
Crown, trade, church and indigenous societies: The functioning of the Spanish shipbuilding industry in the Philippines, 1571–1816

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Abstract

The purpose of this study is to understand the political, social, economic and military factors that shaped the evolution of Spanish shipbuilding for the Acapulco-Manila trade route under the Habsburg and Bourbon dynasties (1571–1815). It focuses on the main variables that affected the size of the trans-Pacific galleons, on the objectives of the Spanish crown's shipbuilding legislation, and on the methods used by Spanish colonial administrators to mobilize human and material resources in the Philippines. It discusses the role of the religious orders in the functioning of this industry, particularly in opposing the negative social consequences of shipbuilding. It also details the administrative reforms that shaped the development of this industry during the eighteenth century, which sought to limit the exploitation of the local workforce by transferring executive powers from local government officials and *encomenderos* to the friars. Finally, it also discusses the measures implemented by the Bourbon regime to increase its control over the functioning of the shipyards, particularly during the late eighteenth century. Although this article focuses on the construction of the largest ships launched from the Philippine shipyards, its conclusions can be extended to other types of vessels built by the Spanish administration in the archipelago during this period.

Keywords

Manila-Acapulco galleons, Pacific shipyards, Philippines, Spanish shipbuilding

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The present study seeks to outline an interpretation of the functioning of the Spanish shipbuilding industry during most of the existence of the Manila-Acapulco trade route (1571–1816).¹ It focuses on the main variables that affected the design of the trans-Pacific galleons (efficiency for war and trade),² on the objectives of the Spanish crown's shipbuilding legislation (to balance the mercantile interests of the Atlantic and the Pacific),³ and the methods used by Spanish colonial administrators to mobilize human

1. William, L. Schurz, *The Manila Galleon*, (New York, 1959); Lourdes Díaz Trecheulo, *Filipinas, la Gran Desconocida (1565–1898)* (Pamplona, 2001); Pedro Pérez Herrero, 'Nueva España, Filipinas y el Galeón de Manila, siglos XVI–XVIII', in María Dolores Elizalde, ed. *Las relaciones entre España y Filipinas. Siglos XVI–XX* (Madrid, 2003); Antonio Bernal, 'La Carrera del Pacífico: Filipinas en el sistema colonial de la Carrera de Indias', in Leoncio Cabrero, ed., *España y el Pacífico* (Madrid, 2004); Carlos Martínez Shaw, *El Sistema Comercial Español del Pacífico (1765–1820)* (Madrid, 2007). Shirley Fish, *The Manila-Acapulco Galleons. The Treasure Ships of the Pacific* (Milton Keynes, 2011); Luis Alonso Álvarez, *El Costo del Imperio Asiático. La Formación Colonial de las Islas Filipinas Bajo Dominio Español, 1565–1800* (México-La Coruña, 2009); José Ángel Barrio Muñoz, *Vientos de Reofirma Ilustrada en Filipinas. El Gobernador Fernando Valdés Tamón (1729–1739)* (Seville, 2012); Mariano Bonialian, *El Pacífico Hispanoamericano. Política y Comercio Asiático en el Imperio Español (1680–1784)* (Mexico, 2012).
2. Ivan Valdez-Bubnov, 'El Conflicto Sevilla-Cádiz y la Construcción Naval Española, 1607–1725', *Derroteros del Mar del Sur*, Año 17, 17 (2009), 85–104; Valdez-Bubnov, 'War, Trade and Technology: The Politics of Spanish Shipbuilding Legislation, 1607–1728', *International Journal of Maritime History*, 21 (2009), 75–102; Valdez-Bubnov, 'El Navío de 70 Cañones González Cabrera Bueno (1734): ¿Un Modelo Tecnológico Propio de la Carrera de Filipinas?' in Jaime Olveda, ed., *Relaciones Intercoloniales: Nueva España y Filipinas*, (Zapopan, 2017), 63–88; Valdez-Bubnov, 'Comercio, Guerra y Tecnología: La Construcción Naval para la Carrera de Filipinas (1577–1757)', in Antonio José Rodríguez, ed., *Comercio, Guerra y Finanzas en una Época de Transición, (siglos XVII–XVIII)*, (Valladolid, 2017), 225–70; Valdez-Bubnov, 'Shipbuilding administration under the Spanish Habsburg and Bourbon Regimes (1590–1834): A comparative perspective', *Business History*, 60, No 1. (2018), 105–25.
3. Rafael Bernal, *México en Filipinas* (Mexico, 1965); Martha de Jarmy Chapa, *La Expansión Española Hacia América y el Océano Pacífico. II. La Mar del Sur y el Impulso Hacia el Oriente* (Mexico, 1988); Carmen Yuste, *El Comercio de la Nueva España con Filipinas, 1570–1785* (Mexico, 1984); Yuste, 'El Galeón en la Economía Colonial', in Fernando Benítez, *El Galeón del Pacífico. Acapulco-Manila, 1565–1815* (Mexico, 1992), 91–112; Yuste, 'Los Tratos Mercantiles Transpacíficos de los Comerciantes de la Ciudad de México en el Siglo XVIII', in Gema Cruz Guerrero et al, *El Galeón de Manila. Un Mar de Historias* (Mexico, 1997), 55–70; Yuste, 'El Eje Comercial Transpacífico en el Siglo XVIII: La Disolución Imperial de una Alternativa Colonial', in Carmen Yuste and Matilde Souto Mantecón, eds., *El Comercio Exterior de México, 1713–1850* (Mexico, 2000), 21–41; Yuste, *Emporios Transpacíficos. Comerciantes Mexicanos en Manila, 1710–1815* (México, 2007); Catherine Bjork, 'The Link that Kept the Philippines Spanish: Mexican Merchant Interests and the Manila Trade, 1571–1815', *Journal of World History*, 9 (2009), 25–50; Ostwald Sales-Colin, 'Polistas y Arquitectura Naval: Una Polémica Contra los Recursos de la Tierra Filipina Durante el Siglo XVII', *Revista de Historia Naval* 31 (2013), 59–76.

and material resources.⁴ Although its main subject is the construction of the largest ships launched from the Philippine shipyards, its conclusions can be extended to other types of vessels built by the Spanish administration in the archipelago during this period, such as frigates, galleys, *vintas*, *caracoas*, and others.

The Spanish empire was built upon the ambition to reach the Spice Islands and the developed economies of the Far East. The first stages of Spanish Atlantic exploration developed throughout the fifteenth century, in competition with the Portuguese, and were undertaken in ships built in the northern provinces of peninsular Spain. When the American continent began to be explored, and the Pacific Ocean was discovered, the conquerors sought to establish shipyards and naval bases on its coasts. The first creole ships were launched in 1517 from Darién, Panama, by a share company specifically created to reach the Spice Islands, and led by the conqueror Vasco Núñez de Balboa. Other adventurers and entrepreneurs followed in this endeavour: Hernán Cortés built several ships in Zacatula, Tehuantepec and Huatulco, and Pedro de Alvarado in Honduras and Guatemala. Several expeditions were sent across the Pacific during the following decades, until a foothold was firmly set in the Philippine islands, and a return route – the *tornaviaje* – was finally discovered in 1565.

Spanish shipbuilding around Manila bay started in the early 1570s, as soon as it became apparent that it was more economically efficient than building on the Pacific shores of Mexico and Central America.⁵ The first permanent shipyard was located in Cavite, two leagues from Manila, where indigenous labourers from the provinces of Tondo, Bulacán, Tayabas, Balayán and Pampanga were regularly employed.⁶ It was soon followed by other shipyards, established in the provinces of Marinduque, Mindoro, Camarines, Masbate and Albay. The initial success of the Spanish shipbuilding industry in the Philippines was due to an abundance of high quality tropical timbers, to the flourishing Chinese and Japanese trade in naval stores that followed the Spanish settlement in

4. On this subject see Luis Alonso Álvarez, 'Financing the Empire: The Nature of the Tax in the Philippines, 1565–1804', *Philippine Studies*, 51 (2003), 63–95.

5. On this subject, see: Harry A. Morton, *The Wind Commands: Sailors and Sailing Ships in the Pacific* (Middleton, 1975); Pierre Yves Manguin, 'The Southeast Asian Ship: A Historical Approach', *Journal of Southeast Asian Studies*, 11 (1980), 266–76 and 'Trading Ships of the South China Sea: Shipbuilding Techniques and their Role in the History of the Development of Asian Trade Networks', *Journal of Economic and Social History of the Orient*, 36 (1993), 253–80; María Fernanda García de los Arcos, 'Galeones Españoles y Trabajo Asiático. Un Caso de Comparación de Recursos Coloniales', *Signos. Anuario de Humanidades* (México, 1992), 47–69; Emmanuel F. Calairo, 'Building the Galleons: Some Preliminary Notes on Philippine Shipbuilding during the Spanish Period', in *Probing Philippine-Spanish Connections in History* (Manila, 2012) 69–80; Isagani Medina, *Cavite Before the Revolution, 1571–1896* (Quezon City, 1994); Francisco Mallari, 'The Spanish Navy in the Philippines, 1589–1787', *Philippine Studies. Historical and Ethnographic Viewpoints*, 37, No. 4 (1989), 384–411; Mary Jane Louise A. Boluana, 'Reconstructing a Past Lifeway through the Astilleros of Sorgoson', in *Probing Philippine-Spanish Connections in History*, 81–100; Andrew Christian Peterson, *Making the First Global Trade Route: The Southeast Asian Foundations of the Acapulco Manila Galleon Trade (1519–1650)* (Manoa, 2014).

6. Sales-Colin, 'Polistas y arquitectura naval', 62.

Manila, and, most important of all, to the presence of a large indigenous population well versed in traditional shipbuilding techniques, and dedicated to the domestic production of sails made of cotton, as well as cables, ropes and caulking materials from abacá palm trees and coconut fibre.

The Spanish settlement in Manila soon became an entrepot for the export of large volumes of luxury Chinese and Indian textiles into Spanish America. This was made possible by the massive output of the silver mines of Mexico and Peru, which generated the wealth necessary to pay for those products. As a result, shipbuilding in the Philippines became an industry of crucial importance for the functioning of the Spanish imperial trade system, linking the developed economies of the Far East with European markets through Spanish America. It is no exaggeration to state that the Philippine shipbuilding industries were a decisive element in the articulation of a coherent and regular system of inter-continental trade, and gave the Spanish monarchy a truly global reach. Thus, the shipbuilding industry reflected not only the very nature of the Spanish presence in Asia, but also the driving forces of globalized trade.⁷ The growth of highly profitable trans-Pacific commerce also fostered the development of an increasingly rich and powerful merchant elite, based mainly in Mexico City, which, through its agents in Manila, competed for control of Spanish American markets. This was perceived as a serious economic threat by the main interests of trans-Atlantic trade, based in the port of Seville, Spain.

The Spanish crown intervened in the shipbuilding industry in the Philippines from a very early stage. The Royal Instructions of 1571, 1572, and 1573 ordered the armament of three to four ships in Manila, financed by the annual silver remittances from the Mexican exchequer, known, as in the Spanish Caribbean system, as *situados*.⁸ A similar number of ships were to be kept in readiness in the port of Acapulco, on the Pacific coast of New Spain. Soon after, the crown issued successive regulations aimed at restricting the volume of transpacific commerce. In 1582, direct trade between Peru and the Philippines was forbidden.⁹ In 1593 it was ordered that the ships built for the trans-Pacific route could not exceed 300 tons burden (*toneladas de arqueo*), and the value of Asian goods introduced in New Spain was limited at 250,000 silver pesos, with a return of double that amount. At least three of these ships were kept in permanent naval service, but they were also used to transport *situados* from Acapulco to Manila, to carry weapons and shipbuilding materials, and any other cargoes for the Spanish colony in the Philippines.¹⁰ In 1602, their combat characteristics were standardized: each ship had to carry eight to 10 cannon and 25 soldiers, as well as proportionate armaments and ammunition.¹¹ Thus, the trans-Pacific galleons were state-owned merchantmen that were alternatively used for naval, military and official purposes. There also were privately-owned vessels in service, belonging to the entrepreneurs of Mexico and Manila, and they were subject to the same royal legislation. In fact, they could be temporarily seized by the

7. See Arturo, Giraldez, *The Age of Trade: The Manila Galleons and the Dawn of the Global Economy* (London and New York, 2015).

8. Barrio Muñoz, *Vientos de Reofrma Ilustrada en Filipinas*, 29–30.

9. Muñoz, *Vientos de Reofrma Ilustrada en Filipinas*, 34–5.

10. Seville, Archivo General de Indias, AGI, FILIPINAS, 1, N. 23.

11. AGI, FILIPINAS, 43, N. 1.

crown to fulfil military services, to carry official dispatches, or to deliver the *situados*.¹² In 1604 the number of ships in permanent service was increased to four, but their size was officially reduced to 200 tons burden each. This regulation also doubled the number of soldiers aboard each ship, and assigned a master gunner and a number of crew to each cannon. The command hierarchy of the vessels was also standardized, as well as their salaries.¹³ Significantly, this order explicitly stated that the size of the ships had to match the volume of merchandise they were allowed to carry, that is, 200 tons. Restricting the size of the ships was seen by the crown officials as a measure to limit the volume of Asian goods introduced into Spanish America, and, therefore, to protect the interests of Seville's trans-Atlantic trade.

In summary, the royal legislation passed between 1593 and 1604 reflected the tensions that were to define the evolution of Spanish shipbuilding in Asia until well into the eighteenth century. On the one hand, the crown attempted to protect the interests of Seville's commerce in Spanish America by restricting the value and volume of trans-Pacific trade, which meant restricting the size of the ships. On the other hand, the merchant elites of Mexico and Manila constantly strove to increase their profits, by means either legal or illegal.¹⁴ The most effective way to achieve this was to build very large ships, in order to allow space in the hold for the transport of unregistered merchandise. This helps us to understand the dramatic increase in the tonnage of trans-Pacific ships, which rose from 400–500 tons in the 1580s,¹⁵ to 2,000 tons witnessed in 1609.¹⁶ In other words, the maximum allowed tonnage was surpassed tenfold.

During the first three decades of the trans-Pacific route, the Manila-Acapulco galleons were praised for their quality, and by the early seventeenth century their size was superior to anything built in the Atlantic world. Nevertheless, there were other considerations that eventually led Spanish officials to question the convenience of building such large vessels. By definition, the galleons were built not only as merchantmen, but also as warships, and in many cases they were used in combat against the Dutch (Manila Bay, 1600 and 1646), or to project military power to other Pacific islands (Ternate, 1606; Tidore, 1613; Formosa, 1627). Some of the ships employed in these expeditions surpassed 1,400 tons; smaller than some of the ships seen in the Manila-Acapulco run, but still very large by Spanish Atlantic standards.¹⁷

By the late 1620s several crown officials produced reports criticizing these large tonnages, stating that they only provided advantages for ship-to ship combat, but not for chasing, manoeuvring, or in entering or exiting ports.¹⁸ They were also seen as having mediocre sailing qualities, which enhanced the likelihood of shipwrecks. Moreover, they were considered expensive to operate, requiring more sailors, artillerymen and soldiers, thus

12. AGI, FILIPINAS, 27, N. 24.

13. AGI, FILIPINAS, 43, N. 1.

14. Yuste, 'El Eje Comercial Transpacífico en el Siglo XVIII', 85–106.

15. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 230–5

16. The first testimony pointing out the existence of very large galleons, of up to 2,000 tons, was written in that year: Medina, 1893.

17. AGI, FILIPINAS, 30, N.11.

18. AGI, FILIPINAS, 30, N.11.

increasing the amount of provisions required for any voyage. Finally, they were also seen as expensive to build and maintain, requiring more timber, iron, sails, cables and ropes than smaller vessels. The authors of these observations stated that the ideal dimensions for the Pacific galleons ranged from 500 to 700 tons, which were praised as the most appropriate for the combined mercantile and naval duties they were expected to perform. These opinions, however, were not necessarily put into practice, nor immediately or completely. There are reports pointing out the existence of ships of 2,000 tons sailing in 1633.¹⁹

The increase in the size of the galleons was not solely a response to the economic interests of the merchants of Mexico and Manila. It was also connected to the interests of the shipbuilding industry in the Philippines, at the local level. Since trans-Pacific trade was based on the exchange of Mexican silver for Chinese, Japanese and Indian goods, and intensive agriculture was not developed in the archipelago, shipbuilding became the most important productive activity of the Spanish settlers. All levels of Spanish administration were involved in the industry for, as a service to the crown, it conceded the privilege of utilizing cargo space in the trans-Pacific galleons. The practical side of this industry was based on the interaction between Spanish royal officials, the interests of the Spanish settlers and the power structures of indigenous societies. At the top of the system was the governor, appointed by the king, who controlled the distribution of the *situados* from the Mexican exchequer. When the decision to build a vessels was made, the Royal Treasury of Manila authorized the purchase of iron products from Chinese or Japanese merchants. Then, the governor appointed a provincial magistrate, known as *Alcalde Mayor* or *Corregidor*, to gather other shipbuilding materials. Local manufactures, such as sails, ropes and caulking fibres, were obtained from the local indigenes, at very low prices, through forced purchases known as *vandalas*. Shipbuilding timber was obtained from large-scale woodcutting concerns known generically as *polos*, and specifically as *elas*, which could also include direct work in the shipyards.²⁰ For this purpose, the *Alcalde Mayor* instructed a provincial Spanish settler, or *encomendero*, to mobilize the indigenous labour under his command. This was a crucial step. The *encomienda* was a type of feudal system, first utilized in Spanish America, in which a Spanish settler – the *encomendero* – was entitled by the crown to commandeer tribute in labour or specie from the indigenous populations of a specific region in exchange for military or missionary service.²¹ In the case of the Philippines, one of the main services performed by the *encomenderos* was shipbuilding, or some part of the productive processes related to it.

The indigenous societies under Spanish control were organized in patriarchal communities composed of around one hundred families, known as *Barangays*, led by a cacique, or *Cabeza de Barangay*.²² The colonial administration forcibly gathered the

19. Fish, *The Manila-Acapulco Galleons*, 150–1.

20. *Polo* was the generic name given to the commandeering for labor, whereas the *ela* was a *polo* specifically organized for the felling and transport of shipbuilding timber.

21. Patricio Hidalgo Nuchera, *Encomienda, Trabajo y Tributo en Filipinas (1570–1608)* (Madrid, 1995), 55–81.

22. Luis Alonso Álvarez, 'Los Señores del Barangay. La Principalía Indígena en las Islas Filipinas, 1565–1789: Viejas Evidencias y Nuevas Hipótesis', in M. Bornemann, ed., *El Cacicazgo en Nueva España y Filipinas* (México, 2005), 355–406.

Barangays of a specific province to constitute a larger community, or *Pueblo de Indios*, headed by a *Cabeza de Barangay* who was appointed by the Spanish authorities as 'little governor' or *Gobernadorcillo*. This figure collaborated with the *encomendero* for the commandeering of foodstuffs, manufactures and labour (*vandalas/polos/elas*). The men could escape conscription to the woodcutting *elas* by paying a fee known as *opa*, which allowed them to send a substitute in their place. The *opa* was divided between their *Cabeza de Barangay* (for his own benefit) and the Spanish Royal Treasury. The substitute was frequently a temporary slave, held by debt bondage, or a permanent slave held as a captive of war (*sangüigüico*).²³ Slavery, temporary or permanent, was widespread in the indigenous societies of the Philippines before the arrival of the Spaniards, and practically all social levels of the indigenous communities, from the aristocracy to the commoners, made extensive use of it. In all, this combination of factors made Philippine shipbuilding economically efficient, in comparison with building in other regions of the Spanish empire, or purchasing ships abroad. It must be considered, however, that all Spanish administrators, from the governor of the islands to the *encomenderos* of the provinces, were involved in the galleon trade, and participation in shipbuilding was not only a way to fulfil their duties to the crown, but also a sure method to be granted cargo space in the Manila-Acapulco fleets. Also, participation in the construction process gave local officials some level of control over the use of the *situados* through the purchase of materials from foreign merchants, or from the local populations through the *vandala* system. In fact, the indigenous labourers mobilized for a specific *ela* were concentrated in temporary camps known as *reales*, situated inside or close to the forests where trees were felled. The local officials controlled these operations and imposed discipline from the *real*, using companies of indigenous soldiers known as *infantería pampanga*, who were also salaried by the Manila treasury. Various shops were set in these camps, where the produce obtained from the *vandalas* was sold to the workers, at convenient prices.²⁴ Therefore, the whole Spanish community, and some part of the indigenous population, contributed to the increase in the size of the galleons, which explains the constant technological circumventions to royal shipbuilding legislation.

It is important to state that the *polos* were also used in the shipyards, although the tasks requiring higher skills, such as shaping frame timbers and other components, were assigned to salaried workers. These could come from the foreign communities established in Manila, mainly the Chinese, but the most important tasks were controlled by master shipwrights from Spain, especially the Basque provinces. For the natives, the shipyard *polos* were privileged in comparison with the *elas*, not only because the working conditions might have been less severe, but also because the Spanish authorities linked the possibility of working as a sailor in the galleons to previous service in the shipyards. There are testimonies showing that many indigenous laborers presented themselves at the shipyards during the months of March, April and May, when the galleons were being fitted out, hoping to be hired as sailors in the voyage to Acapulco. This confirms that other sectors of the local population, and not just the aristocracy, benefited from the galleon trade.

23. Sales-Colin, 'Polistas y Arquitectura Naval', 60.

24. AGI, FILIPINAS, 136, N. 1.

The *elas* soon became known to the authorities as a dangerous source of social unrest. The combined cruelty of the Spanish administrators and the indigenous aristocracy impelled many laborers to flee or to rebel, despite the mitigating effects of slavery and the *opa* system. In the early seventeenth century, the crown had prohibited the use of forced labour for anything but the most urgent public works, vital for the survival of the colony.²⁵ Unfortunately, shipbuilding fell precisely into this category, becoming the only industry in which the use of forced labour was officially accepted.²⁶ Since existing ships were in constant need of careening and repair, and new ones had to be built frequently, the industry exerted permanent pressure on the indigenous societies.

There was another important factor involved in the shipbuilding industries: the influence of the Spanish religious orders deployed in the Philippines. There were five orders active in the archipelago: Franciscans, Dominicans, Agustinians, Recoletos and Jesuits. They were instrumental in the functioning of the colonial system, residing in the *Pueblos de Indios*, participating in the economic activities of the natives, and often being the only ones capable of communicating directly with them. Although they were also known for participating in the galleon trade, and sometimes accused of participating in the abuses, the friars were the only authorities able to contain social tensions, and they often did so. In many instances, they opposed the *polos*, and the *elas*, and there are documented cases of the friars burning the forests to prevent a shipbuilding project. Some of them wrote directly to the king, denouncing the cruelties imposed on the natives. This conflict of jurisdictions between the friars and the royal administration reached a peak of intensity during the second half of the seventeenth century.

Widespread and violent rebellions against the *elas* were frequent throughout this period. The establishment of shipyards in the province of Pangasinán, promoted by the Spanish authorities since 1604, generated an endemic conflict: the Dominican friars there opposed this policy, and initiated one of the first registered cases of sabotage by burning the forests near the port of Abucay.²⁷ Massive desertion of labourers was the most immediate reaction to the *polos* of any kind, and it was identified as a serious problem as early as 1619. More violent reactions to the *elas* could erupt as a part of wider conflicts, such as native resistance to evangelization, as happened in the provinces of Bohol in 1621, and Panay in 1663. In some cases the *elas* were the explicit cause of rebellion, as happened in the province of Samar from 1649 to 1650. Also, in 1649, the Dominicans opposed the levying of labourers from Nueva Segovia, in northern Luzón. In 1660 the friars again led the burning of forests, when simultaneous revolts broke out in Pangasinán, Ilocos, and Cagayán.²⁸

All of this, however, should not give the impression of a permanent and inevitable confrontation between the religious orders and the Spanish government. The friars were instrumental for the functioning of the *vandala/polo/ela* system in their respective

25. Hidalgo Nuchera, *Encomienda, Trabajo y Tributo en Filipinas*, 230.

26. Patricio Hidalgo Nuchera, *La Recta Administración. Primeros Tiempos de la Colonización Hispana en Filipinas: La Situación de la Población Nativa* (Madrid, 2001), 114.

27. Sales-Colin, 'Polistas y Arquitectura Naval', 63.

28. John T. Wing, *Roots of Empire, Forests and Forestry in Early Modern Spain, c. 1500–1750* (Leiden, 2015), 156.

provinces. For example, at least some of the rebellions registered in Panay, Cebú, Ilocos, Pangasinán and Pampanga were directed *against* the Augustinian friars, who were in charge of commandeering labour and food in those regions.²⁹

These conflicts might have been the main cause for recurrent efforts to sub-contract naval construction to other Asian countries, but perhaps not the only one. This idea was first expressed by the master shipwright of Cavite, Sebastián de Pineda, in 1619. In that year he wrote a lengthy report to the Indies Council, evaluating the Philippine shipbuilding industry. Pineda considered that the islands to be were blessed with an abundance of high-quality tropical timbers, among the best in the world, which had made possible the expansion of the industry from Cavite to other provinces. However, he also identified the harsh conditions of the *polos, elas* and, especially, service in the shipyards, as one of the worst scourges suffered by the native populations. Although payment of salaries had been officially instituted, Pineda recognized them to be so meagre as not to be sufficient to 'keep body and soul together'. Moreover, there are detailed testimonies, dating from different periods, showing that they were either systematically retained by the Spanish authorities, or not paid at all. The only compensation they received was a daily ration of rice. This, together with periodical raids by the Dutch and the 'Moors' from Mindanao, had created a dangerous scarcity of workers, both for the *elas* and the regular operation of the shipyards. Pineda's recommendation was to cancel shipbuilding in the Philippines altogether, and to contract out the construction of ships to Cochinchina, financed by the royal exchequer and controlled by master shipwrights appointed by the crown.³⁰ It is possible that this opinion concealed some degree of self-interest, for the crown had strengthened its control over the use of the *situados* in shipbuilding a few years earlier, in 1607, demanding detailed accounts of how the royal moneys were used.³¹ On the other hand, Pineda expected to use the ships built in Cochinchina to transport slaves and merchandise purchased in that region, at good prices.³² Finally, he also produced numerous arguments to show that better quality shipbuilding materials could be bought more cheaply in Seville than in the Philippines through intermediaries in New Spain. All in all, Pineda's report was an argument for the financial independence of Spanish Pacific shipbuilding.

Twelve years later, more influential voices came up in support of Pineda's ideas, although for different reasons. In 1631 the galleon *Santa María Magdalena* was lost during its maiden voyage to Acapulco, in what was considered the worst catastrophe in the history of the trans-Pacific route.³³ According to the official reports on the shipwreck, the ship, launched from Cavite in 1631, had been very poorly built, and the tropical timbers from the Philippine forests, once praised as the best in the world, were now deplored and blamed for the accident. It was also stated that the ship had been expensive, costing over 98,000 silver pesos, which amounted to almost half the *situado* of that year. This prompted governor Juan Niño de Tabora to commission the construction of a new

29. Sales-Colin, 'Polistas y Arquitectura Naval', 74.

30. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 241–5.

31. Sales-Colin, 'Polistas y Arquitectura Naval', 68.

32. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 246.

33. Sales-Colin, 'Polistas y Arquitectura Naval', 69.

galleon in the kingdom of Cambodia. He informed the crown of this in 1632, a year after it was started. Tabora stated that it would ease the pressure on the Manila treasury. He also praised the timbers available in Cambodia, and criticised other shipbuilding enclaves in Asia, such as Siam, for being prone to treachery and friendly to the Dutch.³⁴ It must be mentioned that Niño de Tabora had previously been indicted for allowing unregistered merchandise in the Acapulco galleons, and was involved in promoting the clove trade from Ternate to India. In the 1640s governor Diego Fajardo again promoted the project, this time complaining about the slothfulness of the natives, who, besides that, defrauded the crown by not paying any taxes for their slaves. He also attacked the friars, who burned the forests in complicity with the natives, and did not show any zeal in their duties to the crown.³⁵ It must be recalled that it was precisely under Fajardo's governorship that some of the most violent and widespread rebellions erupted. In his opinion, using arguments similar to Tabora's, the crown would be better served if the galleons were built in Cambodia and Cochinchina. He also recommended that medium sized vessels built in Pacific Central America (Realejo, Sonsonate, Guatemala and Panama) were kept in constant readiness to assist the large transpacific galleons, which might be seen as a measure to transfer some of the building costs directly to the viceroyalty of New Spain.³⁶ It is not known yet to what extent these projects were taken into practice, but at least one galleon was commissioned in Cambodia by governor Sabiniano Manrique de Lara, in 1663. Its construction was supervised by a Spanish shipwright transferred from the Philippines, with at least some part of the required materials. Some 40,000 silver pesos were paid to the Cambodian king, but, when the vessel was finished, delivery was refused, only to be completed when the Spaniards had paid an additional 20,000 pesos.³⁷

After this experiment several galleons were lost to accidents or to poor maintenance. This led to the construction of 700-ton ships in the Philippines during the 1670s and 1680s, showing that the earlier recommendations for the reduction of their size were heeded at some point.³⁸ These ships, however, certainly were not the only ones built in this period: in 1696 the newly-appointed governor of the islands, Domingo de Zabalburu, felt it necessary to write a long discourse against larger ships, stating that they were slower and less seaworthy due to the many shoals of the archipelago. He ordered that, from then on, the largest ships were to be built at 800–900 tons burden, and that the annual Manila-Acapulco run was to be undertaken by two of these, which, significantly, he considered to be 'medium sized' in comparison with others built for the same purpose. Again, there might have been some degree of economic motivation for these changes, for Zabalburu's correspondence indicates that the crown had introduced a tax on the galleons arriving to Acapulco, the *indulto*, which could be reduced by using smaller ships.³⁹

34. Sales-Colin, 'Polistas y Arquitectura Naval', 70.

35. Sales-Colin, 'Polistas y Arquitectura Naval', 63.

36. Sales-Colin, 'Polistas y Arquitectura Naval', 71.

37. Ana María Prieto Lucena, *Filipinas Durante el Gobierno de Manrique de Lara, 1653–1663* (Madrid, 1985), 38–43.

38. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 248–9.

39. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 250.

The advent of the Spanish Bourbon dynasty, in 1700, signalled the beginning of a thorough reform of the Spanish trans-Pacific system, which had a huge impact on the Philippine shipbuilding industry. The first measure was taken in 1702, when the new king, Phillip V, amended the commercial regulations of 1697 and 1699, which had maintained the restrictions on the volume of trade and tonnage of ships. The legal value of cargo sent from Manila to Acapulco was increased to 300,000 pesos, with a return double of that amount, and the authorized size of the galleons was raised to 500 tons.⁴⁰ This was the most significant increase in the volume of legal trade since the establishment of the trans-Pacific route. Despite that, the shipwrights of the Philippines, organized in a formal meeting, declared that the smallest acceptable size for the galleons was 800 tons, 'and no less', due to the large amount of food and water they had to carry in order to complete the Pacific voyages.⁴¹ Most vessels launched until the 1720s were of that capacity, in direct violation of the 1702 royal order. In 1712 the crown reiterated the 500-ton limit. Governor Zabalburu also ordered the construction of 30-gun frigates, intended to escort outbound galleons into the open seas, and inbound ones back into the port of Cavite. In 1714 the crown issued a decree ordering the strict supervision and accounting of the use of royal funds in Philippine shipbuilding. In 1718 the possibility of sub-contracting shipbuilding to other Asian countries was again considered, this time in Siam, possibly as a reaction to royal financial supervision.⁴²

A major reform took place in 1718, when the *econmienda* was abolished, leaving the *Alcaldes Mayores* and the *Corregidores* without direct intermediaries in the commandeering of labour and produce, although the *frailocracia* – the power of the religious orders – remained intact. During these years, the crown ordered the survey of forests and the production of maps to facilitate their exploitation, but the old sources of social unrest remained. For example, a major rebellion erupted in the Cagayán river, in Northern Luzón, just as its forests were being mapped in 1719.⁴³ In 1720, a slight increase in galleon size, with a maximum of 560 tons, was allowed by the crown, but the legal value of the cargo introduced in Acapulco was kept at 300,00 pesos, and new restrictions for Asian products, such as raw silk, were introduced.⁴⁴ In 1723 new shipbuilding legislation, the *Proporciones de las mas essempeciales*, devised by Antonio de Gaztañeta and previously approved for the Atlantic, were imposed on the Philippine shipyards.⁴⁵ The ships built for the trans-Pacific run during the 1730s were built according to these regulations and were of 500 tons burden.⁴⁶ This means that, possibly for the first time, the official limits set by the crown were actually obeyed by the Philippine shipwrights. In 1734 the crown increased the legally accepted value of trade between the Philippines and New Spain, but maximum ship capacity remained at 500

40. AGI, FILIPINAS, 127, N.9

41. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 251.

42. Barrio Muñoz, *Vientos de Reofrma Ilustrada en Filipinas*, 234.

43. Wing, *Roots of Empire*, 119.

44. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 252.

45. Valdez-Bubnov, 'Comercio, Guerra y Tecnología', 252.

46. On these ships see: J. García del Valle-Gómez, *Retrato de un Navío: Nuestra Señora del Pilar de Zaragoza, de la Carrera de Manila-Acapulco (1733–1750)* (Madrid, 1993).

tons.⁴⁷ In the same year, however, an important shipbuilding treatise was published in Manila. Its text was based on Gaztañeta's shipbuilding regulations, approved for the Pacific in 1723, but it presented detailed measurements and scantlings for the construction of ships of almost 1,000 tons.⁴⁸

In 1733 there were new standardized regulations for the contracting of public works by private entrepreneurs, the *Ordenanza de obras de mar y de tierra*, which were partly directed at shipbuilding. Their objective was to control the use of the *situados* by demanding the submission of detailed accounts of shipyard expenditure. In 1736 the social problems generated by the Philippine shipbuilding industry were finally addressed. In that year governor Valdés Tamón issued an *Instrucción* forbidding the intervention of the *Alcaldes Mayores*, not only in all the logistical aspects of the *elas*, but also in the shipyards themselves. These responsibilities were transferred to a committee headed by a purposely-appointed captain, assisted by an *alférez*.⁴⁹ The committee, in turn, was authorized to appoint the officers in charge of organizing and directing the *elas* (*cabos de cortés*, *ahiladores* and *mandadores*). This was explicitly directed not only against the many abuses of the local Spanish authorities, but also against the indigenous aristocracy that collaborated with them.

The most important measure introduced by the *Instrucción* was to correct the long-standing abuse of wage payments to the indigenous labourers. Significantly, it was emphasized that the salaries were to be paid directly to the workers, and not through their respective *Cabezas de Barangay*. It also regulated working conditions, which had to be organized and paid in months of 30 days, including Sundays, holidays, and the number of days it took the workers to reach their assigned *real* or shipyard.

The *Instrucción* also targeted the *opa* system. Traditionally, the collection of these fees had also been in the hands of the *Cabezas de Barangay*, who were directly in charge of the mobilization of labour from their own communities. They were in a position to set the amount paid for each *opa* and, as a rule, kept a part of it for their own benefit, while the remaining was channelled to the Royal Treasury through the *Alcaldes Mayores*, who could also set the amount delivered for each substitute labourer. On the other hand, the *cabos madereros*, and other Spanish lower-rank officials in charge of directing the *elas*, were known for forcing the labourers to perform private works for their personal benefit. Moreover, they regularly seized for themselves a part of the manufactures or produce obtained through the *vandalas*. Finally, they were accused of preventing labourers from carrying their own provisions into the *reales*, in order to force them to purchase from the shops set inside them, which they controlled. The *Instrucción* standardised the amount paid for each *opa*, which was set at five pesos, the monthly calendar and daily timetables for the *elas*, as well as specific amounts of rice that were to be given as a daily ration to each worker at royal expense. Medical services were introduced into the *reales*, financed by the funds collected by the *opa* fees. It also set new, considerably softened, disciplinary measures.

Perhaps the most innovative element of the *Instrucción* was the authority conferred to friars stationed where the *elas* were to take place. They were put in charge of supervising the enforcement of these measures, with the power to impose severe fines on those who

47. Barrio Muñoz, *Vientos de Reofrma Ilustrada en Filipinas*, 251.

48. Valdez-Bubnov, 'El Navío de 70 Cañones González Cabrera Bueno'.

49. AGI, FILIPINAS, 285, N.1.

infringed them. Offenders who could not pay faced three years of rowing in the king's galleys (*esquipazones*), if a native, or two years of forced labour in a frontier garrison (*presidio*) if a Spaniard. The friars were also put in charge of supervising the collection of the *opas*, as well as their correspondence to the number of conscripts mobilized for each *ela*. Also, they were instructed to keep registers of all salaries paid.⁵⁰

In 1738 another important reform was decreed: the *Compulsa* of Cavite, a regulation aimed at rationalizing the productive processes in the main shipyard of the Philippines. This regulation contemplated the introduction of saws for different types of woodworking inside the shipyard, all financed by the crown, to replace the traditional axes employed by the indigenous carpenters. In order to prevent waste, the number of trees to be felled in each *ela* had to correspond to the specific needs of the shipyard, according to lists compiled by the master shipwrights. The trees also were to be separated according to their species, both in the form of trunks and planks. Economy measures for the re-use of timber components from previously discarded vessels were specified in detail, and warehouses were to be built, and properly guarded, in order to save these and other construction materials.

The most important part of the *Compulsa* was dedicated to the administration of the shipyard workforce. The duties of the *pampangá* officers serving in the shipyards were strictly defined, as well as those serving in the infantry companies, who were in charge of controlling the workers. Also, the procedures for hiring indigenous sailors when the galleons or other ships were being fitted out were standardized. In order to obtain one of those jobs, the candidate had to have previously worked for 10 months in the shipyard.⁵¹ Sailors arriving in the galleons, on the other hand, were exempt from these restrictions. Finally, the *Compulsa* dealt with the issue of forced labour in the shipyard. The number of forced workers was reduced, and their duties were specifically limited to determined tasks, such as the stockpiling of rice obtained by tribute.⁵²

During the 1740s, the size of the galleons started to grow again. In 1743, one of the 500-ton ships built according to Gaztañeta's regulation was captured by the British warship *Centurion*. As a result, the next shipbuilding operations, commissioned under the government of the Bishop of Illocos, produced a ship that more than trebled the size of its immediate predecessors: the *Nuestra Señora del Rosario y los Santos Reyes*, of 1,710 tons burden, launched in 1745. In 1750, under the government of the Marqués de Ovando, the galleon *Santísima Trinidad y Nuestra Señora del Buen Fin* (alias *El Poderoso*) was launched from the Bagatao shipyard. It was praised as one of the largest ships ever built, but its scantlings point towards a size of 2,000 tons burden.⁵³

After the launch of the *Trinidad*, several Spanish entrepreneurs from Manila formed a share company for the construction of a new galleon in Siam. At least one vessel was built as a result of this project, which was launched in 1753.⁵⁴ As in other periods, it is

50. AGI, FILIPINAS, 136, N. 1.

51. This particular measure was similar to the procedures of the *Matricula del Mar*, or Maritime Registry, employed in other regions of the Spanish empire.

52. AGI, FILIPINAS, 149, N. 1.

53. David Marley, 'The Great Galleon: The Santísima Trinidad (1750–1765)', *Philippine Studies*, 41 (1993), 168, 169–71.

54. Martínez Shaw, *El Sistema Comercial Español del Pacífico*, 338.

possible that sub-contracting in foreign countries was a reaction to growing crown pressure on the over the use of the *situados*, but also over the amount of Asian products introduced to New Spain. In 1756, King Ferdinand VI ordered the *Santísima Trinidad* to be de-commissioned due to its large size and the suspicions of fraud associated with it. As a result, funds were sent to Manila for the construction of two smaller frigates, specifically meant to replace it.⁵⁵ Nevertheless, the Cavite shipwrights, with the governor's support, used the money to raze the upper deck of the *Trinidad*, with its complete gun battery, substituting it with a forecastle with two gunports, and an aftercastle with six.⁵⁶ This made the ship appear smaller, while retaining its original hold capacity. The *Trinidad* served under this configuration until it was captured by the British 60-gun ship *Panther* in 1762. The renewed tendency towards larger vessels seems to have continued throughout the second half of the eighteenth century.

From 1765 onwards the crown attempted to break the monopoly of trans-Pacific trade held by the merchants of Mexico City and their agents in Manila by promoting direct trade between Spain and the Philippines. This was undertaken in frigates of the Spanish Royal Navy sailing via the Cape of Good Hope, and resulted in a growing naval presence in the Philippines, which in turn led to increased state intervention in the shipbuilding industry.⁵⁷ The Spanish shipbuilding elites, however, resisted this by various means, including clandestine modifications to some of the vessels in service.⁵⁸ In 1771, governor Simón Anda y Salazar organized a squadron of smaller ships – named *Marina Sutil* – for naval operations against the corsairs from Minadanao. This force operated in parallel to the Spanish Royal Navy, and was directly paid by the Manila Treasury.⁵⁹ A new shipyard was established for the construction of its ships at La Barraca, in the Passig river. This organization systematically resisted the intervention of royal officers, until the arrival of a full naval squadron at the Philippines, the *Escuadra de Asia*, in 1796.⁶⁰ This had significant effects for the shipbuilding industry, for the squadron transported a detachment of technicians from the royal shipyard of San Blas, New Spain. They intervened directly against the independence of the local elites, gradually taking control over the technical characteristics of locally-built vessels.⁶¹ In 1816 the government of the islands was assigned to a naval officer, José de Gardoqui Jarabeitia, who abolished the *Marina Sutil* and its parallel infrastructures, and transferred its strategic functions to the Spanish Royal Navy.⁶² Gardoqui also issued new regulations for the Cavite shipyard,

55. Marley, 'The Great Galleon', 173–4.

56. AGI, FILIPINAS, MP. 41

57. C. Vila Miranda, 'Arsenales Españoles de Ultramar en el Siglo XVIII', *España y el Ultramar Hispánico Hasta la Ilustración. Cuadernos Monográficos del Instituto de Historia y Cultura Naval*, No. 41 (2002), 41–57, 50.

58. W. J. McCarthy, 'The Shipyards at Cavite: Shipbuilding in the Early Colonial Philippines', *International Journal of Maritime History*, 7, No. 2 (1995), 149–162.

59. Hermenegildo Franco Castañón, 'La Organización de la Marina en Filipinas. Acacimientos y Evolución (1800–1899)', *La Marina en Filipinas. Cuadernos Monográficos del Instituto de Historia y Cultura Naval*, No. 66 (2012), 45–102.

60. Vila Miranda, 'Arsenales Españoles de Ultramar en el Siglo XVIII', 51.

61. Vila Miranda, 'Arsenales Españoles de Ultramar en el Siglo XVIII', 50, 56, 57.

62. Franco Castañón, 'La Organización de la Marina en Filipinas', 53, 54–5.

directly based on shipbuilding legislation already in use in the naval shipyards of Spain and Spanish America, the 1776 *Ordenanza de Arsenales*.⁶³ With this measure, the independence of the shipbuilding industry of the Philippines practically ceased to exist.

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63. *Superior Decreto que Establece el Método de Cuenta y Razón que se ha de Observar en el Arsenal de Cavite, con Arreglo al Espíritu de la Ordenanza de Arsenales*. Filipinas, Superior Gobierno, 1816, Títulos 1–21.