Marrying the Orient and the Occident: Shipping and Commerce between France and Algeria, 1830-1914

THESIS

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By

John Perry

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Master's Examination Committee:

Professor Alice Conklin, Advisor
Professor Christopher Otter, Advisor
Professor David Hoffmann, Advisor
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Abstract

Steam technology radically transformed world shipping in the nineteenth century. Shipping lines established fast and predictable schedules that linked the far reaches of the world to Europe. These sea routes also went hand-in-hand with European imperial expansion; regular, reliable communications between colony and mother country cemented imperial control. To analyze these links, I explore the establishment and operation of shipping lines between France and its most prized colony, Algeria, between 1830 and 1914. The French state fostered this trade through generous subsidies, eventually declaring a monopoly on Franco-Algerian trade in 1889. Far from being a simple story of the French state playing a large role in the affairs of private enterprise, I examine the tensions between political and economic motives to justify these steamship services. These tensions underlying the justifications of linking France and its empire with French ships reveal that the day-to-day operations of these shipping lines were more complex, and more fraught, than previously imagined.
Dedication

I dedicate this thesis to my family who supported my ambition to go to graduate school.
Acknowledgments

Academic research is a collaborative effort. To this end I wish to thank my thesis committee, Alice Conklin, Chris Otter, and David Hoffmann for providing useful feedback for my writing as well as helpful suggestions to strengthen this paper. I also wish to thank my fellow students who read over this thesis when it was a seminar paper in 802.
Vita

June 2005 ...........................................Barrington High School

2009 ..................................................B.A. Modern European History, French

.....................................................Literature, University of Delaware

2009-2010 .........................................French Teacher, Providence Country Day

.....................................................School

2010 to present .................................Graduate Teaching Associate, Department

of History, The Ohio State University

Fields of Study

Major Field: History
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Chapter 1: Introduction

Traveling from France to Algeria in the Late Nineteenth Century

For the Parisian traveling to Algiers in 1898, his voyage began near the Paris Opera House at 12 Boulevard des Capucines, the ticketing office of the Compagnie Générale Transatlantique, known colloquially in French as la Transat or in English as the French Line. A first class fare cost 177 francs while second class cost 135.50 francs. Included in the fare was the cost of rail transport to Marseille and food on board the ship from Marseille to Algiers. Having obtained his ticket, the traveler would then make his way east to the Gare de Lyon in the 12th arrondissement to catch the 7:15 PM express to Marseille which traveled over the Paris-Lyon-Méditerranée railway, known as the PLM. The overnight express would arrive the next morning in Marseille at the Gare Saint-Charles, located in the center of the city. Our traveler would have to find his own way across Marseille to the la Joilette docks to board the French Line’s Ville d’Alger. After all the passengers and cargo were loaded on the ship, the Ville d’Alger would depart Marseille for the thirty-hour voyage across the Mediterranean to Algiers.\(^1\) In less than

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forty-eight hours, our hypothetical traveler journeyed between the French capital and the capital of France’s most cherished colony, Algeria.

This hypothetical voyage does not appear too impressive by contemporary standards. Today, one can fly from Paris’ Charles de Gaulle airport to Algiers’ Houari Boumediene airport in one hour and fifteen minutes at a cost of 408 euros in economy class.² For someone who desires to make the same trip by rail and sea, the voyage will take little more than twenty-four hours. A TGV, train à grande vitesse, will make the journey between Paris Gare de Lyon and Marseille Saint-Charles in three hours for 100 euros in second class.³ Today’s traveler can then board a Société Nationale Maritime Corse Méditerranée, SNCM, ferry and travel in a four-berth cabin at 381 euros for a twenty-one hour Mediterranean crossing from Marseille to Algiers.⁴ By the standards of the late nineteenth century, however, a two-day voyage from Paris to Algiers was swift compared to the month-long voyage from England to Australia at the turn of the twentieth century.

This anecdote underlines the significant impact of steam technology in the quickening pace of transport and communication across the world in the nineteenth century. It also reflects the impact of European imperialism in facilitating this transformation. In the Age of Imperialism during the late nineteenth and early twentieth

² Information from Air France website: http://www.airfrance.fr/cgi-bin/AF/FR/fr/local/process/standardbooking/FindOutboundFlightActionViaCalendar.do
centuries, Europeans believed their superior technological and engineering skills would end the isolation of the corners of the world and integrate it into the emerging world economy. Yet steam technology did not entirely obliterate space and time. Distance cursed France’s overseas empire, the second-largest after Great Britain’s. When looked at on a map, France’s empire in Africa appeared to be a near-continuous bloc connecting North and West Africa, from the Atlantic Ocean to the Gulf of Guinea, but separated by the immense Sahara.

The one part of France’s immense empire where distance did not appear to be a factor in separating colony from metropole was French North Africa, which contained France’s most prized colony, Algeria. While the Sahara presented a formidable barrier between “White Africa” and “Black Africa,” the Mediterranean Sea was referred to as a “lake,” an appellation dating from Roman times and perpetuated by twentieth-century historian Fernand Braudel. Michel Chevalier’s 1832 book *Système de la Méditerranée* envisioned a fusion of Mediterranean peoples linked by railways and steamships, where the sea would become the “nuptial bed of the Orient and the Occident.” Comparing the Mediterranean to a “lake” and a “nuptial bed” were no mere literary flourishes; a voyage from Marseille to Algiers took only thirty hours in 1880, reduced to twenty by 1909. Sailing ships made the same voyage in one to three weeks. Steamships greatly reduced

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voyage lengths wherever they were introduced. Speed not only shorted the distance between France and Algeria, but enabled regularity of service, too. Daily departures linked French Mediterranean ports of Marseille and Port-Vendres with Algerian ports like Oran, Algiers, Philippeville, and Bône. In the imperial era, the Mediterranean became a vital strategic region for the world’s shipping, especially after the opening of the Suez Canal shortened the sea voyage from Europe to Asia.

Algeria’s proximity to France in turn influenced France’s imperial relationship with Algeria. The regularity and speed of steamship service between France and Algeria established between its conquest by the French and 1914 underlined the physical and colonial bonds between metropole and colony. France’s farther-flung colonies such as Indochina, French West Africa, and French Equatorial Africa did not enjoy such well-developed infrastructure, nor did they share Algeria’s privileged political status. Since the conquest of Algiers in 1830, European settlers had migrated to Algeria, forming a pied-noir community that came to view itself as a pan-Mediterranean culture to the exclusion on indigenous Arabs and Berbers. Not only a settler colony, in 1848 Algeria received departmental status, making the departments of Oran, Algiers, and Constantine part of France. Yet what exactly was traded and who traveled between France and

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Algeria between its conquest and the outbreak of the First World War? How were these steam routes established, maintained and operated? An examination of the dynamics of infrastructure development and imperial economics offers some answers to these questions.

Historical writing about technology and infrastructure usually follows two approaches: either they are not mentioned at all or they are so present as they appear to determine the course of history. Furthermore, the history of French merchant shipping and the development of steamships is an area of “double neglect” in existing scholarship according to Marie-Françoise Berneron-Couvenhes because the study of naval power and ports, rather than technology and business organization, usually attracts the lion’s share of attention.\footnote{Marie-Françoise Berneron-Couvenhes and Bernard Cassagnou, “Introduction,” in \textit{La marine marchande française de 1850 à 2000}, ed. Marie-Françoise Berneron-Couvenhes and Bernard Cassagnou, Revue d’histoire maritime no. 5 (Paris: Presses de l’université Paris-Sorbonne, 2006), 8.}

On the surface, the story of French shipping to Algeria appears straightforward and does not warrant scholarly attention. One is not surprised to learn that good communications, with a colony just across the Mediterranean like Algeria, were considered essential for political control, or that France reserved all Franco-Algerian trade for French shipping firms.\footnote{Jacques Thobie et al., \textit{Histoire de la France coloniale: 1914-1990} (Paris: Armand Colin Éditeur, 1990), 59.}

Yet if a political motivation accounts for the establishment of shipping routes between France and Algeria, it cannot explain the changing dynamics of this trade over time. Try as the French might, they could not make
the Mediterranean a “French lake”\textsuperscript{13}; nor were the French ports on either side of the Mediterranean the exclusive reserve for French shipping firms. The British Peninsular & Oriental Company linked England and India by way of the Mediterranean, using the port of Marseille to transfer the mails overland to England.\textsuperscript{14} Austrian, Spanish, Italian, and later, German firms also operated in the crowded Mediterranean. This paper will demonstrate how France carved out a niche for itself in the colonial trade to Algeria and analyze the development of shipping lines engaged in this trade. Of all the firms investigated, I place the most importance on the French Line, as it was the largest shipping firm in France and served Marseille and Algeria from 1879 to 1969.\textsuperscript{15}

This thesis is broken into two chapters. The first examines the general development of steamship networks in the nineteenth century using systems-level framework elaborated by historian Thomas Hughes and their coherent structures: the steamship, the shipping line, and the port. The second chapter is a case study of French steamship networks with a strong focus on Algeria. This chapter will examine what made French steamship networks “French” and provide a comparison with general shipping trends as well as business-government relations in the French empire.

\textsuperscript{13} Paul Bois, \textit{Le Grand siècle des Messageries maritimes} (Marseille, France: Imprimerie A. Robert, 1992), 11.
\textsuperscript{14} Freda Harcourt, \textit{Flagships of imperialism: the P & O Company and the politics of empire from its origins to 1867} (Manchester, United Kingdom: Manchester University Press, 2006), 9, 117.
Chapter 2: Systems-Theory at Sea

General Trends in the Development of Steam-Powered Shipping c.1800-1914

The study of maritime history is the study of infrastructure and systems, not just the ships themselves. Little sense can be made of the impact of steamships in the nineteenth century without examining how these discrete pieces of technology interacted with the infrastructure of ports and railways as well as systems of communication, business organization, and government. As Stephen Graham and Simon Marvin observe in their introduction to *Splintering Urbanism*, Westerners generally take for granted infrastructure networks that are “so woven into the fabric of daily life” that they hardly seem important until these infrastructure networks break down.¹⁶ Nineteenth-century European imperialists, in contrast, stressed the importance of technology and infrastructure as one of the defining features of European civilization that would be exported to “backward” African and Asian societies. Machines indeed became the “measure of men,” to use the words of Michael Adas.¹⁷

In the age before airplanes, steamship and railway networks cemented the links of empire and bound the undeveloped world into the nascent global economy. Europeans

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boasted that their superior technology did not rely on nature; steamships could sail independent of the wind and railways eliminated the need for beasts of burden for overland transport. In doing so, these steam technologies ensured regular, predictable, and efficient communication between colony and mother country. But what exactly is the relationship between technology and imperialism? Author Daniel Headrick made a name for himself in the 1980s with two books examining the role of technology and imperialism, *The Tools of Empire* and *The Tentacles of Progress*. These books argued that railways, steamships, quinine, and firearms, among other European technologies, gave the colonizers a technological edge in both imperial conquest and administration over the colonized. Headrick concluded that these technologies allowed the European conquest and colonization of Africa and Asia in the 1880s to be “swift, thorough, and cheap” in ways previous that empire-building had not been.

Headrick’s model of imperialism driven by technology is too simplistic when applied to Algeria. The French conquest of the Algerian coast took two un-swift decades (1830-1848) and was marked by indigenous insurrections until 1871. The thoroughness of European control can also be debated. While it is true that new technologies allowed for further European penetration and partition of Africa than previously possible, African societies changed little in the face of these new technologies, despite rhetoric proclaiming the transformative nature of European technology. That is, they did not become modern

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consumer societies. In the case of Algeria, the rapaciousness and racism of the settlers prevented Muslims and Berbers from participating in the supposed benefits of French civilization. In hindsight the cheapness of imperial conquest in terms of expenditure of European men and money might be true, but politicians and colonial officials at the time hotly debated the costs of empire, often citing its expense for little economic gain. Steam technology allowed for regularity of operation but was expensive to operate because coal was costly to import (there was little quality coal to be found in Algeria and France) and steam engines inefficiently burned coal. Colonial governments had to establish coaling stations to ensure a regular supply of coal to ships traveling from Europe to the colonies, meaning that expensive steamship operations were supported by an expensive infrastructure, too. Steam technology also required a change in business organization, the shipping line, reliant on financiers to ensure profits on an expensive investment, the steamship, rather than merchants as had been done in the past with sailing ships.²⁰

A more nuanced framework for analyzing shipping networks between France and Algeria is the systems-level approach developed by Thomas Hughes in *Networks of Power: Electrification in Western Society, 1880-1930*. According to Hughes, large-scale technological history is best studied as a history of systems. Hughes defines a system as “coherent structures comprised of interacting, interconnected components.”²¹ The components of systems can be both technical and non-technical, too.²² Hughes identifies

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²⁰ Ibid., 32, 35–37.
²² Ibid., 6.
a general pattern in evolution of systems that are divided into five different phases and the capabilities as well as the interests of professionals involved in each phase of the system. The first phase is the invention and development of a system dominated by inventor-entrepreneurs rather than engineers, financiers, and managers. Invention is then followed by technology transfer from one region or society to another. The third phase is system growth, a phase characterized by dynamism but also “reverse salients.” Hughes defines reverse salients as technological inefficiencies resulting from the system’s uneven evolution that prevents its further growth. Engineers identify and correct these reverse salients to further expand the system and lead to the next phase in Hughes’ model, momentum. The growth of a system means that it acquires momentum that has substantial mass, velocity, and direction. Organizations such as government institutions and business concerns shape and are shaped by the technological core of the system and define the system’s culture. The last phase of system evolution is when the system reaches maturity, marked by financiers and consulting engineers rather than inventors or entrepreneurs.23 Most importantly, these aforementioned components and the overall dynamic of the system change over time.

Hughes’ model offers a particularly good one for making sense of the development of modern communications in Algeria, one that allows for more room for contingent political and cultural factors than Headrick’s. In the case of French Algeria, the components of the steamship, port and railway infrastructure, the shipping line, the

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23 Ibid., 14–17.
mail contract, the French government, business leaders, dockworkers, and sailors formed the “coherent structures” of Mediterranean shipping systems. The interaction between all these seemingly disparate components is what made the system function, and determined the nature of the system under analysis. In the Mediterranean “lake”, this system was more inefficient than efficient. While France possessed a large merchant marine and some of the most prestigious shipping companies that carried people and trade around the globe, maritime historian Michael Miller believes that the French merchant marine was at best a marginal force in the history of world shipping. He argues that French shipping lines were only an important force within the French empire and that high government subsidies made French shipping uncompetitive beyond its imperial waterways.\textsuperscript{24} As we shall see below, the Algerian case supports these conclusions.

\textit{The Development and Evolution of Steam-Powered Merchant Shipping}

The most obvious “coherent structure” of French shipping networks in the Mediterranean was the steamship. Steamships possessed many advantages over sailing ships, the greatest being that steam propulsion allowed ships to sail regardless of the weather and thereby maintain regular schedules.\textsuperscript{25} There are two broad classifications of ships – naval and merchant. Naval ships engage in military action while merchant ships engage in trade. The somewhat obvious distinction between these two types of ships is important for both practical reasons and for the focus of this thesis. Merchant ships are


designed for one purpose, to make money for its owners, while navy ships are not expected to make profits. Where the navy could be more experimental in testing steam technology on its ships and not as inhibited by cost, merchant ship owners would adopt steam on the basis of either economy or speed.\textsuperscript{26} Lowering the cost of transport allowed cheaper goods to travel over longer distances while increasing speed meant more voyages could be made in a given amount of time and enabled the ship to earn back its capital.\textsuperscript{27}

A brief history of merchant steamship development during the nineteenth and twentieth centuries reveals many aspects that are consistent with Hughes’ systems evolution theory. The invention and transfer of the steamship was undeniably Anglo-centric. American Robert Fulton is generally credited by historians to have invented the first commercially successful steamship, the \textit{North River}, also known as the \textit{Claremont}, in 1807 to sail between New York City and Albany.\textsuperscript{28} Britain, of course, was the other principal inventor of steamships, with the first steamers serving coastal trades, Channel ports, and Ireland starting in the 1820s.\textsuperscript{29} The transfer of steam technology from coastal trades to larger regions such as the Atlantic and the Mediterranean occurred between the late 1810s and 1840s. Civil engineer Samuel Seaward, in a paper he presented to the Institute of Civil Engineers in 1841, calculated that steam propulsion could be practically

\begin{footnotesize}
\begin{enumerate}
\item Headrick, \textit{The Tentacles of Progress}, 18.
\end{enumerate}
\end{footnotesize}
applied to shipping services within a twenty-day range from Europe, given the global supply and distribution of coal. The steamship SS Savannah crossed the Atlantic in 1819, using a combination of sail and steam, though regular transatlantic steamship services were not established until 1838.

Steamships first appeared in the Mediterranean in 1830 when the British government charged the Royal Navy with carrying the mails.

The introduction and transfer of steamships in the first half of the nineteenth century did not produce an instant change in the technological composition of world shipping; it was a decades-long process before steamships outnumbered sailing ships by the end of the century. Steamships encountered what Hughes refers to as “reverse salients,” or inefficiencies, technical or otherwise, that prevented the system’s further growth. The inefficiencies that prevented the spread of steamships were manifold and the result of intertwining factors of expense and technology. Steam’s disadvantages stemmed from the expense of operation and maintenance and the difficulty of adequately supplying steamships with its source of power, coal. Early steam engines consumed great amounts of coal and the higher the speed, the more coal needed. A generally accepted rule among naval architects is that the power needed to increase the speed of a vessel is the cube of its velocity. Put differently, doubling a ship’s speed required eight times more power. In the first half of the nineteenth century, Britain supplied most of the

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30 Greenhill, “Steam before the Screw,” 18–19.
31 Frank O. Braynard, S. S. Savannah, the Elegant Steam Ship (Athens, Georgia: University of Georgia Press, 2008), xi; Dawson, The Liner, 13; Greenhill, “Steam before the Screw,” 15.
32 Greenhill, “Steam before the Screw,” 19.
coal needed for steamships, which forced operators to store as much coal as needed for
the voyage, leaving little room in the ship’s holds for cargo, or resupply en route. The
further the distance from Europe, however, the more difficult and expensive it was to
resupply steamships with coal. Until the establishment of coaling stations to ensure
regular worldwide steamship service, shippers continued to use sailing ships to transport
goods and passengers throughout the nineteenth century.\(^{33}\)

In addition to supplying steamships with coal, the other reverse salients of
maritime steam technology were related to the ship’s inefficient propulsion system and
low thermal efficiency of its power plant. Early steamships used side-paddle wheels for
propulsion. Paddle wheels, usually two, were attached amidships and only partially
submerged in water, making them vulnerable to damage from rough seas. Additionally,
the ship’s rolling would raise one paddle wheel out of the water while lowering the
opposite further into the water, causing the ship to yaw, or to turn on its vertical axis.
The low thermal efficiency of early steamships was related to the use seawater in the
ship’s boilers. Seawater created salt deposits in the boilers, reduced steam pressure,
required periodic scraping, and corroded boilers and pipes, which increased coal and
maintenance costs.\(^{34}\)

\(^{33}\) Headrick, *The Tentacles of Progress*, 23–24; Robin Craig and National Maritime Museum (Great
Britain), *Steam Tramps and Cargo Liners, 1850-1950* (London: Her Majesty’s Stationary Office, 1980),
Shipping 1840-1865,” in *The Advent of Steam: The Merchant Steamship before 1900*, ed. Robert Gardiner
Given the interlocking financial and technological nature of the steamship’s reverse salients, solving these reverse salients was similarly two-pronged. The expense of steamship operation could be offset through the use of sails, known as sail-assist, in order to reduce coal consumption and provide auxiliary power should the boilers fail. Engineers experimented with ether boilers to reduce coal consumption, to some success. Ether boilers, of course, were highly flammable meaning that the engine room and boiler room had to be completely separated. This precaution still did not reduce the incident of fire on board, however. Another alternative to offset steamship expenses was through subsidies. In the age of ever faster communication, the delivery of mail provided an extremely important and lucrative source of additional revenue in the mid-nineteenth century. The regularity and punctuality of steamships first attracted postal systems, and governments were willing to pay for those services through concessions and subsidies.35 Mail contracts provided the foundation of many British shipping firms of the 1830s and 1840s, such as the Peninsular & Oriental (P&O) and Cunard. French shipping firms like Messageries Maritimes and the French Line followed suit in the 1850s and 1860s, and as we shall see below, remained an integral source of revenue for French steamship networks all the way down until 1914. Globally speaking, sail-assist, ether boilers, and subsidies were only partial solutions to the reverse salients of steamship technology. By the mid-nineteenth century, steamships could only be found on short-sea bulk routes or

subsidized deep-sea lines, the transport of general cargo was still the domain of sailing ships.\textsuperscript{36}

Four technological innovations of the 1850s and 1860s further lowered the operation costs of steamships compared to sailing ships, in ways that were critical to the former’s long-term success: the screw propeller, the iron hull, the compound engine, and the surface condenser. The screw propeller was attached at the ship’s stern, produced more rpm than paddle wheels, and completely underwater, better propelling the ship through the water and less vulnerable to rough seas. Iron construction in shipbuilding allowed for larger, stronger, and longer-serving ships than wooden-hulled ones. Iron-hulled ships appeared almost simultaneously with screw propulsion as both crafts depended on ironwork rather than carpentry. The transition from wood to iron hulls did take time, spanning from the 1830s to 1850s, since the shipbuilding industry had to develop ironworking rather than carpentry skills. By the turn of the 1880s, steel replaced iron in ship construction, engines, and boilers.\textsuperscript{37} The introduction of metals in shipbuilding allowed for increased thermal efficiency in the ship’s power plant. Marine engineers worked towards increasing boiler pressure and creating more efficient engines in order to better utilize coal. In the 1850s, compound engines, engines with two cylinders to process increased steam pressure, began appearing on ships. Further increases in steam pressure led to the triple expansion engine in the 1890s and the steam turbine in the early twentieth century. Samuel Hull’s surface condenser, patented in

\textsuperscript{36} Greenhill, “Introduction,” 9; Greenhill, “Steam before the Screw,” 11.
\textsuperscript{37} Headrick, The Tentacles of Progress, 24, 28–29; Greenhill, “Steam before the Screw,” 22.
1834, began to be used on ships in the 1860s. The surface condenser recycled distilled water which reduced maintenance, increased pressure, and prolonged the life of the boiler.\footnote{Headrick, \textit{The Tentacles of Progress}, 25, 29–31.}

In Hughes’ parlance, these technological solutions to steam’s reverse salients provided critical “momentum” to the spread of steamship networks throughout the world that replaced sail in the latter half of the nineteenth century. Merchant shipping for carrying general cargo, not just fast mail ships, became economical enough to operate using steam power. Further adding momentum to the spread of steam was the opening of the Suez Canal in 1869, which considerably shortened the distance of Europe from the India, East Asia, and Australia, by eliminating passing around the Cape of Good Hope. Winds were not suitable in the Red Sea for sailing ships, too.\footnote{Ibid., 25–27.} After the opening of the Suez Canal in 1869, steamships sailing to Asia and Australia could take advantage of the shorter sea passage via the Mediterranean rather than sailing around the Cape of Good Hope.\footnote{Ibid., 32.}

After a half-century of dramatic change, by the turn of the twentieth century, the merchant steamship assumed a form that would remain fairly stable until the post-World War II era, reflecting maturity in the development of shipping networks. Advances in shipbuilding were more likely to be refinements or enlargements of previous innovations. Two new forms of propulsion, the steam turbine and internal combustion engine,
invented in the first two decades of the twentieth century, took time to be widely adopted in steamships. Turbine installations, though more compact and faster than triple expansion engines, were too expensive for all but the most prestigious ocean liners, such as Cunard’s Mauritania and Lusitania, and relatively rare until the advent of geared turbines. Diesel engines took up even less space than turbines, and gained popularity in the interwar years.41 Ships fueled by oil rather than coal offered economies for ship owners such as reducing the number of stokers and could be stored in smaller tanks than coal bunkers.42 The hesitation on the part of ship owners to adopt turbines, diesel engines, and oil power stemmed from the fact that triple expansion engines and coal-powered steamships offered reasonable economy and flexibility of operation, though no longer on the technical cutting-edge.43

Steam power began to be applied to the ship’s auxiliary systems such as steering gear, deck machinery, electrical generation, ventilation, refrigeration, and pumps, developments that reflected the ship’s increasing size, technical complexity, and cost.44

Of these developments, electricity, ventilation, and refrigeration were the most significant. Lighting onboard early steamships was through candles or oil lamps, requiring frequent replacement and increasing the threat of fire. Gas lighting provided a partial solution to shipboard illumination, though the ship’s movement could damage pipe joints in the distribution system. The British Admiralty first began applying electrical generating equipment to its ships in 1876 and spread to North Atlantic liners by the end of the decade. Electric lighting provided a more comfortable onboard atmosphere for passengers and a safer working environment for the ship’s crew, especially in the formerly dark engine and boiler rooms and the propeller shaft tunnel.45 As ships increased in size, the problem of supplying fresh air to the lower decks was most commonly solved by electrically powered fans that forced air to the lower parts of the ship.46 Refrigeration allowed for the transport of perishable foodstuffs over longer distances, and was as much a time-sensitive cargo as passengers.47

**Organizing Ships, Organizing Information**

Early steamship services reflected the aforementioned technological shortcomings, but also novel forms of economic management necessary to maintain early steamship operation. Another “coherent structure” emerges, the shipping line, which specialized in the construction and operation of steamship fleets, and dominated by

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46 Ibid., 175–176.
business, financial, and government interests. In the days of sail, trading groups comprised of merchants owned sailing ships whose captains operated with considerable independence from their owners, sailing from port to port until enough cargo and passengers filled the ship to justify a return voyage. The ownership of sailing ships was often divided among various merchants renting out space on the ship to carry their cargo. It was possible for a merchant to own $\frac{1}{24}$ of a ship or own one to three ships. With the advent of steamships and their high operating costs, a different kind of organization, the shipping line, was needed to manage ship operations and establish regular schedules. The business of financing and organizing shipping fleets fell to banks and limited liability companies with obligations to shareholders. On steamships, captain and crew were employees who navigated the ship rather than captain-entrepreneurs on sailing ships. Jobs available on steamships reflected an increasing division of labor, too. Three broad categories defined the different types of work on steamships. Officers were the pinnacle of this hierarchy, followed by service crew (carpenters, mechanics, deck hands, stewards, etc.), and those responsible for the ship’s propulsion, namely stokers.\textsuperscript{48}

Accompanying the spread of steamship networks was the specialization of tonnage to accommodate different types of trade. Specialization of tonnage was a function of both technological advances and commercial organization. High-value cargo and passengers were transported on fast passenger liners, general cargo on cargo liners or

tramp steamers, and bulk cargo (grain, oil, etc.) on bulk ships. Three distinct types of ships emerged between the nineteenth and twentieth centuries: the passenger liner, the cargo liner, and the bulk carrier. Passenger liners were the most prestigious and fastest ships of any shipping line’s fleet, often incorporating the latest technical advances in naval architecture. These ships could carry hundreds of people and were divided into multiple classes – usually three or four – in the era before 1914, a practice that continued into the 1950s. By the mid-1880s, passenger liners began offering amenities such as promenade decks, salons, and smoking rooms (in first and second class, at least) in an effort to create the atmosphere of a land-based hotel rather than being at sea. Naval architects also included cargo holds on passenger liners to accommodate mail and high-value cargo. Cargo liners were designed to carry primarily freight, though provision was made to accommodate a few dozen passengers. Not having to meet strict speed requirements as passenger liners assigned to carry the mails, design specifications for cargo liners emphasized economy of operation and large holds to carry freight. The third type of ship, bulk carriers, though devoted to carrying freight, differed from cargo liners because naval architects designed bulk carriers to transport one specific kind of cargo that did not need packaging or sorting. Bulk cargos included coal, grain, oil and ores. Cargo liners were also known as break bulk vessels in which the merchandise carried were divided into discrete units and sorted individually. Loading and unloading

51 Berneron-Couvenhes, Les Messageries Maritimes, 516–517.
break bulk ships, performed by longshoremen and the ship’s crew, was a time-
consuming, labor-intensive task, with little automation other than cranes, until the advent
of the container era.\textsuperscript{52}

Parallel to the emergence of more specialized tonnage in world shipping was the
appearance of tramp steamers, cargo ships that did not have a fixed schedule. Tramp
steamers were the nineteenth-century equivalent to the multi-purpose cargo carrier of the
previous century and offered lower freight rates for shippers than scheduled liners.\textsuperscript{53}
Their appearance in the second half of the nineteenth century coincided with
technological advances that made unsubsidized steamship operation possible.\textsuperscript{54} The
distinction between tramp shipping and liner shipping was as much a result from
commercial organization and technical design.\textsuperscript{55} Britain possessed a large fleet of tramp
steamers while France had very few.\textsuperscript{56} The opening of the Suez Canal coincided with a
dramatic increase of shipping tonnage and unsubsidized competition to the liner
companies established earlier in the century. Competition offered few securities for
shipping lines. Commodity prices could fluctuate wildly, providing up-to-date ships
became increasingly costly, and rate wars ate into the shipping line’s bottom line.

Compounding these problems were that the supply of ships was inelastic, fixed costs of a

\textsuperscript{52} Simon P. Ville, \textit{Transport and the Development of the European Economy, 1750-1918} (London:
\textsuperscript{53} Ville, \textit{Transport and the Development of the European Economy}, 57; Headrick, \textit{The Tentacles of Progress}, 36.
\textsuperscript{54} Headrick, \textit{The Tools of Empire}, 142.
\textsuperscript{55} Ville, \textit{Transport and the Development of the European Economy}, 57.
voyage were typically 75 percent, the general depression of the 1870s-1890s, and the increased number of ships drove rates down.\textsuperscript{57}

Shipping companies resorted to cartels, known as conferences, in order to prevent rates from falling and outsiders from muscling in. Conferences worked by offering shippers a deferred rebate, usually 10 percent, 6 to 12 months after the first date of shipment if the shipper remained loyal and did not ship with a line outside of the conference. Shipping with a line outside the conference meant the shipper would lose whatever rebates they had earned and would later be denied shipping space on conference lines. The first conference was held in 1875 for shipping lines serving Calcutta and spread to other shipping routes over the next decades. Though the conference system was challenged in British courts in 1885-90, it was found legal.\textsuperscript{58} Robert Greenhill states in his essay on shipping conferences that the tangible benefits from conferences are hard to measure as they failed to significantly raise rates and profits, which suggests that shipping rates remained a product of market forces. Rather, Greenhill believes that there was a psychological benefit to joining conferences, which it was better to be in a conference than out, business confidence, in short.\textsuperscript{59}


\textsuperscript{58} Headrick, \textit{The Tentacles of Progress}, 37–38; Berneron-Couvenhes, \textit{Les Messageries Maritimes}, 404, 408.

The growth of shipping lines in the nineteenth century was not the work of steam technology and new forms of organization alone. New and more reliable information and communication networks provided shipping lines with better means to manage and direct their operations from a central location. Here two other coherent structures appear, telegraph networks and shipping agents. Before the advent of telegraphy in the beginning of the nineteenth century, passing information from one part of the globe to the other was done either through messengers or through writing; information therefore could not travel any faster than whomever was charged with carrying it. The appearance of the first steamships greatly improved the speed and reliability of physically transporting information, which attracted governments who were willing to pay for those services through concessions and subsidies. Communication developments in non-maritime sectors helped establish high-speed information flows over long distance. During the Napoleonic Wars governments and militaries experimented with semaphore and optical telegraph systems (known as the Chappe telegraph) to quickly transmit messages. These systems were for official business only, closed to private use. Commercial towns and businessmen began building private optical telegraph lines in order to communicate the arrival of ships and to organize dockworkers and port authorities for unloading the ship. Electric telegraphs, transmitting messages through wires rather than through optical

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Starkey and Gelina Harlaftis, Research in Maritime History no. 14 (St. John’s, Newfoundland: International Maritime Economic History Association, 1998), xi.


means, began replacing semaphores and optical telegraphs in the mid-nineteenth century. Telegraphs provided the means for disseminating information faster than the ship itself. Beginning in the 1850s, Britain and France began laying submarine cables across the Mediterranean, Atlantic, and Indian Ocean. The speed of transmission and capacity of both land and submarine telegraphs increased steadily from the 1870s into the twentieth century. Shipping companies could now communicate with their ships in harbor from their home offices in Europe. The advent of wireless telegraphy brought the ship into further contact with its owners for they could now directly contact the ship.\textsuperscript{62}

While telegraphy provided a valuable means for shipping companies to transmit information and centralize decision-making, shipping agents provided the information by which shipping companies conducted their business. Shipping agencies and their agents, either owned by a shipping company or working closely with one in various ports, were the middlemen between the shipping line and the shipper in addition to their duties in overseeing the loading and unloading of ships.\textsuperscript{63} Agents scouted and established relationships with shippers to provide traffic for shipping lines, represented their clients at conference meetings, and provided valuable intelligence for company decisions regarding routes, schedules, and investments. The information provided by agents to shipping companies was maintained through detailed accounting and regular


correspondence. The role of shipping agents underlines that the technology of information relied very much on the human element.

Viewing the development of shipping networks in the nineteenth century through Hughes’ systems-level analysis reveals how intertwined and integral the components of steamships, shipping lines, and ports were to the whole system; it is nearly impossible to study one of these “coherent structures” in isolation from the others. Viewing these components together reveal how important both finance and organization were in making steamship networks function. The non-linear interaction of these components reveals a dynamism and changing context within the development of large systems. My next chapter will examine in closer detail Hughes’ system-level theory applied specifically to French shipping in order to determine the distinctively “French” elements of French networks in the western Mediterranean.

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Chapter 3: Linking the Two Shores of the Mediterranean

French Shipping to and from Algeria, 1830-1914

The previous chapter applied Hughes’ systems-level theory and its ideas of coherent structures in the global evolution to steamships, shipping lines, and communications. This chapter will also apply Hughes’ framework to French shipping in the Mediterranean. In this case study, the coherent structures to be taken up are those of ports, railways, shipping lines, and subsidies (mail contracts and primes), and will reveal the “French” elements Mediterranean shipping networks. Since the invention phase of steamship technology resided in Great Britain and the United States, France acquired steam technology through the process of technology transfer either through importing British steam technology or ordering ships in British shipyards. While French steamships were technically little different from British ones, there was one great difference in the structure and organization between the French and British merchant marine: the generous subsidies furnished by the French government to foster shipping, making the French state a direct player in the business of shipping. Differences between various shipping organizations and networks, let alone the British and French merchant

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65 The other coherent structures, namely communications, shipping agents, and conferences will not be examined in this chapter as the source material needed to illuminate these aspects are in France.
marines, were to be expected since the transfer of technology from its source of invention does means it will not perpetuate identical copies of itself. The new business, political, and economic context into which technology is transferred leads to differences in the systems and networks developed around the technology. Business culture, dominated by Saint-Simonian thought, and its relation to the government, defined the “French” elements of this system and explain the large role of the state in this particular sector of French private enterprise.

*Ports and Railways in France and Algeria*

In Hughes’ terms, ports and railways are integral to any shipping network, thus coherent structures. The introduction of liner services meant that ships could serve multiple ports during one voyage; sailing ships usually made direct voyages. In order to remain competitive in the era of steam, ports needed to be able to accommodate ships’ increasing size and deepening draft (the distance from the ship’s waterline to its keel). The need for coaling and re-supply stations for ships en-route from Europe to the Tropics and the Far-East gave ports another raison-d’être in addition to their role as conduits of trade. Furthermore, the establishment of ports, railways, and coaling stations was an act of territorial expansion and control. Both railways and steamships transformed the layout of ports. The high amounts of capital in ensuring quick, regular transportation services

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pressed ports to be locations of transfer and turnaround for railways and shipping companies to make the most of their investments.\textsuperscript{68}

The ports dotting the Mediterranean coasts of Algeria and France and their inland connections via rail are two important coherent structures that factored in the development of French shipping networks in the nineteenth century. French shipping services usually centered on Marseille and Algiers due to their harbors and rail connections, but shipping lines also operated between other ports in France and Algeria. Since its founding by Phoenician sailors, Marseille has been a city that lives off the sea and trade. During the Old Regime, especially the eighteenth century, Marseillais merchants became wealthy from trade privileges, monopolies that is, granted by the monarchy on trade with the Levant and Barbary coast. The French Revolution did away with privileges, destabilizing the economic base of trading companies like the Compagnie Royale d’Afrique. The wars of the French Revolution and Napoleon, however, did more to damage Marseillais commerce than economic liberalization, as the resulting British blockade strangled the port of Marseille.\textsuperscript{69} The British also acquired the Compagnie Royale d’Afrique’s concession with North Africa in 1806, though handed it back to the


French in 1816.\textsuperscript{70} While economic historian Paul Masson, writing in the early twentieth century, identified the continuities of the French presence in North Africa in order to explain France’s domination of Algeria and Tunisia, current historian Michael Smith observes that the great trading families of the eighteenth century were ruined by Revolution and Terror. A new generation of merchants and ship owners came to dominate Marseille after 1815.\textsuperscript{71}

With the French landing at Algiers in 1830, Marseille regained its supremacy as a trading port intimately linked with colonial expansion in Algeria. Though the navy and military centered their shipping operations in Toulon for the 1830 expedition, Marseillais ship owners offered 357 ships and five thousand sailors for the effort. Marseille-based merchants viewed Algerian developments with sanguine optimism and began acquiring land in Algeria to develop cotton, indigo, and sugar.\textsuperscript{72} The port of Marseille underwent a dramatic industrial and infrastructural transformation in the nineteenth century to cement its new role as a colonial port. Algerian imports were reprocessed for re-exportation into France or elsewhere, and shipbuilding industry developed alongside metallurgy. The newer and larger steamships could not navigate in Marseille’s Old Port in the heart of the city, and entrepreneurs and the chamber of commerce began constructing new docks such as la Joilette to the west in 1844, completed in 1853. The new dock installations were linked to the Marseille-Avignon-Arles railway in 1848, further facilitating the movement

\textsuperscript{71} Masson, \textit{Commerce français dans l’Afrique barbaresque}, viii; Smith, \textit{The Emergence of Modern Business Enterprise in France}, 1800-1930, 43.
\textsuperscript{72} Meyer et al., \textit{France coloniale: Des origines à 1914}, 371.
of goods.\textsuperscript{73} This railway line eventually became part of the PLM railway in 1857, the largest of six railway companies in France and operator of a few lines in Algeria.\textsuperscript{74}

Paulin Talabot, director of the PLM, also expanded Marseille’s dock facilities through his company Docks et Entrepôts de Marseille, which built the Docks Talabot in 1863 and the Bassin Impérial in 1870. The Marseille Chamber of Commerce further expanded dock facilities in the 1880s. All these enlargements to Marseille’s port maintained its status as a leading continental European port into the twentieth century.\textsuperscript{75}

While Marseille enjoyed primacy in being the premier port serving North Africa, several other French ports also engaged in the Algerian trade. Sète (sometimes spelled Cette) and to a lesser extent Port-Vendres, two ports in the Languedoc, specialized in importing Algerian wines. Both ports were linked to the French railway system by the Midi railway in the 1857 and the first Sète-Algiers steamship service began in 1850.\textsuperscript{76}

Atlantic ports such as Bordeaux, Nantes, Le Havre, and Dunkirk also engaged in trade with Algeria.\textsuperscript{77}


\textsuperscript{75} Smith, \textit{The Emergence of Modern Business Enterprise in France, 1800-1930}, 93–94.


Ports, both large and small, dot the rugged Algerian coast, most with a heritage dating back to the ancient world. In the colonial era, the French divided Algeria into three coastal departments. From west to east they were Oran, Algiers, and Constantine, named after the largest cities in each department. Most of these ports were for fishing where Algiers possessed a deep harbor. At the time of the French invasion in 1830, Algiers consisted of a port built in the sixteenth century under Ottoman rule that housed the infamous Barbary pirates. Because of Algiers’ relatively better port, it served as a logistical center for the French military during the conquest of Algeria. From the 1830s into the 1890s, the French considered Algiers to be a naval port and to be transformed into an “African Toulon.” Indeed, the port of Algiers remained under military authority until 1871. With increased European settlement and trade and as the capital of Algeria, by the Algiers underwent a transformation similar to that of Marseille, though in the late nineteenth century. Between 1860 and 1866, city planners dramatically transformed the look of Algiers with the Boulevard de l’Impératrice, a commercial artery along the city’s waterfront. Given Algiers’ hilly terrain, the boulevard was located above sea-level, but connected to the port with ramps completed in 1874. The Boulevard de l’Impératrice and


ramps gave Algiers’ port a distinctive look, one that it maintains to this day. Further expansion of the port to the south and infrastructure improvements took place between the 1870s and 1890s. Algiers benefitted from the opening of the Suez Canal, given its location on the east-west axis between Europe and the East. After 1869, various firms in Algiers began selling coal to resupply ships en-route to Suez, making Algiers a bunkering port on par with Gibraltar and Malta. The first railway in Algeria connected Algiers to Blida in 1862 and the subsequent growth of railway infrastructure, admittedly haphazard, linked Algiers to its agricultural hinterland.

Oran, to the west of Algiers and conquered by the French in 1831, is another coastal city like Algiers. Its port dates from the ninth century and its strategic location facilitated transport between Moorish Spain and North Africa. After the Reconquista, Oran also sheltered pirates like Algiers. Oran’s infrastructure underwent modernization in the last quarter of the nineteenth century. The PLM railway opened between Algiers and Oran in 1871, and directly served the port after 1885. Oran primarily exported agricultural goods, most notably wine and alfalfa, and started to compete with Algiers as the largest port by 1903.

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While Oran and Algiers were coastal cities equipped with forts, Constantine was situated in the high plateaux in eastern Algeria. As a result, the Constantinois region did not have what was considered one major port and several minor ports but rival ports competing for supremacy, namely Philippeville and Bône. The French conquered Bône, formerly Annaba, in 1832. French military forces established the new port of Philippeville in 1838 directly north of Constantine to facilitate communications between the Mediterranean and the Algerian interior while still maintaining roads to Bône, northwest of the city. The development of railways linked these ports with Constantine and the mineral resources to be found in the area, making Philippeville and Bône “mining ports.” The relationship of the city and its hinterland is reflected in the Algerian railway network.

Overall, the geography of Algerian railways followed the form of a west-east transversal line linking the Oran, Algiers, and Constantine, crossed by north-south “penetration lines” that linked the coast with the interior. These lines were built in four different gauges and administered by five separate railway companies, each company operating multiple gauges, making travel by rail within Algeria a cumbersome and time-consuming process. For the purposes of export, however, the “penetration lines” functioned adequately enough, bringing raw materials from the Algerian interior to

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87 Prochaska, Making Algeria French, 63, 109; Benjamin Thomas, Trade Routes of Algeria and the Sahara (New York: Johnson Reprint Corporation, 1968), 182–183; Billiard, Vergnieaud, and Balensi, Les ports et la navigation de l’Algérie, 162.
various ports to be transported by sea. The transformation of Algerian ports and hinterlands with the construction of railways and harbors, and the “rational” development of natural resources characterized the colonial doctrine of *mise en valeur*, development, which privileged European merchants and settlers at the expense of the indigenous Algerian population.  

*French Shipping Lines, Subsidies, and Public Service*

Two other coherent structures of great importance to understanding French shipping networks in the Mediterranean are shipping lines and subsidies, either in the form of mail contracts or primes. Two shipping lines dominated the colonial port of Marseille: Messageries Maritimes and the French Line. Both lines were subsidized through mail contracts and their services fanned out from Marseille to serve various Mediterranean and colonial services. Messageries Maritimes and the French Line were classified as *sociétés anonymes*, or limited liability joint-stock companies, the most sophisticated business organization and funded by Parisian capital.  

Messageries Maritimes generally served the eastern Mediterranean and Indochinese trade while the French Line served the western Mediterranean in Morocco, Algeria, and Tunisia. Messageries Maritimes and the French Line were not the only two shipping lines based in Marseille, however. Paulin Talabot, director of the PLM railway, was also involved in Mediterranean shipping. In 1865 he established the Société Générale des Transports

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Maritimes, or SGTM also a *société anonyme*, to transport iron from mines he owned near Bône. Many family-owned lines operated out of Marseille, even serving ports in North Africa, but did not match Messageries Maritimes or the French Line in terms of total tonnage or business structure. As *sociétés anonymes*, Messageries Maritimes and the French Line kept detailed public records for their shareholders. The smaller family-based lines, known as *sociétés en commandite*, a rudimentary form of joint-stock company, kept their records private and were not legally required to them public since they had more limited number of shareholders. One Marseillais shipping line, the Compagnie de Navigation Mixte, was founded in 1850 as a *société en commandite* but became a *société anonyme* in 1913. Whatever records that did survive the Second World War are privately owned, making research for the smaller family-owned lines more difficult than researching Messageries Maritimes or the French Line.91 Nevertheless, the overall dominance of Messageries Maritimes and the French Line in Marseille makes these two lines (and especially the French Line) important to study as national carriers and their economy of scale.

One notable difference between the industrialization of England and France is that the French government played a larger role in stimulating industrial development than across the Channel. A primary reason for this difference was the reluctance and means of private capital alone to economically modernize France. To solve this bottleneck, the

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French government often resorted to contracting state interests with private firms such as utilities, railways, and shipping lines, providing financial compensation to the service provided. Government contracts, also known as concessions were particularly prominent during the Second Empire. Concessions doled out by the French state to railways provided a model for concessions to steamship companies and the blending of public service and private enterprise. In 1832, Victor Legrand, director-general of Ponts et Chaussées, drew up a plan for a national rail system, codified in the 1842 railway law. Legrand’s plan envisioned a star pattern of railways converging in Paris while the 1842 law determined that railway building in France would be a public-private affair. While the state would buy and prepare a right-of-way, it would grant a concession to a private company to lay the track, build infrastructure, and operate the rail line for a certain period of time.

After the establishment of the 1842 law, there was a wave of railway promotion, but little actual construction. This was because the technical specifications formulated by Ponts et Chaussées made railway construction more expensive in France than in other European countries and that railway concessions were considered to be too short for shareholders to recoup their investment. In 1851, Louis-Napoléon enacted a railway policy that allowed for rapid railway growth under the Second Empire. His policy extended all railway concessions to ninety-nine years, and made the state the guarantor of

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all railway investments in order to raise adequate capital. The 1851 law also advocated the creation of single railway companies to operate each planned trunk line of the Legrand’s plan, considered to be “natural monopolies.” Six railway systems emerged in France emerged from this reorganization, the Compagnie du Nord, the Compagnie de l’Ouest, the Compagnie de l’Est, the Paris-Orléans (serving Paris and Bordeaux), the PLM, and the Midi (serving Bordeaux and Sète).93

The development of steam navigation also experienced the same slowness as railway construction. While the first steamship appeared in 1829 in Marseille, its delayed spread was attributed to the inability of Marseillais merchants to mobilize capital. *Sociétés en commandite* defined the business structure Marseillais ship owners which limited how much capital could be raised for constructing and operating ships. Additionally, the early technical shortcomings and high cost of early steamships convinced the majority Marseillais merchants that steamships did not have a promising future. The first large French steamship line, Messageries Nationales, provided the organizational and financial structure that allowed the development of other French shipping lines. Messageries Nationales was incorporated as a *société anonyme* in 1851 in order for shareholders to raise capital for the line. Furthermore, it received mail contracts from the government to help cover operating costs.94

Contracts between shipping lines and governments for mail subsidies stipulated four main points of a concession; these were the service to be provided, the duration of

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the concession, the subsidy furnished by the state to the line, and the ability of the line to furnish the appropriate ships to provide the proper service. Furthermore, the government contract contained a clause to not subsidize other companies serving the same routes as the subsidized line. The duration of the mail contract usually lasted between ten to twenty years to take into account the estimated lifespan of a ship. When the concession came up for renewal, it could take into account recent maritime innovations in speed and construction readjust the conditions of the mail contract and spur shipping companies to build new tonnage.95 The specific financial aspects of the mail contract could also be renegotiated during the renewal process, too.

Shipping lines that received mail contracts, however, faced stringent government regulations regarding seaworthiness and fast enough to meet the obligations of the mail service they provided to the state. In time of war, subsidized shipping lines were expected to give over their ships to the navy to be used as auxiliary cruisers with design specifications for speed and plans of where to place artillery on deck, or for the transport of goods or troops for the war effort.96 Carrying the mails for the state was one aspect of the mail contract; it also designated types of freight and passengers to be carried at discounted rates of thirty percent such as military and governmental personnel, missionaries free of charge, and the transport of arms at the lowest possible rate. Lines with mail contracts therefore provided a public service, service for the state, that is, in

addition to their obligations to private and commercial interests. French shipping lines that received the mail contract viewed the exclusivity clause both as compensation for the service it provided to the state and an affirmation of its “natural monopoly” for the regions it served.

The establishment of subsidized shipping lines in the mid-nineteenth century put the French merchant marine on equal footing with other maritime powers. With the rise of unsubsidized shipping companies, fueled by the decreasing cost of steamship technology and the opening of the Suez Canal, competition in the shipping world became fiercer. French shipping encountered a relative decline with the rise of global shipping tonnage. Messageries Maritimes, formerly Messageries Nationales, participated in the Far East conference of 1879 in order to stabilize its position, but its traffic decreased nonetheless. The conference system tended to favor British shipping interests to the disadvantage of other national members of the conference. In 1881 the French government passed a law that offered a second form of subsidy for the merchant marine, primes, also known as bonuses, to facilitate purely commercial trade. The government would offer speed primes on what were known as “commercial lines,” lines for the transport of cargo, in which precise speeds and scheduling were not as important as lines subsidized by mail contracts. Oftentimes commercial lines doubled postal lines.

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97 Berneron-Couvenhes, “La concession des services maritimes postaux au XIXe siècle,” 266.
99 Ibid., 396, 404–409.
100 Starkey and Harlaftis, “Introduction,” ix.
These two forms of subsidies, mail contracts and primes, linked shipping companies ever closer to the French state. The idea that subsidies would stimulate the development of the French merchant marine to the point where state support would no longer be needed never materialized. Subsidies rather than shareholders became indispensible in financially supporting French shipping lines. France was no different from other countries in resorting to mail contracts and subsidies to support the development of steamship networks, where it did differ was the fact that its subsidies were much higher than other countries. In 1893, the French mail subsidy allocated twenty-six million francs between the French Line and Messageries Maritimes while Britain’s twenty-one million franc mail subsidy was deemed sufficient for a greater number of British shipping lines. Furthermore, these subsidies reinforced the primacy of Messageries Maritimes and the French Line, leading to criticism of these lines as monopolies. Yet, what other shipping lines could the French government turn to in order to carry out the services undertaken by these two lines?\footnote{Ibid., 369–370, 683–684; Marie-Françoise Berneron-Couvenhes, “French Mail Contracts with Private Steamship Companies, 1835-1914,” \textit{Business and Economic History On-Line} Vol. 2 (2004): 8; Berneron-Couvenhes, “La concession des services maritimes postaux au XIXe siècle,” 270.} Messageries Maritimes was the only French shipping line that participated in the Far East conference. Multiple steamship companies served Algeria and French African colonies, yet for the most part their organization as \textit{sociétés en commandite} made them less powerful than the French Line, a \textit{société anonyme}, and less able to draw on financial resources to build the expensive and fast mail ships needed for Mediterranean services.
Saint-Simonians and Nineteenth-Century French Capitalism

Business culture also structured the nature of French shipping networks, in which seemingly every business leader was influenced by Saint-Simonian thought. Public discourse in early nineteenth-century France centered on “the need for economic modernization through cooperation and association among people of wealth and expertise.” The preeminent advocate of economic development through association was Claude Henri de Saint-Simon (1760-1825) who through his writings conceived a new society as an organized machine organized and administered by an industrial, producing class. Saint-Simon advocated for a “New Christianity” in which industrial and productive values would create a new popular morality based on the idea of association between classes. Saint-Simon’s writings have earned him the titles of “utopian socialist” and “father of technocracy.” Michel Chevalier expressed the Saint-Simonian world view in his Système de la Méditerranée, published in 1832. Chevalier envisioned a universal association of Mediterranean peoples linked by railways and steamships, where the sea would become the “nuptial bed of the Orient and the Occident.” The positivism of Chevalier’s universal association was tempered by the hierarchical social organization of Saint-Simonianism and its characterizing of Europeans as Children of

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Abel and Africans as descendants of Cain. According to Osama Abi-Mershed, no matter how well-meaning the civilizing initiative, it rests on exploitative assumptions and repressive outcomes. After Saint-Simon’s death in 1825, his follower Prosper Enfantin became the leader of the Saint-Simonian movement, founding the short-lived Saint-Simonian church and model community, designating himself as Le Père (Father) Enfantin in the process. In 1832, the Saint-Simonian church and community was broken up by the authorities for violations against public decency.

Despite the quick dissipation of the Saint-Simonian movement, Saint-Simonian ideas persisted and were widely influential. Saint-Simonianism appealed to engineers and industrialists who translated these ideas into practice and influenced the course of nineteenth-century capitalism in France. At the forefront of French capitalists were the Péreire brothers and Paulin Talabot. The Péreires, Émile (1800-1875) and Isaac (1806-1880), were Sephardic Jews from Bordeaux published in Saint-Simonian journals and founded the Crédit Mobilier bank in 1852 to finance railway construction, the establishment of shipping lines, and promote industrialization in other countries. Talabot graduated from the École Polytechnique and served as a state engineer for ten years before associating with the Saint-Simonians. With Rothschild backing, Talabot began constructing railways, later heading the PLM, and he, along with a group of other

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industrialists, founded the Société Générale bank in 1864, with similar goals as that of the Péreire’s Crédit Mobilier.\textsuperscript{109}

Both the Péreires and Talabot invested in the development of both sides of the Mediterranean; the Péreires French Line established shipping services between France and Algeria and their Midi railway linked Bordeaux to Sète while Talabot linked Paris to Marseille with the PLM, owned iron mines in Algeria, and owned his own steamship line.\textsuperscript{110} It is tempting to construct an image of former Saint-Simonians working in tandem to marry the east and west, but this concept is difficult to maintain. The Rothschild bank, who supported Talabot, bitterly opposed the Péreire’s Crédit Mobilier while the Péreires fought with Talabot for railway concessions. Talabot blocked the Péreire’s attempt to extend their Midi railway’s Bordeaux-Sète trunk line to Marseille.\textsuperscript{111} A curious pattern surfaces: Saint-Simonian influenced business leaders emerged in mid-nineteenth century France, but the rivalries and conflicts between individual financiers appeared to negate Chevalier’s high claim to universal association. As Marthe Barbance observed, however, Saint-Simonians desired to suppress competition.\textsuperscript{112} Perhaps, then, the source of rivalries between Saint-Simonian business leaders was not in the name of cutthroat, unfettered competition, but rather reflected their desire to eke out “natural monopolies” for themselves, much like the battle for railway concessions.

\textsuperscript{111} Ibid., 83–85.
\textsuperscript{112} Barbance, Histoire de la Compagnie générale transatlantique, 35.
Because of the proximity of the Mediterranean to Europe compared to India or Australia, steamships began operating in the region fairly early, in the 1830s.\textsuperscript{113} French ship owners from Marseille linked that port with those of Italy beginning in 1831. During the conquest of Algiers in 1830, the navy supplied military forces in Algeria and later undertook weekly transport of the mails using the naval base of Toulon rather than Marseille. These state-owned services operated at a heavy loss. As the military occupation of Algeria stabilized, Marseillais merchants became interested in the new colony across the Mediterranean. Privately-owned lines like the Compagnie Bazin, established in 1835, could not support the costs involved in maintaining service from France to Algeria, however. In 1842, the July Monarchy (1830-1848) began subsidizing the Compagnie Bazin to carry the mails (for free) and government personnel and materials (at reduced rates) in exchange for regular, weekly service between Marseille and Algiers, while the government gradually phased out its state-run service to Algeria. The Compagnie Bazin was guaranteed exclusive rights to carry the mails.\textsuperscript{114} The ships that the Compagnie Bazin employed on during this time period reflect the general evolution of steamship technology during the nineteenth century, namely the era of wooden and iron hulls and paddle wheels. For example, the 	extit{Charlemagne} (1840-1854), constructed in wood and propelled by paddle wheels, was the fastest ship in the line,

\textsuperscript{113} Charles Issawi, \textit{An Economic History of the Middle East and North Africa} (New York: Columbia University Press, 1982), 47.
being able to steam at 9 knots and making the Marseille-Algiers voyage in 45 hours. The
*Philippe-Auguste*, the first iron-hulled steamship (though still paddle-wheeled) in the
Mediterranean, however, consumed high amounts of coal and suffered many mechanical
breakdowns. Ships with propellers began appearing in the Bazin fleet around the mid-
1850s, though by this time it no longer possessed the mail contract.  

In 1854, during the Second Empire of Napoleon III (1852-1870), the Compagnie
des Services Maritimes et des Messageries Impériales, formerly Messageries Nationales,
obtained a twelve-year mail contract to serve Marseille and Algiers. With an annual
subsidy of 1.5 million francs, the government contracted with Messageries Impériales for
the free transport of the mails and the annual transport of fifteen thousand passengers in
fourth class and three thousand tons of military arms. Messageries Impériales provided
six monthly round trips from Marseille to Algiers, three from Marseille to Oran, and three
from Marseille to Tunis with stops at Stora and Bône. In 1866, Messageries Impériales
obtained a five-year contract to serve two Algerian coastal services, one heading west to
Oran and the other heading east to Bône, for an additional annual subsidy of 600,000
francs. While Messageries Impériales participated in the transport of troops to
interventions in Crimea or Italy, these were temporary diversions. The company
transported more than 400,000 troops to Algeria during its time as the concessionary
company, considerably outnumbering civilian traffic. The ships constructed by

Messageries Impériales were generally of iron construction and had propellers. Messageries Impériales served Algeria until 1870, later renaming itself Messageries Maritimes in 1871 and eventually became the second-largest shipping line in France, the first being the French Line, though its services connected Marseille with the eastern Mediterranean and the Far-East. The Compagnie Valéry Frères took over Messageries Impériales’ Algerian service in 1870 for a ten-year contract. Valéry Frères’ subsidy was smaller than that of its predecessor, 910,000 francs, but it did not carry government personnel and materiel at reduced rates, either. The Compagnie Valéry Frères ordered eight passenger liners, built in England, to meet the requirements of the mail contract. They were iron-hulled and had propellers, with a service speed of 13 knots.

In 1879, though, the French Line applied for and obtained the mail contract for service between France and North Africa from Valéry Frères. The Péreire brothers established the French Line in 1861 to serve the transatlantic Le Havre-New York and Central America trade and acquired other mail contracts to become one of the most important shipping firms in France. Isaac Péreire, president of the French Line in the 1870s, had long been interested in establishing his company in Marseille. After acquiring the mail contract for North Africa, the French Line was obligated to provide eight monthly voyages between Marseille and Algiers and four monthly voyages for Oran and

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119 Grout, Les services maritimes postaux, 67.
120 Bois, Armements marseillels, 260–262.
Tunis as well.\textsuperscript{121} The French Line’s presence in the western and Messageries Maritimes’ presence in the eastern Mediterranean brought two of the strongest French firms based in Paris in the Mediterranean in which the French portion of the Mediterranean trade was owned by smaller, Marseille-owned firms.\textsuperscript{122}

The French Line built passenger liners, delivered between 1880 and 1881, acquired twelve ships and the Marseillais offices and docks from Valéry Frères and commenced its Mediterranean service in July 1880, enjoying considerable success in the first years of the 1880s. The French Line operated passenger and cargo liners on its Mediterranean services. The life of a French Line ship operating in the Mediterranean spanned decades, too. The Ville d’Alger, the ship used for the hypothetical voyage from Marseille to Algiers in the introduction, served from 1890 to 1921, when it foundered in Marseille’s harbor after extensive damage from a squall. Had the Ville d’Alger not sank, it would have most likely served until the late 1920s like its sister ships, the Eugène Péreire (1888-1929) and the Maréchal Bugeaud (1890-1927).\textsuperscript{123} With a service speed of 15 knots and 150 passengers divided almost equally in three classes, the French Line’s new ships were propeller-driven, had compound engines, and built with iron hulls. In 1880, the French Line sailed 310 voyages transporting a total of eighty-two thousand passengers and eighty thousand tons of freight. 1881-82 were good years for the company as well, the French Line helped transport troops and materiel to Tunisia during

\textsuperscript{122} Bois, \textit{Armements marseillais}, 5.
\textsuperscript{123} Bois, \textit{La Transat et Marseille}, 382–385.
the French annexation. By the end of 1882, the French Line’s Mediterranean services earned fourteen and a half million francs, one million francs more than the line’s Le Havre-New York service.\textsuperscript{124}

What sort of goods did the French Line transport and who traveled on its ships? From Tunisia and Algeria to France, French Line ships transported oil, wheat, wine, citrus, tobacco, dried fruit, cork, and sheep. The transport of live sheep in the late nineteenth century by ordinary ships eventually gave way to the transport of frozen meat in specialized refrigerated ships. Agricultural products carried by the French Line necessitated the use of rapid and well-ventilated ships to ensure undamaged delivery of goods. All these agricultural items created seasonal fluctuations in the French Line’s Mediterranean commerce with heavy summer and light winter traffic. The French Line did not carry much heavy freight such as minerals like the SGTM. Traffic from France to Algeria and Tunisia consisted of manufactured goods and foodstuff. Passenger traffic for the French Line consisted of government functionaries, military personnel, and businessmen in both directions and the transport of Arab workers to France. Smaller shipping lines carried European emigrant traffic to Algeria.\textsuperscript{125}

Despite the good results of the French Line’s first few years of operation in the Mediterranean in the early 1880s, prosperity did not last long. This was the result of


\textsuperscript{125} Bois, \textit{La Transat et Marseille}, 45, 59; Headrick, \textit{The Tentacles of Progress}, 31.
factors beyond the company’s control, such as the outbreak of cholera in 1884-85, as well as institutional factors that ate into the company’s bottom line. The mail contract which once allowed for mid-nineteenth century steamship firms to eclipse the competition became more burdensome to maintain at the turn of the twentieth century.

As previously stated, this was because of the technical improvements in steam technology that allowed for the development of unsubsidized shipping. More specifically, the French did not dominate Mediterranean shipping as the British dominated world shipping. French shipping firms faced strong competition from subsidized Italian, Spanish, and Austrian lines that could saturate the market and drive down freight rates. Subsidized Italian lines jeopardized the French Line’s position in Tunisia. Furthermore, French shipping lines served many Algerian ports at a loss to meet their postal contractual obligations. The French Line complained that only services from Marseille to Oran, Algiers, and Tunis met their expenses while those to smaller ports like Bône, Philippeville, and Bougie did not. Strong pressure from these smaller ports called for good maritime connections; the rail network in Algeria did not permit easy communication links between cities as Algerian railways were plagued by multiple gauges and difficult terrain. Despite the financial difficulties, the French Line added

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127 Berneron-Couvenhes, “La concession des services maritimes postaux au XIXe siècle,” 270.
six new ships to its Mediterranean fleet between 1884 and 1892. The French Line also inaugurated daily Marseille-Algiers services in 1887, much appreciated by Government-General, though this was reduced to 6 weekly voyages in 1890 due to the economic downturn and general depression of the time. The entrance into service of these new ships also saw the introduction of steel hulls, triple-expansion engines, higher service speeds (17 knots), and larger passenger capacities. To prop up the bottom line, starting in 1887 the French Line also began operating commercial lines in the Mediterranean to double its mail lines.

The government attempted to solve the organizational and institutional problems faced by French shipping between Algeria and France by declaring in 1889 that Franco-Algerian commerce was coastal trade and therefore reserved to French firms, known as the monopole du pavillon. In 1895 the government also suspended the French Line’s mail contract and commenced a period of free commerce, or régime de liberté, within the “coastal trade” between Algeria and France where the transport of mails would be remunerated by the weight of mail carried.

These attempts at reform contained many undesirable business consequences. With the régime de liberté of 1895, the French Line, obligated by the 1879 concession to

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provide services on fifteen different lines, discontinued the six least profitable lines and in 1896 lowered speeds to reduce coal consumption and costs for those that remained. Finding its liners idle in Marseille, the French Line decided to send them on cruises in the Mediterranean or Northern Europe.\textsuperscript{136} The 1889 law did not conceive Algerian ports as sites for bunkering and re-supply for ships en route to the Suez Canal driving docking fees up and causing British shipping to re-route their ships to Gibraltar and Malta rather than Algiers and the loss of valuable source of docking fees.\textsuperscript{137} Realizing its error, the government changed docking fees to attract foreign ships passing through Algiers and worked out a new mail contract in 1897-98 for a duration of ten years to maintain the French monopoly on Franco-Algerian trade. The new contract specified twenty routes from Marseille and Port-Vendres to be divided among three companies, the French Line, the Compagnie de navigation mixte or CNM, and the Société générale des transports maritimes or SGTM. The French line received thirteen, the CNM six, and the SGTM one. The 1898 convention offered not only mail subsidies, put primes for high speeds, too.\textsuperscript{138} In addition to the division of mail lines to Algeria among the French Line, CNM, and SGTM is also known as a “shared monopoly,” or monopole partagé.\textsuperscript{139} The French Line added only three new ships to its Mediterranean fleet between 1908 and 1911,

\textsuperscript{137} Revillon, “La navigation algérienne et sa législation,” 345–346.
\textsuperscript{138} Ibid., 350; Bois, \textit{La Transat et Marseille}, 105–106, 114; Pozzo di Borgo, « Mon beau navire, ô ma mémoire… », 65.
preferring to refit and modernize its older ships with triple-expansion engines and electric lighting rather than invest in new tonnage.¹⁴⁰

Mediterranean services stabilized through coordination until the outbreak of the First World War in 1914 but the debate over mail subsidies to private shipping lines continued to be a subject of controversy in both France and Algeria. The pied noir community viewed the 1889 law and 1898 convention as a double monopoly, with the French Line, CNM, and SGTM dominating Franco-Algerian trade by setting high rates and using the smallest ships possible to meet their contract obligations. Pied noirs also believed this double monopoly weakened communications with the metropole; strike action by Marseille dockworkers in 1902, 1903, 1904 1907, and 1909 cut off all contact with France leaving shippers with little other options to transport their goods. They advocated repealing the 1889 law to allow free trade and transport by foreign shipping lines and not be held hostage by the shipping lines subsidized by mail contracts.¹⁴¹ The French government passed a law in 1909 which stipulated that in case of strikes the monopoly could be temporarily uplifted to see shippers through the crisis. Mail subsidies, however remained. When the 1898 convention came up for review in 1908, the government extended for two more years until 1910 and then tacitly renewed the convention every six months until the outbreak of World War I.¹⁴² The debate over subsidies continued until the interwar era with Messageries Maritimes becoming a


¹⁴² Ibid., 27–28, 40.
private-public enterprise in 1921 and then the French Line in 1932. Cost of operation continued to increase, however, due to rising freight rates, coal prices, and the cost of replacing aging ships.143

143 Berneron-Couvenhes, “La concession des services maritimes postaux au XIXe siècle,” 276; Bois, La Transat et Marseille, 108, 143.
Chapter 4: Conclusion

Looking towards 1930

French shipping lines bridged the Mediterranean, linking France and Algeria and transporting both people and goods between colony and metropole with regular liner services. These liner services connected with ports and railways on both sides of the Mediterranean that quickened the pace of commerce and communication and created truly global business networks and infrastructures. The importance of steam technology cannot be underestimated when examining the impact of European political and economic expansion beyond its borders during the nineteenth and twentieth centuries. Coupled with the steamship, the new business organization of the shipping line provided the financial means to construct and organize worldwide liner services. Not all shipping lines and merchant marines were identical, however, nor were they created equal. The French shipping lines that crossed the Mediterranean were distinct from their British counterparts through differences in business organization and political cultures. France generously subsidized its merchant marine in the name of public service, yet also favored Messageries Maritimes and the French Line over other French shipping firms creating internal divisions and hostilities within the French merchant marine. The story of French
shipping lines serving Algeria reveals that despite these internal divisions and hostilities, France maintained an inefficient yet functional system of shipping networks.

Hughes’ systems-level framework allows for a concise synthesis of the disparate parts that coalesced into forming the infrastructure network of French shipping in the Mediterranean. The infrastructure network developed around these technologies, the shipping firm, the mail contract, primes, and the port shed light on how infrastructure is both established and, more importantly, maintained. Of vital significance to French shipping networks were mail contracts, primes, and, in the case of Algeria, monopoly that helped guarantee profits in the mid-nineteenth century for Messageries Maritimes and the French Line, but became increasingly costly for both the operator and the government.

There are however larger conclusions to be drawn from an analysis inspired by Hughes. For example, the origins and development of steamship operation between France and Algeria help explain the vicissitudes of French colonialism between 1830 and 1914. While Algeria was indeed France’s most important colony in terms of political status and settler presence, how to maintain the connections between metropole and colony was constantly changing. New technologies such as railways and steamships do not tell the whole story as to how France maintained its dominance over Algeria.

Investigating shipping provides even more valuable insight into the interaction of economics and imperialism. It is not only the process of technological change, but the organization needed to maintain such trade that must be examined. The relationship between the invention and diffusion of technology is a constant process, and the two feed
off each other. Steamships required drastic changes in operation and management to maintain fast, punctual schedules and regularity of service. Specifically, the mail contract guaranteed the economic operation of early steamship lines and the maintenance of public service. Public service in the nineteenth century meant that governmental authorities contracted out state interests to private firms such as utilities, railways, and shipping lines. The private firm believed that liberal economics, otherwise engaged in unregulated competition, could partner with the government through contracts to provide public services. Additionally, a generally accepted belief that French ships should serve French colonies in the interest of national honor permeated justifications for mail contracts.

Yet behind the façade of regularity, power, and efficiency of steamship lines laid a fraught reality of maintaining a large enterprise. French shipping lines such as the French Line or Messageries Maritimes between France and Algeria had to keep abreast of competition, both domestic and foreign, and technological change while fulfilling their contractual obligations in providing a public service. This example of uneasy relations between private enterprise and government underlines the tensions within capitalism and public service in the colonies.

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147 Harcourt, *Flagships of imperialism*, viii.
The brief period of free trade between 1895 and 1898 demonstrates that mail contracts or other forms of subsidies were vital to covering the costs of steamship operation. While there was extensive trade between France and Algeria, finding ways of obtaining profits from this trade remained elusive. These services were, however, still considered necessary and worthwhile as long as Algeria was a French colony. Rather than simply being abandoned, contracts between shipping firms and government were renegotiated. The mail contract best symbolized the organization of shipping lines and their relation to the French government. Over time, the government claimed a larger stake in maintaining shipping services to the colonies, reducing the importance of indirect subsidies through the mail contract that had been so vital in the nineteenth century. This trend accelerated most dramatically during the First World War. In August 1914, the government requisitioned all ships to transport the 19th corps from Algeria to France. After the initial mobilization, the French Line ran half of its services to Algeria from Marseille and lost many ships to submarine attacks. The same is true for the other shipping lines serving North Africa. By 1918, the government had placed all shipping under its control to better coordinate wartime transport needs.148 In 1919, exhausted by war, the French Line, CNM, and SGTM renounced the 1898 convention which still remained on the books despite the First World War. The early 1920s saw much debate over the future of French sea links with North Africa. Initially, the French government

decided to build its own fleet of state-owned ships to serve North Africa, much like in the 1830s, but in the end sold these ships to the French Line and CNM.\textsuperscript{149}

The fitful development of the French merchant marine and debatable merits of its subsidizing by the French government confirm present-day historian Martin Thomas’ view that few scholars support the idea that “France valued its colonies for economic reasons above all.”\textsuperscript{150} Indeed, French historian Jacques Marseille’s 1984 work \textit{Empire colonial et capitalisme français: Histoire d’un divorce} claims that only uncompetitive French industries viewed the colonies with any interest in order to protect them from competition.\textsuperscript{151} While Marseille observes that the French empire attracted little industry, he and other historians conclude that agricultural products were the primary source of trade between France and its colonies.\textsuperscript{152} Marseille believes that French capitalism and the French empire lived in a healthy balance until about 1930, when the Depression made the empire a valuable protected market.\textsuperscript{153} The developments of the interwar years confirm Jacques Marseille’s thesis that the empire continued to serve as a valuable market for French industry, and the merchant marine, too. With the onset of the

\textsuperscript{149} Bois, \textit{Armements marseillais}, 90; Bois, \textit{La Transat et Marseille}, 396–399.
\textsuperscript{152} Issawi, \textit{An Economic History of the Middle East and North Africa}, 28; Marseille, \textit{Empire colonial et capitalisme français}, 53.
\textsuperscript{153} Issawi, \textit{An Economic History of the Middle East and North Africa}, 28; Marseille, \textit{Empire colonial et capitalisme français}, 370.
Depression in 1930, French industry and shipping firms leaned more on the empire to guarantee profits that could not be found elsewhere.¹⁵⁴

Despite Miller’s claim of the marginality of the French merchant marine in the history of world shipping, its impact on the French empire cannot be overstated. The supposed economic insignificance of French colonialism does not negate the fact that the infrastructure built during the colonial era is of immense historical significance. The newly independent countries of the 1950s and 1960s inherited what their colonial masters had built, making it difficult to reorient their economies from the colonial system. The sea links between France and its North African Empire also reflect the larger conception of Algeria as a part of France, which for the French remained a certainty until the beginning of the Algerian War in 1954.

¹⁵⁴ Caty and Richard, “Le cas de Marseille,” 111.
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