napoléon, the Ottomans had witnessed the efficiency of British seapower in the defeat of France, especially during the Egyptian Campaign (1798-1801). Due to a correct perception of the

importance of naval power by Selim III and his successor Mahmud II, the Ottoman navy started to develop into an independent armed force instead of being an extension of the army.[358] The main cause of the naval weakness had been identified correctly as the unprofessional nature of the naval officers even before the sultanate of Selim III and a naval college, the *Mühendishane-i Bahr-i Hümayûn*, was set up to alleviate the problem. The Russians had encountered the same problem earlier in the eighteenth century, and had countered it by hiring officers among the maritime nations of Europe until they had trained their own competent professionals. In fact, the fleet which set the Ottoman battle squadron afire in Çeşme (1770) had been commanded by a British admiral while Rear-Admiral Dzhon, the commander of the Black Sea Fleet during the Ottoman War of 1788-92, was none other than John Paul Jones, the legendary Yankee hero of the American Revolution.

Ironically the Ottomans had a far older tradition of employing foreign specialists in their army, a practice descended from the early classical era. It was not, however, for the purpose that Russians did it: the import and institutionalisation of the western military professionalism.[359] By the Napoléonic Wars, Russians had their own great seamen of first generation, like Admirals Senyavin and Ushakov. To be fair however, it must be said that the Ottomans lacked the necessary peace time required for proper officer education and training. The period from 1768 to 1841 was a time of continuous warfare and turmoil for the Ottoman Empire which virtually

[358] Panzac, Daniel. "The Ottoman Navy: From Early Beginnings to Nizâm-ı Cedîd (14th to 18th Centuries)," in *The Logbook of the Ottoman Navy: Ships, Legends, Sailors*, edited by Emir Yener and Ekrem Işın (İstanbul: Pera Müzesi, 2009), p. 31.
[359] For an analysis of the import of western military professionalism both in Russia, the Ottoman Empire, China and Japan see David B. Ralston, *Importing the European Army: the Introduction of European Military Techniques and Institutions into the Extra-European World 1600-1914* (Chicago: University of Chicago Pres), pp. 13-79, 107-142.

destroyed the basic fabric of state and society. Everything had to be created almost from scratch, including naval education and colleges. Only by the 1870s did graduates possessing necessary skills begin to appear in the Ottoman navy in any numbers.

Finding enough crewmembers was another serious problem. With the Greek Revolt and Mahmud II's restructuring of the empire as a Muslim autocracy, the navy was purged of its Greek-Christian element, which had traditionally constituted the navigation personnel. Impressment or voluntary recruitment all failed to alleviate the problem. Only with the full implementation of conscription in the 1840s was a more satisfactory solution to the manpower shortage found. By comparison, Russia had implemented a working conscription system in the eighteenth century which also had been used to man the navy. Initially, the *muzhiks* allotted to man the warships suffered heavy losses in many accidents and storms in the period of initiation on the sea, but with persistant efforts, Russia managed to train a satisfactory number of naval reserves.

As the Ottomans struggled to properly man and professionalise their navy, technological change was gaining pace. As well as being the harbinger of the industrial revolution, steam power offered a mobility revolution over the waves by freeing ships from the unpredictability of the elements. The first steamships were in commercial use in the middle of the Napoléonic Wars and before the end of the conflict, the first steam warship was on the water. Over the next thirty years, the advances were so rapid that technology quickly surpassed the level which could be followed by countries without an industrial framework.

The initial paddlewheels quickly left their place to the screw propellor while the appeareance of the shell gun triggered the armored warship. Guns became heavier and more destructive; they were installed in rotating armored turrets to provide "round the clock" fire. As ships got bigger, masts and sails disappeared in favor of increasingly developed machinery. First iron, then steel replaced wood as the primary shipbuilding material. Such a rapid and complex change meant that warships became the most costly and advanced weapon systems in the world.

The Ottoman Empire and Russia were broadly similar in industrial capability at the start of the period and thus were technologically dependent on the western market and expertise in the initial phase of the naval revolution. However, following the Crimean War, Russia initiated a massive industrialisation program which changed the face of its realms. In the twenty years following the Treaty of Paris (1856), Russia built the necessary naval-industrial framework to construct its own latest model battleships. The Ottoman Empire, in contrast, apart from a short period between 1870-80, failed to construct a similar heavy industry and remained a client to the Western arms market with serious financial and political implications.[360]

While the Russo-Ottoman naval rivalry was going in, on the Far East a new rivalry was emerging. China under the Qing dynasty was the world's greatest economy until the end of the eighteenth century, but by the end of 1850's it was a giant in the state of stagnation and decline. European imperialism had made a shocking show of force twice (1839-42 and 1858-62) to open the Chinese economy to "free trade" by a full exploitation of steam

[360] Grant, pp. 34-36.

powered warships and improved artillery. A similar act of "gunboat diplomacy," this time by the United States of America, was employed to impose an unequal relationship on the introvert Japanese Empire in 1853. The reactions given by the two states offer a salutary lesson in terms of modernisation. The Chinese elites never seriously considered the complete overhaul of the state and society required by a modern state. Though, to be fair, even if they had wanted one, it is doubtful that the unending internal turmoil and continuous foreign intervention would have allowed them to follow a coherent agenda.

In 1862, China set out to build an organized navy for the first time since the early fifteenth century. Shipyards and arsenals were set up, sometimes with successful results, and Chinese shipbuilding gained noteworthy successes in its own fledgeling capacity. Still, the Chinese naval organization was almost caricaturesquely pre-modern, centered around regional fleets under semi-autonomous viceroys, without a proper drill program or professional officers. Almost any Chinese naval capability was dependent on hired foreigners. In the end, China ended up with a costly collection of ships the primary mission of which was coastal defense and which was devoid of any professionalism. These regional fleets were annihilated by France in 1885 and by their regional rival, Japan, in 1894.

The story of the Imperial Japanese Navy, on the other hand, is exemplary. When the American "Black Ships" appeared in the Tokyo harbor in 1853, Japan had not built even a specialist warship in its history, let alone a navy. Some twenty years later a modest but extremely conscious start was taken for the construction of what was to become the third greatest naval

power in the world in 1941. With the adoption of the British Navy as a role model, the Japanese Navy succeeded in making the unique cultural import of naval professionalism complete with its traditions. Financially strapped and conceived only as a coastal defense force by politicians, the Imperial Japanese Navy gave the first priority to the education of a superb officers cadre, fully equipped for the necessities of modern naval warfare. These men correctly understood the correlation of naval power and overseas trade in the same time with Mahan and launched a carefully prepared political campaign to rally popular support for the navy's cause. Their professionalism would be crowned with a great victory over a technically much superior enemy in the 1894-95 Sino-Japanese War that brought the long awaited political support.

In the meantime, stage by stage, Japan overcame its poverty in natural resources and managed to build a sound naval-industrial framework, supported by a healthy private sector. In this second and critical area, Japan far surpassed both China and the Ottoman Empire. In the decade following the war with China, Japan assured British diplomatic support and constructed a well-built, well-manned battlefleet to tackle its next and most dangereous rival in the Far East, Russia. Such a balancing of means, aims and strategy had been seen nowhere outside the West at that point. The successful modernization of Japan, and above all its navy, brought the greatest naval victory of the modern age along with the great power status to the nation in the Russo-Japanese War of 1904-05.

While Japan was making its modest naval beginnings, the Ottoman navy was entering to its last dramatic period of expansion under the direction of the pro-navy Sultan Abdülaziz. The defeat of Russia to the maritime

alliance of France and England had convinced many Ottomans of the superiority of seapower. However, the Ottoman naval expansion was flawed in many respects. First of all, reinforcing the fleet up to the point that it became the fourth greatest armored navy of the world was beyond the resources of the Ottoman state. To cover the fleet's expenses large amounts of foreign loans were used, which would prove to be fatal to the imperial economy in the long run. The number of ships had far surpassed the number of avaliable sailors and officers, which resulted in a manpower shortage. The naval college was properly reformed into a modern institution but the number of graduates was always small.

Considering the fact that Russia's Black Sea Fleet, the principal *raison d'etre* of the Ottoman battlefleet, was scuttled according to the Treaty of Paris (1856), the question of why the Ottoman administration felt the need for such an enormous naval expansion comes to the mind. Without Russia, only Greece remained a maritime threat, but it could be countered surely without a costly ironclad force. Lawrence Sondhaus argues that, just like nuclear weapons today, the armored battlefleets of the nineteenth century were perceived as the ultimate deterrent force; the best way to force rivals to back down without resorting to the costly and socially disruptive land mobilizations.[361] Abdülaziz had seen the allied armada of the Crimean War forcing the Russian giant onto its knees and it can be argued that he tried to imitate this deterrent force. However, the Ottoman Empire had no framework to support such a fleet. The Sultan made a grave mistake in misjudging the means at his disposal and the aims. The contribution of Abdülaziz's naval

[361] Sondhaus, pp. 226-228.

program to the Ottoman moratorium of 1875 was to cost him his throne; by a fate of irony, he had become the first victim of the navy he himself had built. In the ensuing Balkan crisis and the Russian War of 1877-78, the huge ironclad fleet that Ottomans could neither maintain nor properly man achieved little.

The collapse of the Ottoman naval power into oblivion during the thirty three year reign of Abdülhamid II was, and still is, one of the most controversial topics of modern Ottoman history. Abdülhamid's political opponents accused him of locking the navy into the Golden Horn out of his fearful obsession about the role that the navy had played in the deposition of Abdülaziz, since his deposition in 1908,. There was no doubt that Abdühamid II's approach to the navy was reluctant at best. Admiral Mark Kerr, who was the British naval attaché in Constantinople, remarked that Abdülhamid showed a great interest in the submarine and, according to him, this was because submarines had no big guns to turn towards his residence, Yıldız Palace.[362] However, the Sultan was not alone in his skepticism about the navy. The recent experience of the Russian War, when the makeshift Russian torpedoboats had virtually immobilized the inept Ottoman navy and Russian merchant cruisers raided the Ottoman Black Sea coast with impunity, had created an outcry in among the Ottoman elite. The existence of a navy created at such a crippling cost came into question and an anti-navy sentiment rallied around the slogan "*Donanma İstemezük !*" (We don't want a navy !)[363]

Accompanying the anti-navy sentiments of Abdülhamid II and many of his ministers was the permanent economic crisis which also effectively

[362] Mark Kerr, *Land, Sea and Air: Remnisciences of Mark Kerr* (New York: Longman, 1927), pp. 127-128.
[363] Çoker, pp. 56-65.

ruled out any possibility to allot the former lavish sums to the navy. The Ottoman treasury had simply no means to pay the foreign debt, which approached 200,000,000 gold liras. The devastation of the Russian War, the loss of the Balkan heartland which so far had yielded most of the revenues, war expenses and the indemnity of 35,310,000 gold liras delivered the Ottoman economy a mortal blow from which it never recovered. With no option and under constant pressure from the great powers, the Porte issued the *Muharrem Kararnamesi* (the decree of Muharram) in 1881, which established *Düyûn-u Umûmiyye İdaresi* or the Ottoman Public Debt Admnistration (PDA). The PDA was an international commission to which the control of the Ottoman treasury and major revenues were relinquished.[364] It allocated the majority of Ottoman revenues to the settling of foreign debts and left only a bare sum for state expenses. Considering the meagre resources left, it was natural that the land forces which formed the backbone of imperial defense took priority.

Yet, it must be asked, considering all the financial difficulties, was the navy's total collapse inevitable? My argument is that it was not. After the naval scandal of the Thessalian War (1897), when a limited naval renovation program was initiated, more than 12,000,000 gold liras were spent for a futile attempt to modernize the antiquated ironclads of Abdülaziz's navy. Instead, those useless old ships should be retired and a moderate but far more flexible and effective fleet should be built around a couple of armored cruisers or coast defense ships, a similar number of protected cruisers and a flotilla of modern destroyers. However, the short-sightedness in naval strategy and

[364] Şevket Pamuk, *100 Soruda Osmanlı-Türkiye İktisadi Tarihi 1500-1914* (İstanbul: Koç Üniversitesi Yayınları, 1999), pp. 280-284.

corruption, especially when concerning tenders, caused the waste of the precious money.

All counted, the Ottoman navy was like an obstinate phoenix during the nineteenth century. More than once (in 1827 and 1853) it was destroyed with heavy material and manpower loss but each time it rose again with renewed vigor. It never reached to the effectiveness of the Russian and Japanese navies, but it fared far better than the Chinese navy, succeeding in professionalisation and the creation of a more or less trained naval reserve. The most serious drawback of the Ottoman naval power was its excessive dependence on foreign industry for its war material in the second half of the nineteenth century. Only after the proclamation of the Republic did a revitalisation of the Turkish naval-industrial framework start, and the results only became visible in the 1950s. The Ottomans spent great sums on what was basically a coast defense force and made little use of their fleet thereafter, but also they succeeded in the creation of a professional naval officer corps which passed on to the Turkish Republic.

APPENDIX A

PRIMARY NAVAL FORCES IN THE NINETEENTH CENTURY

Wooden Battlefleets 1815-1860				
Ships-of-the-line	1815	1830	1845	1860
Britain	218	106	88	58
France	69	53	46	37
Spain	21	4	2	-
Holland	19	5	7	-
Russia	47	47	47	8
Ottoman Empire	20	16	16	4

Note: Only ships-of-the-line fitted with a steam machine are counted for 1860 estimates.

Armored Battlefleets 1870-1904			
First Class Battleships	1870	1885	January 1904
Britain	37	39	46
France	35	34	23
Russia	10	15	24
Ottoman Empire	12	8	-
Italy	16	11	11
Austria-Hungary	11	10	9
Germany	7	10	24
United States	6	-	31
China	-	2	-
Japan	-	1	6

Note: Battleships in building stage are also counted.

Cruiser Forces 1884-1904			
Armored Cruisers	1884	1894	January 1904
Britain	5	12	35
France	14	11	16
Russia	4	5	8
Ottoman Empire	-	-	1
Italy	-	1	9
Austria-Hungary	-	1	3
Germany	-	2	6
United States	-	2	12
China	-	3	-
Japan	2	1	10

Note: Ironclads rebuilt as armored cruisers are also counted.

Torpedo Craft 1880-1900			
Seagoing Torpedo Craft	1880	1890	1900
Britain	2	176	306
France	58	128	233
Russia	19	31	206
Ottoman Empire	-	24	24
Italy	4	163	119
Austria-Hungary	10	63	68
Germany	-	72	124
United States	-	1	33
China	1	18	16
Japan	-	25	42

Note: Only First and Second Class Torpedoboats, Torpedo-Gunboats and Destroyers are counted.

Source: Compiled from data in the: Lawrence Sondhaus. *Naval Warfare 1815-1914*; Tony Gibbons. *The Complete Encyclopedia of Battleships and Battlecruisers*, and the *Brassey's Naval Annual* 's issues of 1880, 1890 and 1900.

APPENDIX B

OTTOMAN NAVY ORDERS OF BATTLE 1853-1897

The Crimean War

Imperial Ottoman Navy, 1 October 1853
Admiral of the Fleet: Topal Mahmud Pasha

Topal Mahmud Pasha Squadron	Type	Year Built	Guns
Mukaddeme-i Hayır	SoL	1806	74
Teşrifiye	SoL	1834	96
Peyk-i Meserret	SoL	1834	96
Halep (E)	SoL	1833	100
Mefta Cihad (E)	SoL	1833	100
Ben Zuhaf (E)	SoL	1833	100
Nusretiye	F	1835	64
Reşid (E)	F	1826	60

Mustafa Pasha Squadron	Type	Year Built	Guns
Taif	PS	1847	32
Mecidiye	PS	1847	32
Saik-i Şadi	PS	1847	32
Feyza-i Bahri	PS	1847	32
Muhbir-i Sürur	SF	1849	22

Osman Pasha Squadron	Type	Year Built	Guns
Avnillah	F	1832	44
Navek-i Bahri	F	1834	42
Nizamiye	F	1832	60
Fazlillah	F	1822	44
Kaid-i Zafer	F	1825	54
Dimyad (E)	F	1829	52
Necm-i Fesan	C	1824	26
Gül-i Sefid	C	1831	22
Feyz-i Mabud	C	1828	22
Ereğli	PS	1839	5
Pervaz-ı Bahri (E)	PS	1845	10

Kayserili Ahmed Pasha Squadron	Type	Year Built	Guns
Bahri (E)	F	?	?
Zir-i Cihad	F	?	?
Şerafeddin	F	?	?
Mesir-i Ferah	C	1829	16
Necat-i Fer	C	1831	22
Burc-u Şeref	C	?	?
Alayiş-i Derya	C	?	?
Cihad Bekker (E)	C	1829	22
Cena Bahir (E)	C	1829	22
Saman Bahri (E)	C	1838	26
Tir-i Zafer	B	1837	11
Ahter	B	1834	20
Bergüzide	B	1850	18
Kav-i Zafer	B	1837	22
Fery-i Sefid	B	1833	22
Feth-i Hüner	B	1833	18
Tabidar	B	1850	16
Ferahnüma	B	1842	22

Note: (E) denotes Egyptian ships.

The Cretan Uprising

Imperial Ottoman Navy, April-May 1866
Admiral of the Fleet: Ateş Mehmed Pasha

Rumelia Fleet: Rear-Admiral Edhem Pasha			
1st Division	Type	Year Built	Guns
Şadiye	SSoL	1858	68
Fethiye	SSoL	1858	68
Eruğrul	SF	1864	40
Muhbir-i Sürur	SF	1849	22
Eser-i Cedid	PS	1842	6
Talia	PS	1864	4
Medar-ı Zafer	PS	1864	4
2nd Division	Type	Year Built	Guns
Şevketnüma	SC	1859	4
Sinop	SC	1859	16

Anatolian Fleet: Rear-Admiral Ibrahim Pasha			
1st Division	Type	Year Built	Guns
Peyk-i Zafer	SSoL	1842	78
Eser-i Nusret	SC	1864	4
İskenderiye	SC	1862	3
Meriç	SC	1863	12
2nd Division	Type	Year Built	Guns
Akka	GB	1859	4
Varna	GB	1859	4

The Russo-Turkish War 1877-78

Imperial Ottoman Navy, March 1877
Minister of Marine: Rauf Pasha

Black Sea Fleet: Vice-Admiral Bozcaadalı Hasan Hüsnü Pasha			
Black Sea Ironclad Division	Year Built	Tonnage	Guns
Asar-ı Tevfik	1868	5600	8
Orhaniye	1864	6300	15
Asar-ı Şevket	1868	2600	5
Necm-i Şevket	1868	2600	5
İclaliye	1868	2200	5
Feth-i Bülend	1867	2800	4
Muin-i Zafer	1867	2400	4
Avnillah	1867	2400	4
Black Sea Wooden Division	Year Built	Tonnage	Guns
Hüdavendigar	1856	2900	36
Muhbir-i Sürur	1849	1500	22
Sinop	1857	780	16
Muzaffer	1861	780	12
İzmir	1857	780	16
Edirne	1857	780	16
Asır	1869	1600	4
İsmail	1964	1000	4
Mecidiye	1847	1400	4

Mediterranean Fleet: Vice-Admiral Giritli Hüseyin Pasha			
Mediterranean Ironclad Division	Year Built	Tonnage	Guns
Mesudiye	1874	10,000	15
Aziziye	1864	6300	15
Osmaniye	1864	6300	15
Mahmudiye	1864	6300	15
Mukaddeme-i Hayır	1872	2800	4
Mediterranean Wooden Division	Year Built	Tonnage	Guns
Selimiye	1865	6500	55
Mansure	1867	780	12
Utarid	1860	600	7
Eser-i Cedid	1840	1100	6
Sahir	1864	260	4
Taif	1869	1600	4
Fevait	1851	1000	4
Talia	1863	1000	4

Danubian Fleet: Vice- Admiral Mehmed Ali Pasha			
Ironclads	Year Built	Tonnage	Guns
Lütf-ü Celil	1867	2500	4
Hıfz-ı Rahman	1867	2500	4
Hizber	1870	400	2
Seyfi	1870	400	2
Semendire	1864	340	2
Feth-ül İslam	1864	340	2
Böğürtlen	1864	340	2
İşkodra	1864	340	2
Podgoriçe	1864	340	2
Wooden Vessels	Year Built	Tonnage	Guns
Akka	1857	200	4
Varna	1857	200	4
Şevketnüma	1857	200	4
Sultaniye	1862	3.000	4
Müverrid-i Nusret	1869	3.000	2
Mesir-i Bahri	1838	300	4
Feyza-i Bahri	1848	1500	-
Şerafeddin	?	?	-
Medar-ı Tevfik (*)	1869	800	-
Kayseriye (*)	1873	1000	-
Batum (*)	1869	900	-
Selanik (*)	1869	800	-
Mersin (*)	?	?	-
Lütfiye (*)	1865	600	-
Pürsur (*)	1865	700	-
Canik (*)	1869	900	-
Kılıç Ali (*)	1865	500	-

Note: (*) denotes transports from *Idare-i Aziziye* state shipping company.

The Thessalian War

Imperial Ottoman Navy, March 1897
Minister of Marine: Bozcaadalı Hasan Hüsnü Pasha

Commander: Admiral Hasan Rami Pasha				
1st Division	Type	Year Built	Tonnage	Armament
Mesudiye	I	1874	10,000	12x25.4 cm 3x17.8 cm G
Hamidiye	I	1871	6600	4x23.8 cm 10x15 cm G
Aziziye	I	1864	6300	2X24 cm 8x10.5 cm G
Orhaniye	I	1864	6300	2x24 cm 8x10.5 cm G
Ejder	TB	1886	150	2x42.8 cm TT
Berkefşan	TB	1883	250	2x42.8 cm TT
Siham	TB	1886	90	2x42.8 cm TT
Pervin	TB	1886	90	2x42.8 cm TT
Gilyum	TB	1885	90	2x42.8 cm TT
Tarık	TB	1886	90	2x42.8 cm TT
Tir-i Zafer	TB	1885	40	2x35.5 cm TT
Eser-i Terakki	TB	1883	40	2x35.5 cm TT
İzmir	T	1871	1500	-
Mekke	T	1872	2500	-
2nd Division	Type	Year Built	Tonnage	Armament
Osmaniye	I	1864	6300	2x24 cm 8x15 cm 5x10.5 cm G
Necm-i Şevket	I	1868	2600	1x23 cm 4x18 cm G
Hıfz-ı Rahman	I	1867	2500	2x22.5 cm 1x15 cm 1x12 cm G
Peleng-i Derya	TB	1887	750	2x10.5 cm G 3x35.5 cm TT
Vesile-i Nusret	TB	1885	90	2x42.8 cm TT
Fatih	TB	1886	90	2x42.8 cm TT
Şahab	TB	1886	90	2x35.5 cm TT
Mecidiye	TB	1883	40	2x35.5 cm TT
Burhaneddin	TB	1883	40	2x35.5 cm TT
Marmara	T	1871	1800	-
Hüdeyde	T	1874	2000	-

Abbreviations:

C = Corvette
F = Frigate
G = Gun
GB = Gunboat
I = Ironclad
PS = Paddle Steamer
SC = Screw Corvette
SF = Screw Frigate
SoL = Ship-of-the-Line
SSol = Screw Ship-of-the-Line
T = Transport

TB = Torpedoboat
TT = Torpedo Tube

Source: Compiled from Bernd Langensiepen and Ahmet Güleryüz. *The Ottoman Navy 1828-1922* and Hacer Bulgurcuoğlu. *Efsane Gemi Mahmudiye Kalyonu*.

APPENDIX C

TORPEDO COMMISSION'S REPORT ON THE TORPEDO SCHOOL

Müzekkere

Ba irâde-i seniyye Tersâne-i Âmire'de teşkîl olunan Torpido Komisyonu'ndan tanzîm ve takdîm olunup Şûrâ-yı Bahriye'ye havâle buyurulan işbu melfûf mazbata ile defter kırâât ve mutâla'a olundu. Mazbata-i merkûmânın hulâsa-i me'âlî torpidonun Avrupa'ca olan terakkiyâtı bahriye zâbitânın dahi istihsâl-i ma'lûmât ve iktisâb-ı ameliyât eylemeleri için Tersâne-i Âmire'de bir Torpido Mektebi'nin te'sis ve teferru'ât-ı lâzımesinin icrâsı îfâde ve tafsilâtından ibâret bulunmuşdur. Ma'lûm-ı 'âlî-i nezâretpenâhîleri buyurulduğu vechile torpido fenninin Avrupa devletlerince meşhud olan terakkiyâtına tevfîkan ve Donanma-yı Hümâyûn-ı cenâb-ı mülûkâne zâbitânının dahi kesb-i ma'lûmât ve ameliyât eylemelerinin lüzûm ve ehemmiyeti gayr-i münkir olup mazbata-i mezkûranın mevâdd-ı münderecesi şu maksad-ı hayr mirsadın hîn-i husûle vusulü esâsına mübteni bulunmuş olduğundan mûcebince münâsib bir sefînenin tahsîsiyle mekteb-i mezkûrun hemen teşkîl ve küşâdı ve komisyon-ı mezbûrun nezâret-i mütemadiyesi tahtında bulunmak üzere erbâb-ı fen ve iktidârdan bir ser mu'allim ile üç nefer mu'allim zâbitin ve icâbı mikdâr mu'avinlerin ve mektebe devam edecek zâbitânın mikdârı şimdilik yigirmiye iblâğ olunarak bunun nısfının Tophâne-i Âmire zâbitânından ve nısf-ı diğerinin dahi Şiltenk, Çarhçı ve sülüsanının Güğerte sınıfından ve Bahriye ve Tophâne-i Âmire'den yigirmişer kadar neferâtın dahi oldukça okuyup yazmak planlarından tefrîk ve ta'yîni ve sefîne-i merkûmânın derûnunda tanzîm ve i'tâ olunacak resim mûcebince dershâne ve kamaralar ve eşyâ muhafâzası için mağazalar inşâsı ve icrâ-yı ameliyâta muktazi iki aded istimbotun tahsîs ve lehimcilik ve modülcülük gibi i'mâlâta muktedir lüzûmu kadar işçinin dahi ta'yîn olunması ve defter-i mezkûrda muharrer alât ve edevât-ı muktaziyenin tedârik ve mübâya'ası ve torpido fennine dair olup lüzûmu beyân olunan gazetelerin abone olunarak celbi ve mazbata-i merkûmâda münderic mevâd ve tefarru'ât-ı sâiresinin dahi mükemmelen icrâsı Şûrâ'ca dahi tezekkür ve tensîb kılınmış ise de sûret-i ma'ruza nezd-i 'âlî-i âsafâneleri'nde dahi rehîn-i tasvîb buyurulduğu halde alât ve edevât-ı mukteziyeden melfûf evrâkda gösterildigi vechile bir kısmının torpido mûcidi Kapudan zâtdan ve kısm-ı diğerinin Mösyö Simin ve birâderlerinden mübâya'ası lâzım gelecegi misilli mevcûd bulunan beş aded Whitehead Torpidosu için lüzûmu olan edevâtın dahi mumaileyh Fabrikatör Whitehead'den iştira ve celbi icâb edecegi ve bunların mecmu'-ı esmanı bin dokuz yüz seksen Lira-yı Siterlin ve on Şilin'e baliğ olacağı cihetle ona göre icâb-ı halin icrâsı ve mekteb ittihâz olunacak sefînenin techîzât-ı lâzımesi icrâ ve ikmâl olunmak üzere liman Kumandanlığı Vekâlet-i Behiyyesi'ne ma'lûmât ve teferru'at-ı sâiresinin icrâsı hakkında komisyon-ı mezbûra me'zuniyet i'tâ buyurulması bâbında.

Fi 13 Şa'bân Sene 1300.
'Osmân, Tahsîn, Ali, Hasan, Ârif, Mehmed, Zühdü, İbrâhim, Fâik.

Deniz Müzesi Arşivi, ŞUB-197/18-A.

Discovered in the Istanbul Naval Museum Archive by Assistant Professor Şakir Batmaz and published by his permission.

APPENDIX D

THE MAPS AND PICTURES

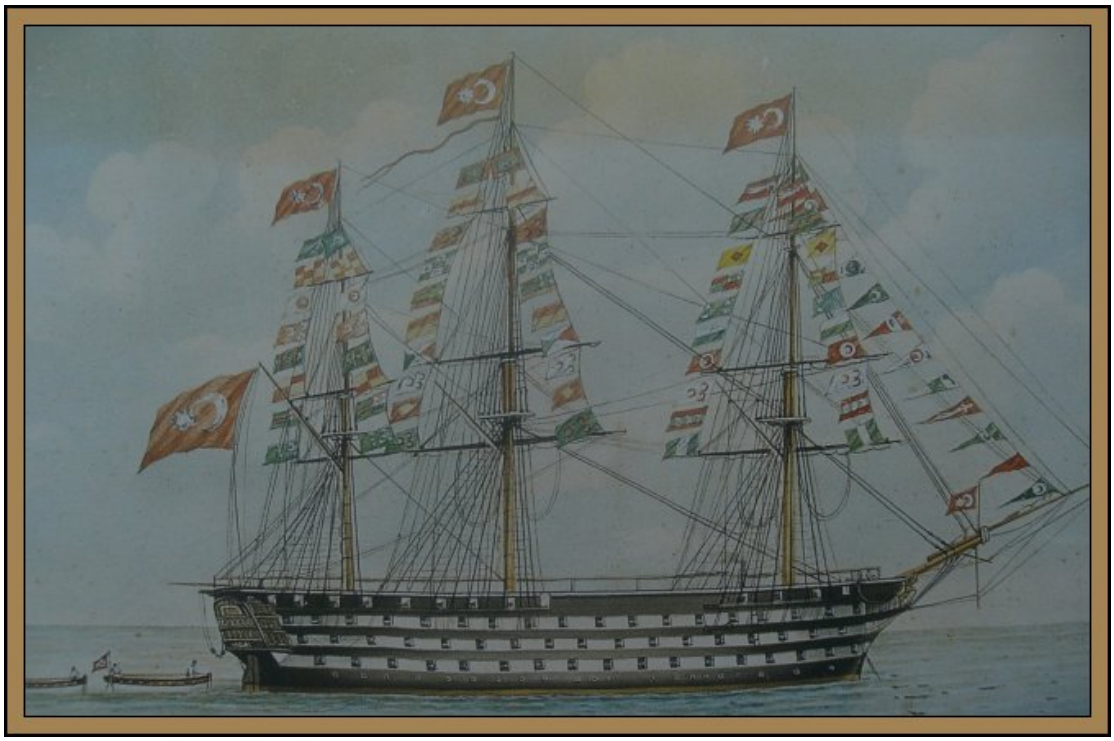

Figure1. The Sailing Warship: Ottoman Three-Decker Ship-of-the-Line *Mahmudiye*

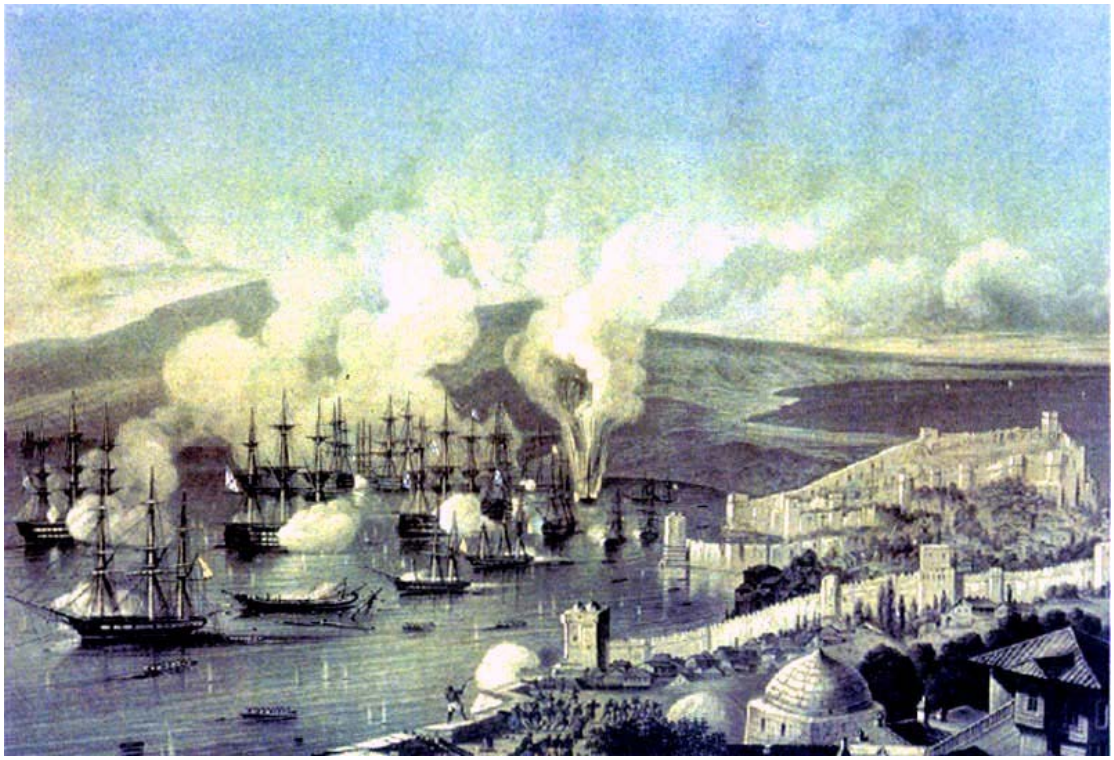

Figure 2. The Battle of Sinop (1853), Last Engagement of the Age of Sail.

Figure 3. The Paddle Warship: Duel of *Vladimir* and *Pervaz-ı Bahri* (1853)

Figure 4. The Screw Warship: Ottoman Steam Frigate *Ertuğrul*, Just Before Her Fateful Voyage to Japan (1889)

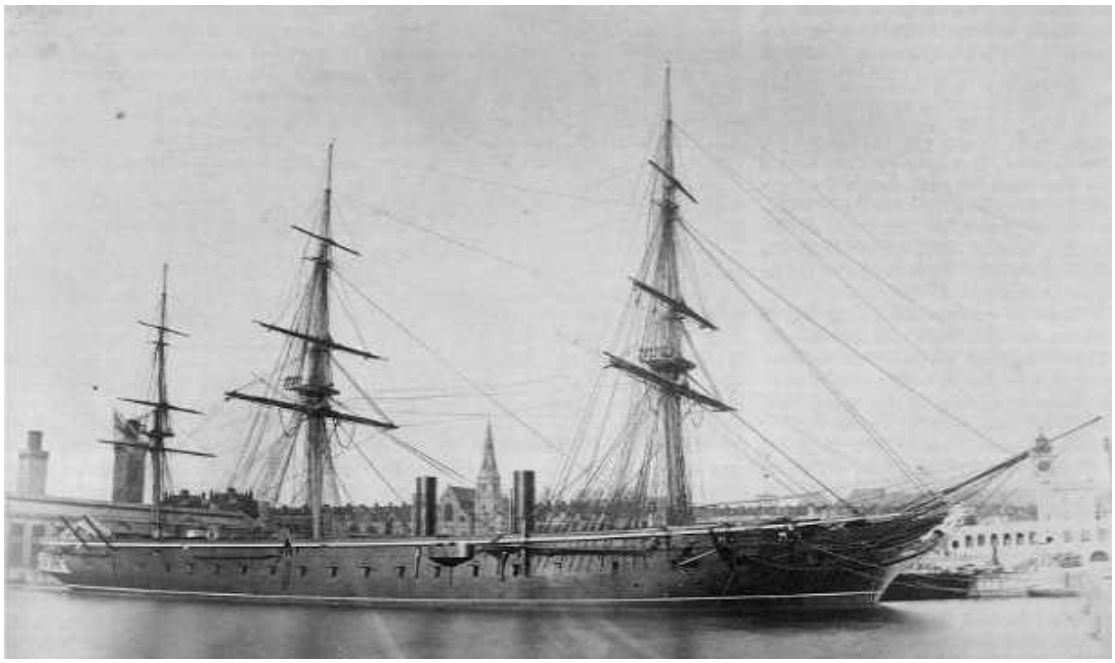

Figure 5. The Ironclad Warship: *HMS Warrior* (1860)

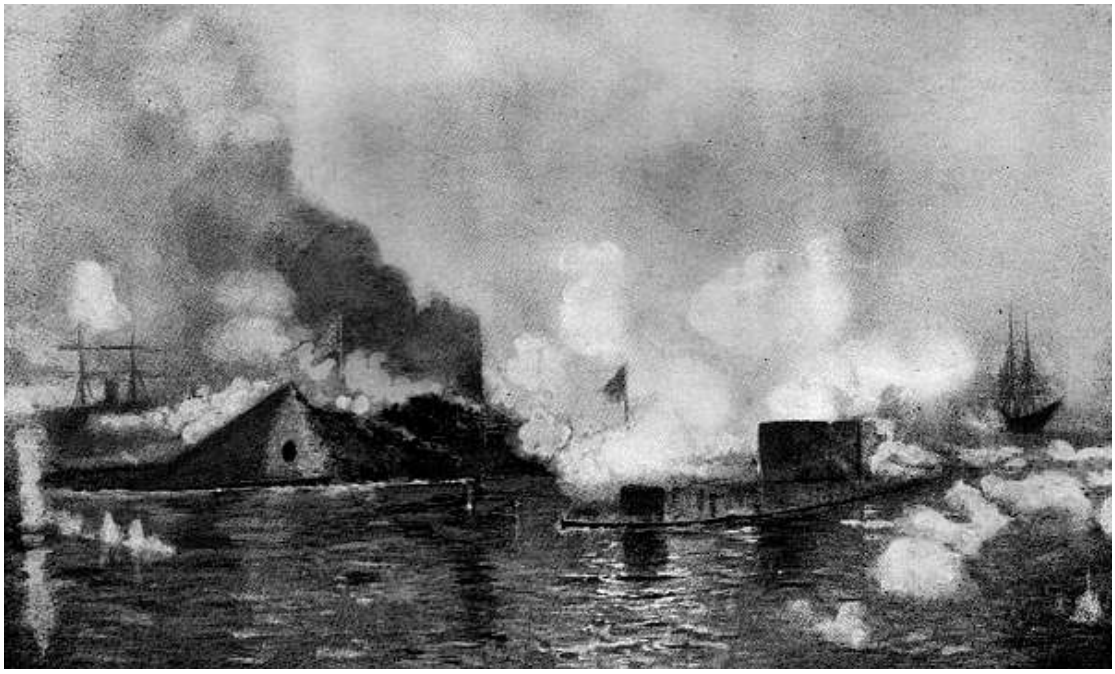

Figure 6. The First Battle of Ironclads: *Monitor* vs. *Virginia* (1862)

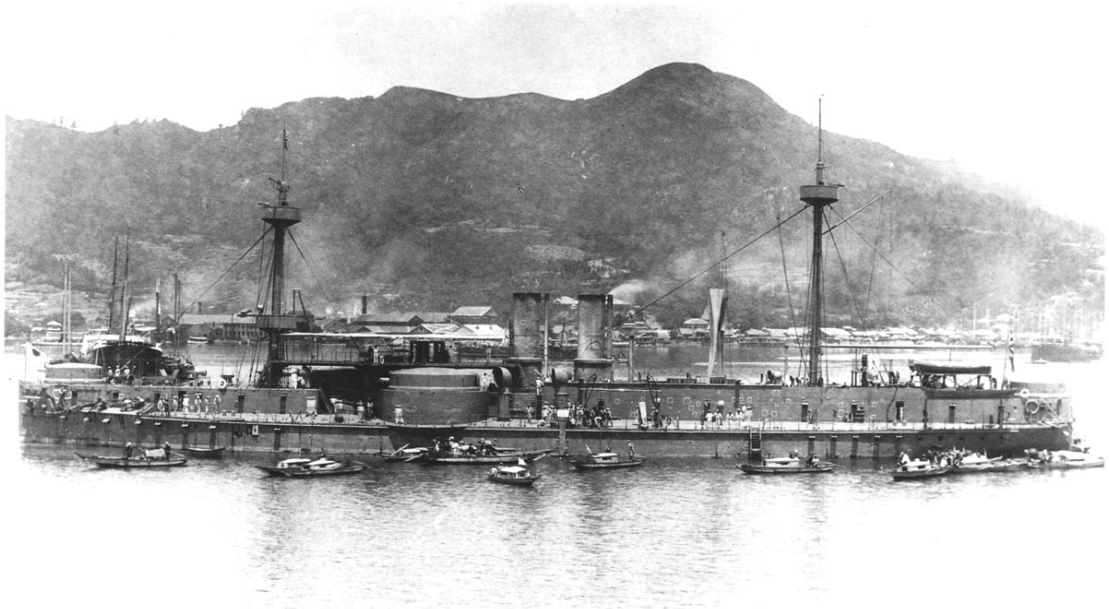

Figure 7. The Chinese Armored Ship *Chen Yuan* (1895)

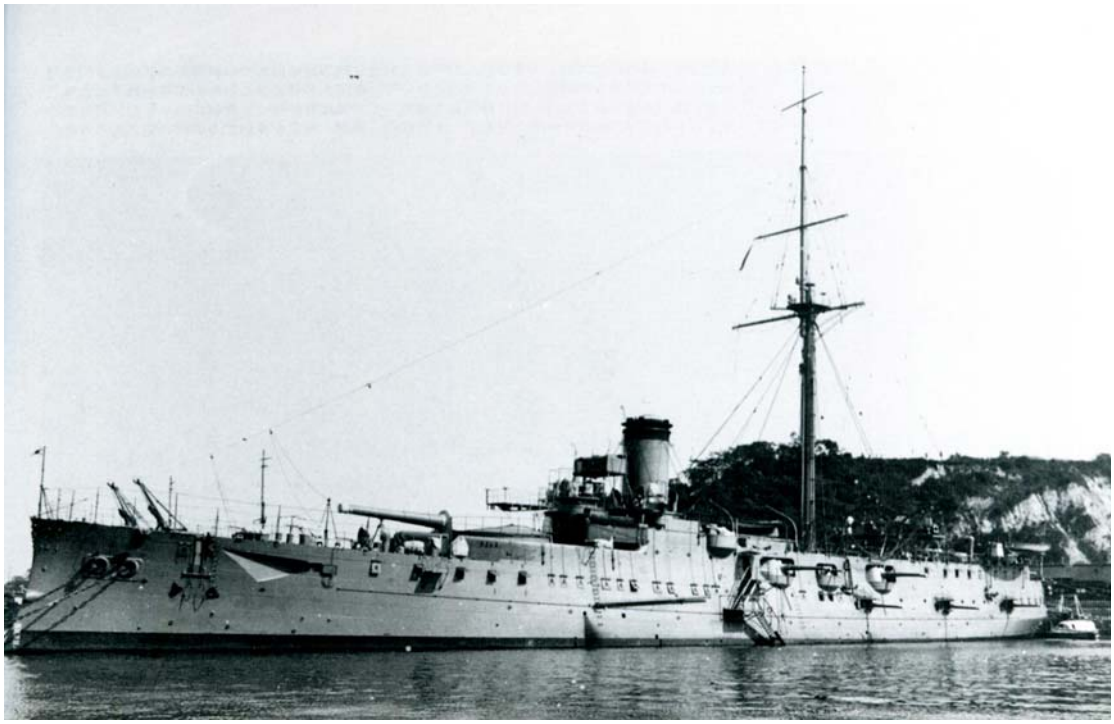

Figure 8. The *Jeune Ecole* warship: *Sankeikan* Class Japanese Cruiser *Hashidate*

Figure 9. Line-Ahead vs. Line-Abreast: Plan of the Battle of Yalu River (1894)
Source: "*Famous Sea Fights from Salamis to Tsu-Shima*" p. 264

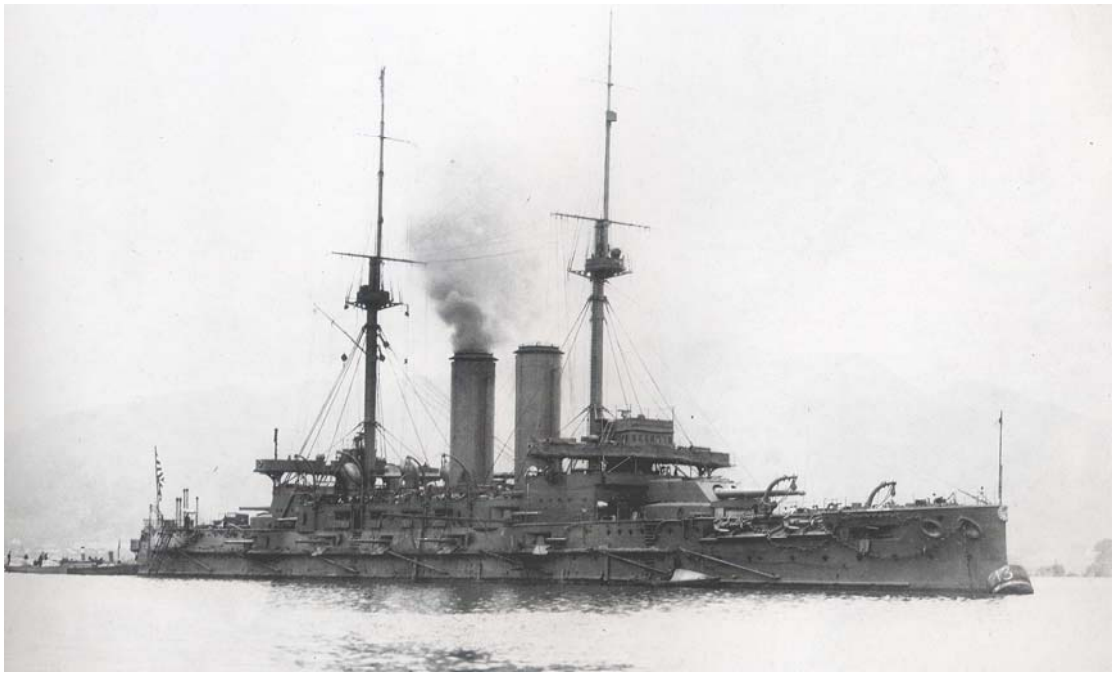

Figure 10. The Mahanian Battleship: *Mikasa*, Flagship of Admiral Togo Heihachiro

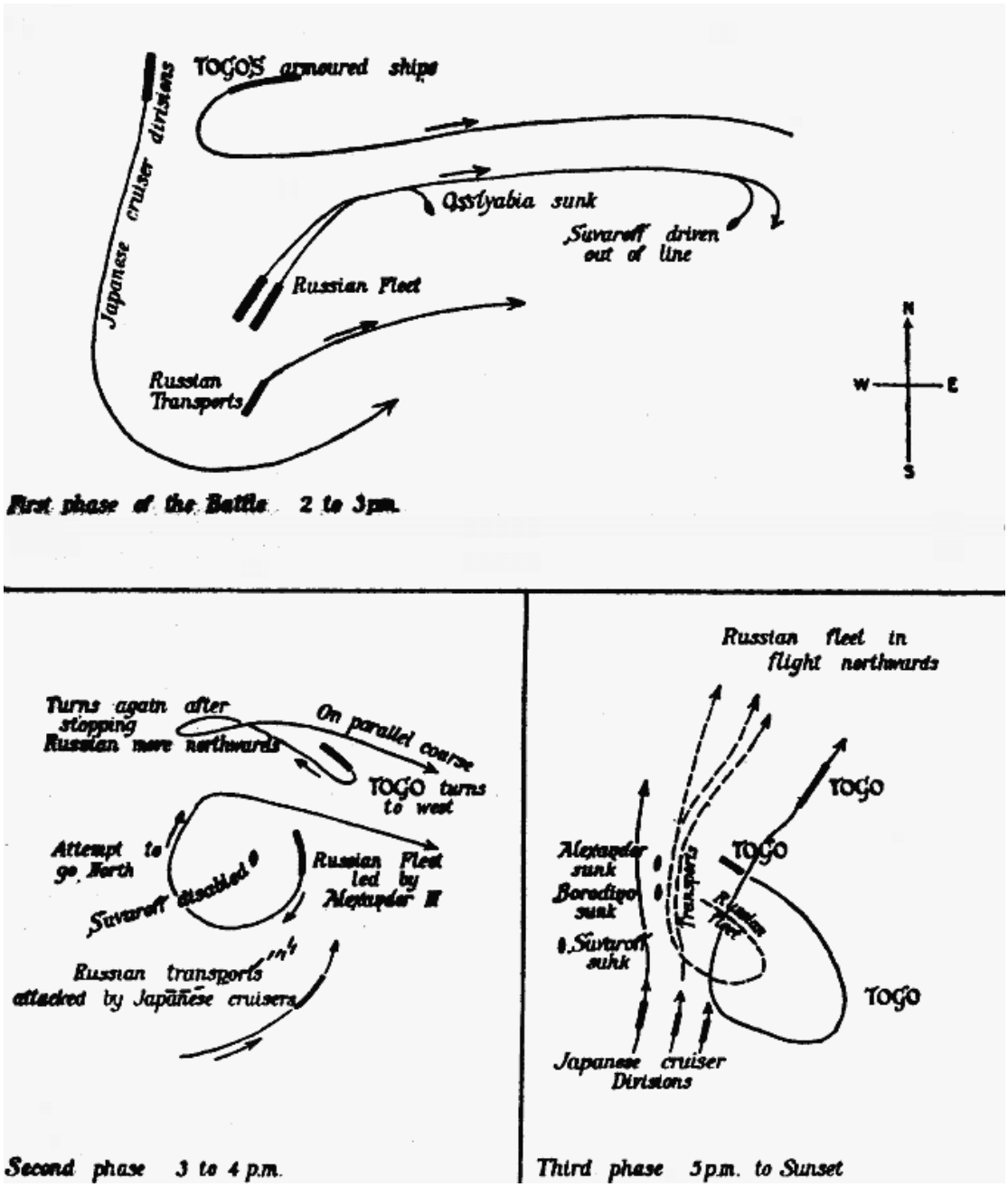

Figure 11. "Capping the T": Plan of the Battle of Tsushima (1905)
Source: "*Famous Sea Fights from Salamis to Tsu-Shima*" p. 326

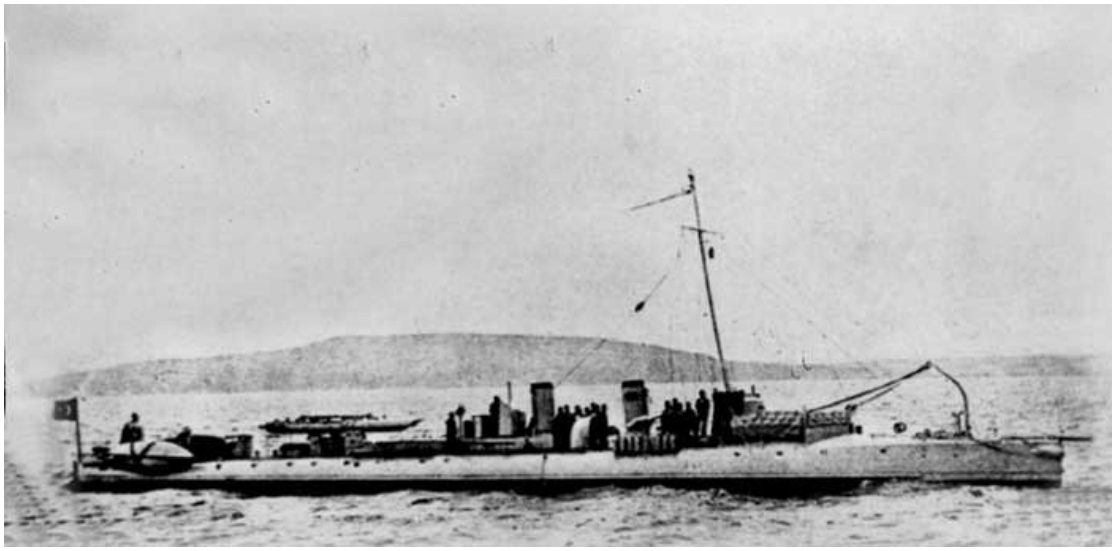

Figure 12a. The Torpedo Craft: Ottoman Torpedoboat *Sultanhisar*

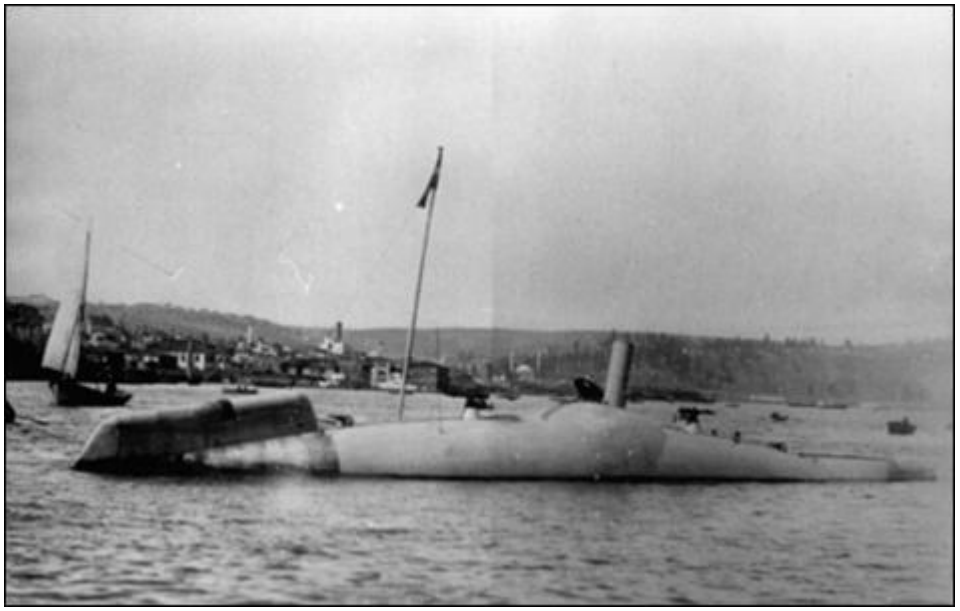

Figure 12b. The Torpedo Craft: Ottoman prototype Submarine *Abdülhamid*

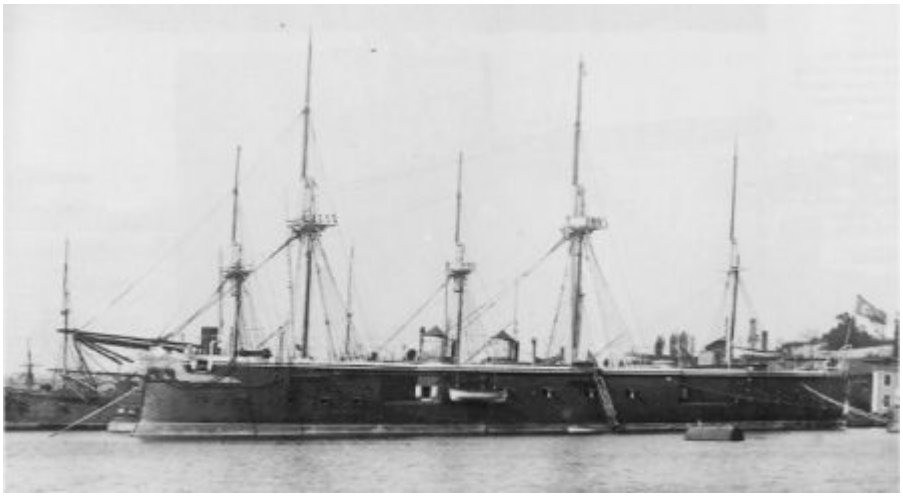

Figure 13. The Ironclad *Mesudiye*, Flagship of the Ottoman Navy

Figure 14. Ottoman Sailors from the Reign of Abdülhamid II (1876-1908)

Figure 15. A View of the Imperial Arsenal from the Nineteenth Century

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