

**TURNING THEIR WEAPONS AGAINST THEM:
CAPTURED SPANISH SHIPS AND THEIR INFLUENCE ON
THE BRITISH ROYAL NAVY IN THE 18TH CENTURY**

by

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A Thesis Submitted in
Partial Fulfilment of the
Requirements for the Degree of

Master of Arts
in Maritime Archaeology

at

The University of Bristol

September 2013

ABSTRACT

The purpose of this study is to analyse and document the influence that captured Spanish ships had on the British Royal Navy during the eighteenth century. The eighteenth century was a period filled with naval battles stretching to all corners of the Atlantic and Pacific Oceans and the Mediterranean and Caribbean Seas. The European powers as well as the young New World nations fought and tried to preserve their control over the colonies. The British maintained an advantage in many battles with the Spanish by capturing vessels of the Spanish fleet and adapting the naval construction techniques to their own ships.

Using historical and archaeological evidence, this essay will explore the nature of capture of Spanish ships by the British Navy. I analyse the differences in ship design of Spanish and English vessels. Then, a discussion of the influence of Spanish prizes on British ship design adaptations will be presented. This will be followed by an examination of the draft analysis of Spanish ships pre- and post- capture. Finally, the essay will conclude with an assessment of the archaeological record, a review of two case studies. The first is of a Spanish ship captured by the British. The second case study is of a British vessel which was captured by the French, and sold to the Dutch, before being recaptured by the British. French influence on the Royal Navy has been the subject of many studies unlike the effect of Spanish prizes on the British. This study will ultimately illuminate on the changes done to the Royal Navy's ships which were adapted from the Spanish prizes leading to Britain's undisputed naval power over the seas.

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Introduction

British naval historians have placed a great deal of emphasis on the influence of French ship designs on the Royal Navy. Conversely, Spanish influence is rarely discussed. The purpose of this paper is to shed light on this relatively underexplored topic and focus on the aspects regarding the capture of Spanish vessels.

This paper will cover a wide variety of topics which are divided into five chapters. The first chapter is focused on the principles of British ship design which include the different Establishments set by the Royal Navy Board during the first half of the eighteenth century. It also includes the revolution that took place in the 1740s and 1750s after the abolishment of these standards. The new movement led Britain to change its shipbuilding policies; soon after, the navy quickly became a devastating fighting force in Europe and the world (Lavery, 1984).

Chapter two contains a comparison of Spanish and British ship designs. This assessment is mainly dedicated to the difference in ship designs of both nations during the period of the Establishments. There is correspondingly a portion of the chapter concentrated on the adaptation of Spanish ship models to the British Navy and their influence. This is subsequently analysed in the hybrid models constructed by the Royal Navy which combine British naval construction techniques with Spanish prize plans.

The third chapter is a discussion of the influence of captured Spanish ships on the design of British Navy vessels. This section is focused on the period after the Establishments since this period underwent heavy influence from prizes of Spanish and French origin on the

Royal Navy. The primary case study is the Spanish 74-gun ship *Princesa* which started this new shipbuilding movement. The other case study that is examined is the 64-gun ship which was a vessel that went through a series of alterations based on the success of the 74-gun ship models.

Chapter four is an examination of the drafts from the National Maritime Museum. These contain the captured ship body plans before and after the refitting process. These are essential to understanding what Spanish ships looked like and how the British modified them to fit their own needs. There are two sub-sections to this chapter, one is focused on the 74-gun ship, and the other is dedicated to a 112-gun First Rate vessel.

The fifth chapter is fixated on the archaeological aspect of the influence of captured ships on the British Navy. Few excavations of captured ships have been made; this section will discuss two of them. The first is the Spanish prize *Santa Monica*, which was captured by the British and refitted before use. Wrecked in the American Virgin Islands where the Caribbean Research Institute of the U.S. Virgin Islands is located, it was later excavated by a team from the East Carolina University (Gleason, 2006). The second ship is the HMS *DeBraak*, a British ship captured by the French, sold to the Dutch, and recaptured by the British before its wreck in Delaware (Beard, 1989).

Britain fell far behind the Spanish and French on modernizing its ship designs in the first half of the eighteenth century as a result of the Establishments proposed by the Royal Navy to maintain all its ships standardized. It was not until the 1740s that the capture of the *Princesa*, a 74-gun Spanish ship, by the British that they realized this design's potential and began adapting their ships to this model. This was the beginning of a ship construction revolution which would come to influence all the Royal Navy ships as the British modernized

their fleet until the end of the Age of Sail. Therefore, it can be said that the influence of Spanish prizes played a significant role in the modernization of British ships, ultimately leading Britain to become the world's strongest navy by the end of the eighteenth century (Lavery, 1987).

The information acquired to write this paper was obtained from several sources. Secondary sources include numerous books by Brian Lavery, a British naval historian who has written extensively about the adaptations of British ships in the eighteenth century, especially with regard to foreign influence. There are several more authors who were included because of their focus on the influence of captured prizes from France and Spain on the British Royal Navy. Primary source readings on the capture of Spanish ships by the British were obtained from the National Archive in Madrid, the General Archive of the Indies in Seville, the National Archive in London and the National Maritime Museum in Greenwich.

For the most part, these sources yielded data on the nature of capture but were deficient in any information regarding the actual ships. This was quite convenient for the compilation of most of the captures of Spanish ships along with general data. The records found along with the name of the Spanish prizes were: date and location of capture, type of ship, captain's name, and captor's name (Anon., 1793-1799). Additional information was limited as most of these documents were letters from the colonies reporting to Spain that one of their ships had been captured. These letters mentioned the purpose of the vessel at the time, whether the ship was being used as a convoy, military, cargo, etc (Morales, 1797).

Information on these ships as well as their body plans were quite limited for the purpose of analysing the influence of Spanish prizes in the British Royal Navy. Fortunately, the National Maritime Museum holds the largest collection of ship plans in the world.

Access to this collection was crucial to the examination of these vessels and their development through the eighteenth century. This study was enhanced by comparing several captured Spanish prizes as drawn by the Royal Navy before and after their refitting in British dockyards. Because this information makes no sense without context, the next section is dedicated to understanding Britain's necessity for capturing foreign vessels.

Nature of Capture

The eighteenth century was a period filled with naval warfare spreading all over the world as the European powers fought to maintain their control over their colonies. The Spanish, British, French, Portuguese, and Dutch were the primary nations battling in both Europe and the New World, transforming the Atlantic Ocean and the Caribbean Sea into major battlefields. These, in turn, were converted into cemeteries for thousands of shipwrecks and seamen.

Spying was rather common amongst the European powers in order to learn about the weapons and crafts of other nations' militaries. Different inventions were developed by each nation based on its specific needs and requirements for advancement in naval warfare and shipbuilding methods. Monopoly did not last long as new technology spread through Europe and the Americas. Studying and reproducing foreign ship designs became a crucial part of a European power's military strategy.

Many of the British Navy's modifications and improvements to their vessels were acquired by technological advancements as well as a better understanding of the sciences behind sailing. These were, for the most part, developed through trial and error. As a result

of a lack of innovative work applied by the British during the first half of the eighteenth century, many of these techniques were obtained from espionage and the capture of hundreds of foreign prizes (Lavery, 1984).

Capturing enemy ships and selling them to the Royal Navy was a well-paying business. The Royal Navy would inspect the prize, and decide whether to purchase it or not. The vessel was then sent to a dockyard for further inspections where a body plan was designed of the ship prior to any modifications done by the Royal Navy. After the body plan of the original ship was made, a secondary plan was organized demonstrating the refitted design for the vessel. Once complete, the ships underwent repairs and refitting. When the vessels were completed, the ships were commissioned for service under the British Empire. They were then used against Britain's enemies, turning their own weapons against them (Beatson, 1804).

The British set contracts with privateers to sink or capture ships of nations which were in a state of war against England. Once captured, ships were brought to British ports, mostly to Plymouth or Portsmouth, for a decision on whether these were worth purchasing for the Admiralty (Beatson, 1804). Furthermore, many were also pieces of important information on the different technologies developed by other nations. Spain and France were far superior in the size and power of their ships so the capture of these was considered a priority for naval advancement despite the fact that little changed in the British Navy for the first part of the eighteenth century (Lavery, 1984).

Chapter 1: Principles of naval ship design in the eighteenth century

British warship design in the eighteenth century was divided into a rating system. This system was regulated by certain standards that would become a hindrance to the Royal Navy in the first half of the eighteenth century. The first section of this chapter is based on the explanation of how the rating system works. There are two more subdivisions in this section; the first is based on the eighteenth century Establishments taking place in the first half of the century. The second is focused on the second part of the century, including the revolution of the Admiralty and Britain's immense progress to become a dominant naval power in Europe and the world.

The Ship Rating System

The rating system for British ships was a simple rating scale from one to six based on cannon quantity. There were many other types of ships which were not rated as a result of their small size and specific purposes. Each European nation followed this rating standard in the naming of their vessels, yet they were vastly different. Spanish ships were larger than British ships though they held the same quantity of guns; the main difference, however, was that Spanish vessels held larger-calibre guns, giving them a firepower advantage over the British. When the British began adapting their vessels to the Spanish standards, the Royal Navy desired quantity over quality. This meant that the British began setting up a higher quantity of smaller guns than the Spanish who were placing on their ships a smaller quantity of higher-calibre guns. An example is the Spanish 70-gun ship design which, after capture, was constructed as 74-gun ships in the British system (Dodds & Moore, 1984).

The British First Rate ships were 100-gun three-decked vessels. Hardly in service, these ships had a very long lifespan. The British Navy only built three in the second part of the eighteenth century: the *Victory* in 1765, the *Royal George* in 1788 and the *Queen Charlotte* in 1790. The Second Rate vessels were 90-gun three-deck ships. These 90-gun vessels went through significant changes from the original British prototypes during 1778. During this time, a decision was made to incorporate eight cannon to the quarterdecks in an attempt to keep up with the ever-growing expansion in size of the Spanish and French vessels (Lavery, 1987).

The Third Rate ships were made in several sizes for different armaments. Because of their mediocre sailing quality, the 80-gun three-decker was lightly produced by the British. Several 74-gun two-decked ships were captured from the Spanish and the French in the 1740s. Decisions were then made to incorporate the Spanish and French models to the British Navy thanks to their naval superiority. It was in the 1740s that 80-gun three-deckers were transformed into holding only two gun decks. Nonetheless, it was not until the 1750s that these British ships were constructed using the Spanish and French proportions. The change in quantity of firing decks and dimensions transformed the British 80-gun vessel design into a 74-gun ship. This new model soon became the most common ship of the line in the second part of the eighteenth century (Lavery, 1987).

The Fourth Rate ships were two-decked vessels which included the 60-gunner and the 50-gunner. For the majority of the eighteenth century, the 60-gun ship was produced almost exclusively by the British (Dodds & Moore, 1984). The 64-gun ship, however, was the common ship amongst the Spanish and French (Alvarez, 2011). An enlarged version of the British 60-gun vessel; the 64-gun ship was captured and used from 1758 to the 1770s before

it was finally considered to be too small for the line of battle. During that period, however, the British adapted their 60-gun vessels to fit the armament of the Spanish and French. The 50-gun ship was discarded as a ship of the line in the middle of the eighteenth century because of its small size (Lavery, 1987). Still stronger than any frigate, it emerged as a convoy escort and small squadron flagship which led to a significant number of captures of Spanish prizes in the Caribbean Sea (Beatson, 1804).

Fifth Rate vessels included frigates with an armament of between 30- and 40-guns and contained only one gun deck. The 44-gun vessel was adapted from the Spanish and French 40-gun ship models. These British adaptations were constantly favoured and then discarded as a result of their poor sailing qualities. The Royal Navy captured more 40-gun ships than it actually produced. On the other hand, the British 32-gun frigate was replaced by the Spanish and French 36- and 38-gun frigates because of their larger size and gun power. The Sixth Rate ships were frigates with 20- to 28-guns and, just like the Fifth Rate vessels, they contained only one gun deck. The first frigate to be built by the British was the 28-gun ship. Most of the fifth and sixth rate vessels were used for patrolling the coast but were also commissioned as convoy escorts (Lavery, 1987). Most of the Spanish prizes that came to be captured by the British were frigates that were later used against the Royal Navy's enemies (Lyon, 1993).

Eighteenth Century Establishments and Standards

In Britain, ships were being built in an outdated fashion owing to the Royal Navy Board's desire to keep its ships standardized and few new adjustments were made. This issue led the British to regress significantly in the production of innovative warship

construction techniques. While nations such as Spain and France were advancing exponentially, Britain's Royal Navy set up several Establishments throughout the first half of the eighteenth century which made it fall behind the rest. The main objective of these Establishments was to standardize all ships of the navy to better manage ship production in England. Setting up standards for gun count and calibres on specific ship dimensions would also come to benefit training as all ships would be very similar and training could become uniform. These standardisations included the 1703, 1716, 1743, and the 1745 Establishments. These were the main Establishments of the eighteenth century; however, there were several more establishments through the years (Lavery, 1987).

The idea behind the creation of the Establishments was obtained from other European powers. Several Establishments were made in the second half of the seventeenth century. The first formal implementation however, was the 1703 Standardisation for all calibres on board the same class ships. Originally, these Establishments were part of a French movement which aimed to centralize and unify ship building ideologies. This heavily French-influenced program had been recently adapted by the Spanish who formed an allegiance with the French in 1700 (Alvarez, 2011). The 1716 Establishment was the continued work of the 1703 movement which sought to set up all the fleet's ships under an identical armament. This was a vicious proposal as all the older ships were unable to suit these proposed arrangements. A new innovation was the change of name in the artillery now being described by weight. An example would be the demi-cannon which came to be called the 32-pounder gun (Lavery, 1987).

In 1733, a proposal for a new Establishment was set which was only passed in 1743. This plan intended for the creation of larger, more powerful warships like the ones that the

Spanish and French were constructing. The British Admiralty began to fear these adjustments by their enemies yet the Royal Navy Board was content with the quality of its ships and did not accept the proposal until 1743 (Lavery, 1987).

In 1745, a new Establishment was made to further increase ships' dimensions since they were no match in fire power against the Spanish and French ships of the time. This project was based on adapting Spanish and French prize technology into their ships. Until this point, Third Class 80-gun three-decker ships were considered to be the least successful vessels of the navy. The Admiralty's suggestion was to incorporate Spanish and French modifications and transform these 80-gun three-decker ships into 74-gun two-decker vessels (Lavery, 1987).

A new system took place in 1755 when the Royal Navy's Admiralty administration, led by George Anson, was introduced. This new movement in shipbuilding created a Royal Navy Board which supported the shipwrights instead of restricting them. This proved very useful for the distribution of the artillery and its placement onto specific ships which could use this armament to its full potential while maintaining an effective sailing quality (Lavery, 1987).

The Royal Navy's Shipbuilding Revolution

In the 1740s and 1750s, the admiralty was naming its ships by the Establishment's standards, yet the ships were being constructed using several modifications including the quantity of their cannon. These new ship models constructed were considered to be better than any ship before; they were stronger, faster, and more resilient to strong weather. The

new adaptations would transform Britain into an overwhelming naval fighting force (Dodds & Moore, 1984).

The Royal Navy Board contested the assembly of the new ship designs as they stood against everything the Establishment represented. These ships used alternative shipbuilding techniques adapted from other nations. The Royal Navy refused to become dependent on foreign prizes to create new models and feared constantly falling one step behind the Spanish and French on new ship designs. There was also an emphasis on spending less on the construction of smaller three-deckers instead of larger two-decked ships. This was especially seen in the *Valiant*, a *Dublin* class 74-gun British ship that used French design and had a construction cost of £42,000 instead of the usual £36,000 for old-fashioned 80-gun three-decked vessels. The *Triumph* was another ship of the same class which was made for a lower price than the *Valiant*, but instead of the usual two and a half years of production, it took seven years to build (Lavery, 1984).

Ultimately, the Board was not ready to abandon traditional beliefs even though other nations had long before begun modernizing their navies. It was not until the new models proved to be far more resilient that the Royal Navy Board finally gave in to the admiralty's demands to build new vessels. These came from Spanish and French design with their own sets of adaptations to make them stronger.

When, in 1745, the Admiralty began constructing 74-gun ships using foreign designs from Spanish and French captured prizes, a rebellion of sorts had begun. In order for the Royal Navy Council to accept the proposals, these were named 70-gun vessels (Lavery, 1984). The new design was completely different from the old-fashioned British 80-gun plan; a blueprint for the *Dublin* class ship can be seen in Figure 1. The 74-gun ship was a large

two-decked vessel which had a longer body, was narrower on its sides and was shorter in height. This Spanish and French design led to better qualities for sailing, as well as a lower centre of gravity for the ship.

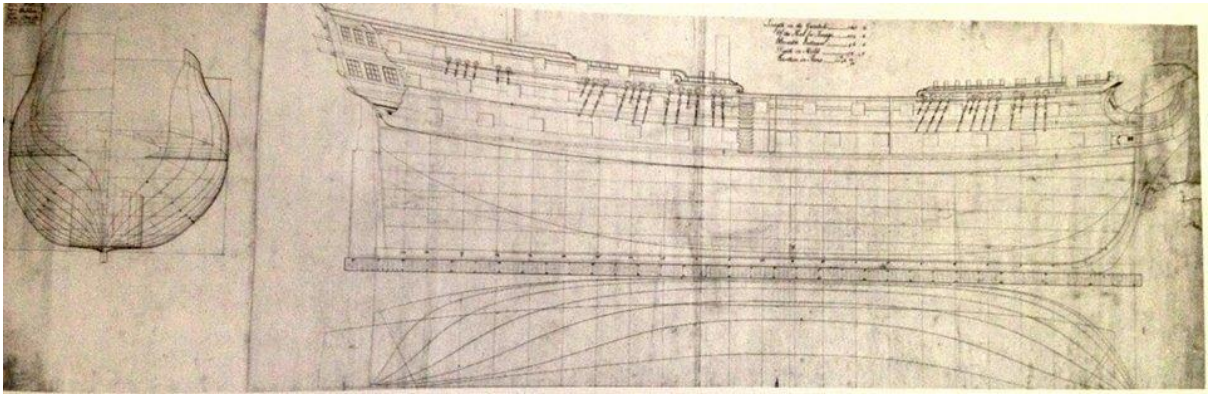


Figure 1: Dublin class body plan (Lavery, 1984).

The British 70- and 80-gun ship designs had a major defect. These were three deck ships that were shorter in length, wider on their sides and taller giving them a higher centre of gravity and lowering their sailing qualities. The Spanish Third Rate ships were comparable to British First Rates because of their enormous size. The *Dublin* class vessels drew more water than many of the great First Rate ships. This was a great issue when it came to sailing in shallower water as these vessels came close to being on shore more than once (Lyon, 1993).

In 1761, the *Bellona*, a British 74-gun ship, encountered the French 74-gun *Courageux*. The French ship was over 100 tons heavier, carried higher-calibre weapons, and had 150 more men on board manning the sails and guns. The *Courageux* vessel had far greater gun power than the *Bellona* but they both had similar ship dimensions. Within thirty minutes, the battle was over and the French ship had surrendered (Lavery, 1984). It was these sorts of victories that led the British admiralty to order several more of these vessels to be constructed.

The new Royal Navy Board reacted positively to these triumphs by the new 74-gun ships by accepting the changes made and embracing new ones. Using the newly learned improvements of the 74-gun ships, the navy decided to adapt these changes to other ships of the line. The British 60-gun ships were converted into 64-gun vessels. Using Spanish designs and applying them to this smaller vessel, dimensions on the ship were lengthened for the gun decks to become significantly longer and be able to hold four more guns in the ship's two decks. Success with these vessels led to the rapid adoption of additional models. Britain's victories over foreign ships with higher fire power soon became common practice and, using their already superior crew and naval skills, the British ships would capture enemy convoys that outmanned and outgunned them (Gardiner, 1996).

During the eighteenth century, there was a continuous debate in the British navy regarding whether to maintain traditional ship construction or to modernize it. Keeping things the same led the other European powers to pull ahead and develop stronger, larger, more seaworthy vessels, leading to a significant amount of defeats. It was not until the revolution of the second part of the century that Britain realized its need to evolve its navy. This was accomplished by adapting many of the new techniques developed by Spain and France to their own ships. Spain's main advantage until this point was its larger ships and heavier firepower, which could decimate an enemy with a more qualified crew. By increasing the Royal Navy's ship sizes and strength to equal those of its enemies, the outcome of the battle relied on the side with the better crew and war tactics and, in this respect, Britain had always been stronger. Thus, it was at this time that Britain became undeniably the world's strongest naval power (Gardiner, 1996).

Chapter 2: Comparison of Spanish and English ship designs

Before Britain improved their ship building techniques, the Spanish and French ship designs were considered to be the most advanced. Because the French royal candidate Philip V claimed the Spanish crown in the beginning of the eighteenth century, the two nations formed a strong allegiance. At the time, Spain was at a critical point with a weak navy that could scarcely control its few colonies. The strong bond formed between Spain and France allowed Spain to become accustomed to the shipbuilding techniques of the French and apply them to its own navy (Alvarez, 2011). Soon after, Spain and France had the strongest navies in the world as their combined construction methods were superior in size and fire power, exceeding those of any other nation. The British Royal Navy, on the other hand, found itself to be stronger in other respects, such as the logistics and management of its ships as well as the quality of their crews (Flynn, 2006).

The timber industry is a perfect example of British superiority in management over the Spanish. The British gained access to enormous quantities of hardwood from all over the Baltic. In Figure 2, royal and merchant shipyards are shown as well as the timber suppliers in England. Short distances were crucial when transporting the timber from a supplier to its destination in a shipyard and few issues arose because of the vicinity of one with the other. In the eighteenth century, the British began transporting large

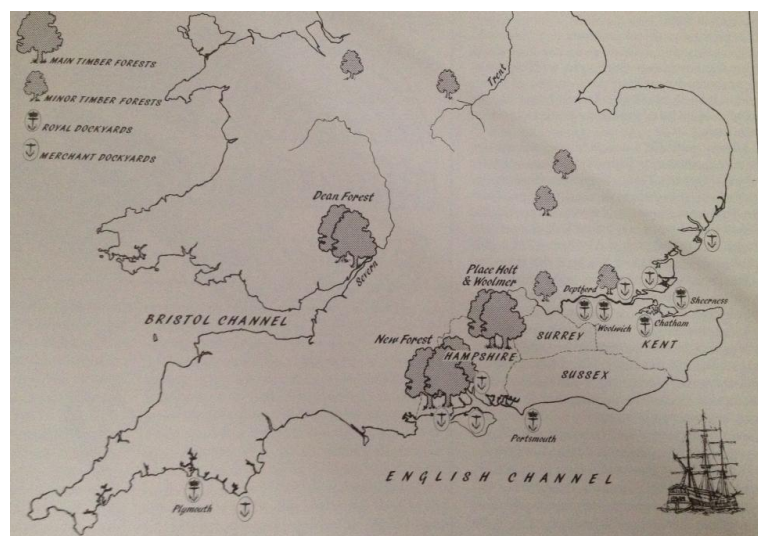


Figure 2: Areas of timber forests used for royal and merchant dockyards (Dodds & Moore, 1984)

quantities of timber from North America, especially from Canada (Dodds & Moore, 1984).

Less effectively, the Spanish had to obtain hardwood for their dockyards in Europe from the Baltic and the Mediterranean; it was therefore easiest to transport timber by sea. Moving the hardwood using Spanish timber ships developed problems of its own; this method of transportation placed the Spanish in a vulnerable state for their enemies to capture or sink their ships (Knight, 1993). In the early-eighteenth century, however, Spain began to focus on revitalizing its navy by giving contracts for ship construction in Central America and the West Indies, especially the Havana and the Guatemala dockyards. The stronger wood obtained in Central America made for more resilient vessels which would last significantly longer (Alvarez, 2011).

The allegiance between Spain and France gave Spain momentum in ship design and construction that would last throughout the eighteenth century. Previous to the eighteenth century, Spain had lost a large part of its navy and was barely able to maintain communications and control across the Atlantic with its colonies. It was after the War of the Spanish Succession in 1700 that an alliance with France combined the ship-building skills of both nations, establishing them as the most superior ship constructors in Europe and the world. The French changed shipbuilding management and amended the techniques used by both nations. The administration was institutionalized and professionalized for the entire industry. There was also a new set up of government-sponsored research on the mathematical treatment of ship design (Alvarez, 2011). It was also very important for the French to persuade as many talented shipwrights to come work for France from abroad (Pritchard, 1987).

The competence levels of Spanish and British crews were rather polarized. While the British had a large merchant marine, there was always a large number of experienced seamen available for the navy. The Spanish, on the other hand, had few experienced seamen available to recruit for their fleet. By the second half of the eighteenth century, Spanish crews revolved around inexperienced crew members promoted not by their merits but as a result of lack of officers. The little training these naval officers received was seen in their lack of skill in gunnery, manoeuvring, and seamanship. This was most apparent during battles, when the Spanish would hold the upper hand in gun power and still be defeated by the British. The Spanish were considered tough opponents, yet their victories and achievements were few in comparison to the Royal Navy (Gardiner, 1996).

The Spanish produced larger, more resilient vessels, than the British. Several adaptations were therefore, taken from the Spanish and French prizes and incorporated to the British navy. The Spanish had to compensate for their underqualified crews by building larger vessels. The pride of the Spanish fleet was the *Santisima Trinidad*, the only 120-gun four-decked vessel ever built. This ship, like many others of Spanish origin, was constructed to exponentially increase its fire power; yet the ship's size and gun quantity made it over-gunned and ultimately caused it to "roll" heavily. During the Battle of Trafalgar in 1805, the ship was captured by the British but, because of severe damage, it sank in deep sea. The British, conversely, had a stronger more qualified crew and had to continuously build larger ships based on the Spanish models to increase their chances of victory against the raw power that the Spanish vessels generated (Gardiner, 1996).

Traditional versus Functional

When building a warship, different nations used different techniques. The Spanish were more focused on having higher-calibre guns while the British appreciated quantity over quality, incorporating a higher amount of lower-calibre guns. Some of these variations were attributable to tradition; others, however, were made to improve the maximum military or storage potential or increasing sailing qualities (Goodwin, 1988).

Nations such as France and Spain had the captain's cabin as a private room not to be modified. The Spanish adapted these techniques from the French in the early eighteenth century when the French and the Spanish became powerful allies at the end of the War of the Spanish Succession. The British, on the other hand, made sure every inch of the vessel was put to full use. This included the captain's chambers which had several cannon and in which the furniture was readjusted in times of war. This does not mean that the British treated their officers as they did their seamen. Considerable space was given to each officer, according to their rank. A petty officer would have an additional twenty-eight inches for his hammock, twice as much as a seaman would get. The Admiral occupied several rooms which came to take up the space of two-hundred seamen (Lavery, 1987).

The ship rating system was simply based on cannon quantity. There are, however, patterns that arise in ship classification. A simple configuration for classifying ships into their rating systems for most European nations in the eighteenth century was that First and Second Rates had three gun decks, Third and Fourth Rates had two gun decks, and Fifth and Sixth Rates had one gun deck. An exception was the Royal Navy's design in which 80-gun Third Rates contained three decks instead of two. During the movement to evolve the

British navy, however, the first step taken was to convert 80-gun three-decked ships into 74-gun ships containing only two decks (Lavery, 1987).

Spanish ships were also found to be larger. With every decade that passed in the eighteenth century, all British captures of Spanish prizes led the English shipwrights to discover an increase in the size of the Spanish vessels. These were continuously being modified as the Spanish admiralty kept creating larger and larger ships. This Spanish ideology that bigger is better formed problems for the Royal Navy Board. Its rating of vessels as Spanish Third Rate ships was exceeding British First Rates in certain dimensions while maintaining a lower amount of cannon. In the case of the 74-gun vessel, the Spanish preferred to create longer ships that only contained two gun decks. This gave the Spanish the advantage of more space in between decks which improved the living conditions and the effectiveness of the crew during combat situations. Finally, the ship was longer in comparison to its height which lowered the centre of gravity, giving the ship more stability (Lavery, 1984).

British ships were very different in their designs prior to adaptations from the 70-gun vessels captured from Spain and France. These changes were complete opposites of prior models. Before the modifications to their plans, the Royal Navy constructed 70- and 80-gun ships containing three decks instead of two. There were several reasons for this method including the fact that the British favoured ships with greater breadth, depth, and height (Lavery, 1984).

The British thought that increasing the breadth of a ship would grant it more stability and allow it to carry its guns better; the height and depth were also increased for the comfort of officers on board the ship (Lavery, 1984). Having a shorter length also granted

the vessel a more focused and accurate attack on the enemy as the cannon were more clustered together. In a sense this was true; however, there were more disadvantages than advantages in this design. A major disadvantage, as previously stated, was the shortened length of the ship in comparison to its height. These dimensions actually raised the centre of gravity of the ship which significantly lowered its stability and caused it to “roll” more frequently.

In the second half of the eighteenth century, there was an increase in the hull size of British ships. First Rate ships, which weighed 1,700 tons in the beginning of the eighteenth century, were 2,142 tons by 1765 (Lyon, 1993). This was chiefly owing to the necessity of expansion in hold space for the vessels as these needed to spend several months at sea independent of shore or supply. At the beginning of the eighteenth century, three months’ worth of ratios was enough for ships to survive on. By the end of the eighteenth century, however, war had spread from Europe to all its colonies and British ships were capable of carrying six months’ supplies with some commodities capable of lasting for one year (Dodds & Moore, 1984).

The increase in hull size by the British was based on Spanish and French hulls which were significantly larger. Even though Spanish construction did impress the British, hull formation was something that the British did not adopt. This rejection was primarily as a result of the low sailing quality on ships like the *Fenix*, a 74-gun ship that the British captured from the Spanish. Unlike most of the other Spanish 74-gun prizes, this ship was famous in the British navy for its poor sailing qualities and its design was not implemented on British ships. This vessel was a larger version of other Spanish 74-gun ships yet the dimensions made it slower and more prone to “rolling” (Gardiner, 1996).

Ship growth in size in British Navy vessels was a major part of the Spanish influence; however, its use was widely different. The Spanish used the extra length to fit more cannon on lower decks and give the vessel better sailing qualities. The British however, used hull expansion to fit more cargo on board their ships, allowing them to carry more supplies and to spend significantly more time away from shore. This additional space was caused by the need of the British to venture on long voyages across the world (Dodds & Moore, 1984). The Spanish, on the other hand, were more focused on traveling shorter distances and that is why they had to stop to resupply more often (Morales, 1797).

British ship design evolved greatly during the second half of the eighteenth century. This trend was primarily caused by the capture of Spanish and French ships. The 74-gun vessel was the leading force in the Royal Navy's revolution which placed it ahead of the other European nations. Soon it was not a matter of which vessel was stronger but, now that these warships were similar in dimensions and equal in might, it was rather about which navy had superior war tactics and combat techniques and in that sense Britain almost surpassed the other navies (Goodwin, 1988).

During the first half of the eighteenth century, Britain's navy was in a constant dilemma between the practicality that shipwrights wanted to pursue and the conservationist views of the Royal Navy Board. Spanish and French influence was seen all throughout the second half of the eighteenth century in British ships. Fear of becoming dependent on enemy prize designs did not stop Britain from applying the plans from the Spanish 74-gun ships to other vessels. A new system rapidly made its way from capturing Spanish vessels and adapting them to creating new prototypes based on other hybrid models. What started as a movement to modernize a Third Rate ship became a revolution

during which every vessel constructed by the end of the eighteenth century was being built under modern standards, larger and stronger than ever before.

Chapter 3: How did the appearance of British naval ships change during the eighteenth century as a result of the capture of Spanish vessels?

For the first half of the eighteenth century, few modifications on ship design were made by the British because of the organization of the Royal Navy and its standardization of its vessels. All models of the different ship rates were assigned a certain number of guns of the same calibre and ships were refitted under each Establishment to maintain a certain order. This became highly impractical and shipwrights were unable to put their full potential to use as most naval technological advancements of the time came through trial and error (Lavery, 1987).

This all changed when the Establishments were dismantled. While the British had been building old-fashioned ships, the Spanish and French had been developing larger and stronger vessels. At this point in time, the British began to capture and adapt these techniques developed by other European nations in an effort to catch up with their enemies' superior naval power. The Royal Navy now recognized the potential of adapting Spanish ship designs to their own vessels to make them stronger than ever before. An increase in British captures of Spanish ships took place at this time as it became a priority to capture or, if necessary, destroy enemy warships. Once captured, Spanish prizes were sent back to England for inspection by the dockyard's shipwrights. The shipwrights would carefully examine the ship's architecture and practicality in order to build future hybrid models with the best of both the British and Spanish designs (Beatson, 1804). The following chart in Figure 3 shows the different wars in the eighteenth century including their time periods and the Spanish ships captured in those times. An analysis is made based on the correlation between the time period and the amount of ships captured. It is important to mention that this list does not include every British capture of a Spanish vessel in the

eighteenth century; instead, it includes most of the recorded Spanish prizes captured by the Royal Navy at times of war in the eighteenth century. Many of the ships on this list were obtained from the Spanish capture lists made by Lyon and Winfield yet most come from the British prizes letters from 1793-1799.

War	Duration	Ships Captured	Rates of Prizes Captured
War of Spanish Succession	1701-1714	<i>Thunder.</i>	Unrated: 1 Total: 1
War of Jenkins' Ear	1739-1748	<i>Galicia, Princesa, Rippon's prize, Shoreham's Prize, Deptford's Prize, Pembroke's Prize, Rupert's Prize, Galgo, Peregrina, Sapphire's Prize, Conquistador (Jesus, Maria y Jose), Margaretta, Superb, La Famiglia Sacra, San Sebastian, San Antonio y Animas, Virgen del Rosario, Nostra Señora del Pilar, Nuestra Señora de Misericordia, Nuestra Señora del Rosario y San Joseph, Nuestra Señora de la Esclavitud, El Soveroio, Nuestra Señora del Belen (America), Nuestra Señora del Belen (Glorioso), Poder.</i>	Third Rate: 5 Fifth Rate: 3 Sixth Rate: 6 Unrated: 11 Total: 25
Seven Years' War	1754-1763	<i>Infanta, Moro, Reina, Soverano, Tigre (San Lorenzo), San Gerano, San Antonio, Conquistador, Aquilon (San Damaso).</i>	Third Rate: 7 Forth Rate: 2 Total: 9
American War of Independence	1775-1783	<i>Gibraltar, San Miguel, Guipuzcoano, Monarca, Princessa, Diligente, Santa Monica, Leocadia, Grana, San Firmin, San Vicente, San Julian, San Isidro.</i>	Third Rate: 8 Fifth Rate: 2 Sixth Rate: 1 Unrated: 2 Total: 13
French Revolutionary War	1792-1802	<i>Salvador del Mundo, San Jose, San Nicolas, San Damaso, Monarca, Argonauta, San Miguel, San Isidro, Mahonesa, Ninfa, Santa Dorotea, Santa Teresa, San Leon, Port Mahon, Vensejo, Corso, Rosario,</i>	First Rate: 2 Third Rate: 6 Fifth Rate: 6 Sixth Rate: 1 Unrated: 12 Total: 27

		<i>Hyder Haly, In Rafael, Princesa, Reina Luisa, Princesa, San Juan Bautista, Nuestra Señora del Carmen el Diligente, Nuestra Señora del Carmen, Nuestra Señora de la Concepcion, Aguilla</i>	
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Figure 3: Table of 18th century wars and their relation to the capture of Spanish ships (Anon., 1793-1799) (Lyon, 1993) (Winfield, 2007).

The capture of Spanish and French prizes led to a great deal of influence from these naval powers on the British navy. This impact was especially seen in the 1740s when the Royal Navy's Admiralty was given more freedoms and the Royal Navy Board accepted the changes brought on the different ship designs. Larger and larger ships were captured from Spain and imitated by the British as the Spanish attempted to construct grander vessels while maintaining strong sailing qualities (Beatson, 1804).

In Figure 3, a pattern is identified in the Royal Navy's preference for the capture of Spanish Third Rates. This fondness is attributable to the simple fact that the British Third Rate was poorly designed as it originally had eighty cannon spread out amongst three decks in a ship too tall for its short length. This made the ship unbalanced and was considered to be the worst vessel of the Royal Navy. It was not until the British captured several French and Spanish prizes that they modified their ships to be instead two-decked vessels of 74-guns. Soon after, this vessel became a preferred ship of the line for the Royal Navy, and the capture of these ships was well paid for by the Admiralty (Bingeman, 2010).

Ship alterations after the Establishments

In the Mediterranean and the Caribbean, there was an infestation of marine worms in the water. These would destroy ships by eating the timber of the outer hull planking and leaving a calcium carbonate tube. As time passed, these worms would eventually cause

major structural damage to a ship (Maurer, 1950). Until the end of the Establishment, little had been attempted to fix this problem. Lead sheathing on the outer hull planking had been adapted from the Spanish in the Sixteenth century and several tests on ships were conducted. However, the result was always the same: the salt water made the lead erode quickly. During the Establishments in 1708, other innovative attempts were made by Charles Parry to sheath the ships with copper, but the Navy Board found this method to be too expensive. Other attempts were made with brass, tin, and iron but none were successful. Finally, in 1760, trials were made and copper was found to be effective. Still, copper sheathing seemed too expensive and the Navy Board continued to be sceptical. It was not until the end of the 1770s that a vast number of ships of the line became sheathed with copper below the waterline (Staniforth, 1995).

Ship deck height was of crucial importance for sailors manning the guns to work at their full potential, as well as to increase the sailing qualities of the vessel. The British set up a standard minimum of 5 feet 6 inches for the height of each deck. The Third Rate 74-gun two-decked ship seen in Figure 4 and the frigate were the ideal sizes for British vessels because of the standard in height of each deck in comparison to the length of the ships. The 44-gun two-decked ship seen on Figure 5, and the 80-gun three-decker ship, were,

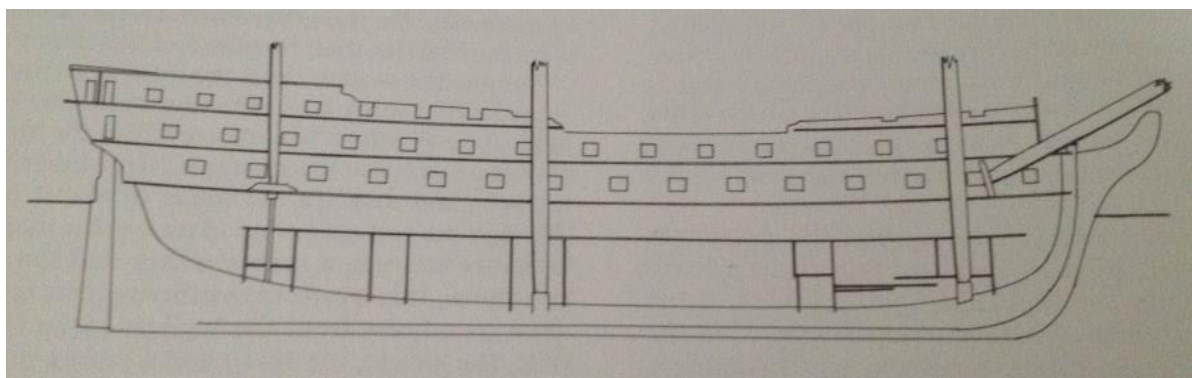


Figure 4: Third Rate 74-Gun Ship of the 1790s (Lavery, 1987).

conversely, too tall for their length and this issue caused them to have very poor sailing qualities (Lavery, 1987).

Thanks to a necessity for increasing the rate of fire in ships, the British had to intensify the number of men manning each cannon over the period of the eighteenth century. At the beginning of the century, 32-pounders would have had a crew of ten men per cannon; however, by the turn of the century fourteen men were operating them (Lavery, 1987). An increase in cannon quantity based on Spanish models also led to a significant rise in crew members.

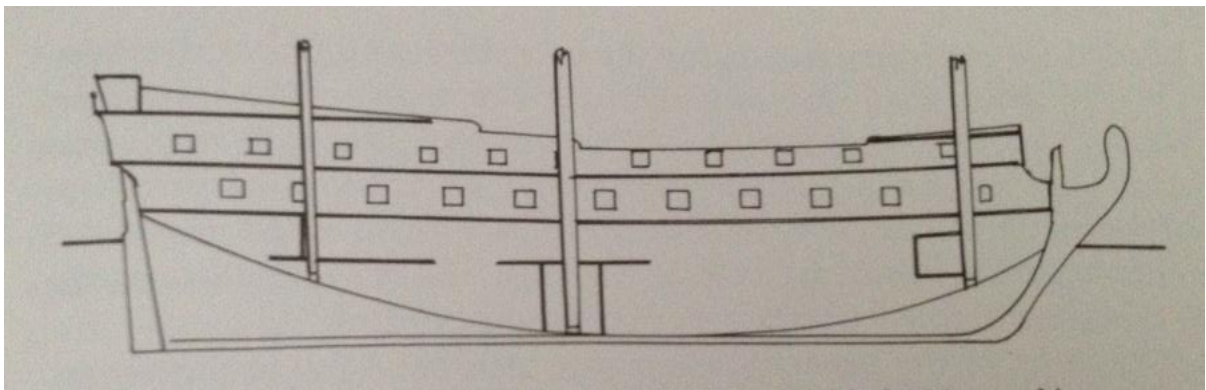


Figure 5: Fifth Rate 40-Gun Diamond of 1722 (Lavery, 1987).

La Princesa and her Influence on the British Navy

On the 8th of April 1740, the 70-gun Spanish ship *Princesa*, was captured by the *Kent*, *Orford* and *Lenox*, three 70-gun ships (Lyon, 1993). This ship held the same amount of guns as the British vessels, yet she held them higher above the waterline. She was also five hundred tons heavier and twenty feet longer proving the superiority that this man-of-war had over the British vessels. This prize was taken in by the British for further inspection. After the body plans of the vessel were complete she was to become the prototype of future 74-gun British ships. As a result of the heavier weight of the Spanish cannon, the

British were able to construct their ships with a greater quantity of guns of smaller calibre.

In 1746, the *Royal George* was completed in Woolwich as a First Rate ship with 100 guns constructed to the model of the *Princesa*. Two more ships were built after this: in 1751 *Amelia*, an 80-gun ship was completed; and in 1756 the *Blenheim* of 90-guns (Dodds & Moore, 1984). These vessels had a major modification from the *Princesa* in that they contained three gun decks instead of two.

The *Princesa* was a Third Rate 70-gun vessel built in the Guarnizo shipyard in Santander, Spain (Lyon, 1993). She was 178 feet long, while most of the British Third Rate 80-gun ships were 150 feet long. The depth in hold was 22 feet, while carrying a tonnage of 2,046; over 500 tons more than British vessels which normally weighed 1,550 tons. Even with such a large amount of weight it still took the *Kent*, *Orford* and *Lenox* six hours to chase and finally capture this vessel proving the vast superiority of Spanish warships. The *Princesa* also proved to be more comfortable with more intense weather in heavy conditions (Dodds & Moore, 1984). This meant she could endure severe storms while focusing on fighting a British enemy ship which would instead be directing its attention to staying afloat. This was attributable to the need by the Spanish to continuously create superior ships without affecting their sailing quality (Alvarez, 2006).

The 64-Gun Ship

On the 8th of January 1780, during the American War of Independence, a 64-gun two-decked Spanish ship from the Caracas Company by the name of *Guipuzcoano* was captured by the British. It had a gun deck with a length of 153 feet 2 inches; the length of its keel for tonnage was 130 feet 3 inches; its breadth moulded was 44 feet 1 inch; its depth in

hold was of 19 feet 9 inches; and its tonnage calculated in 94ths was of 1,346 ⁶¹/₉₄. On its gun deck it carried twenty-six 24-pounders, in the upper deck it carried twenty-eight 12-pounders, and in its forecastle and quarterdeck it carried ten 9-pounders. The *Guipuzcoano* was manned by 500 men (Lyon, 1993).

The acquisition of the *Guipuzcoano* was led by Admiral Sir George Rodney, leader of a large British fleet headed to relieve Gibraltar when they ran into the *Guipuzcoano* and a Spanish merchant convoy it was escorting. It did not take long for the Royal Navy's ships to secure the entire convoy before sending it back to Britain. In the Portsmouth Dockyard, it was purchased by the Royal Navy and fitted for the West Indies to take part in the American War of Independence. Figure 6 shows the body plans of the *Guipuzcoano* before its modifications. Here the ship was renamed HMS *Prince William*. After the war, she was sent back to Britain to be converted to sheer hulk before the start of the French Revolution (Winfield, 2007).

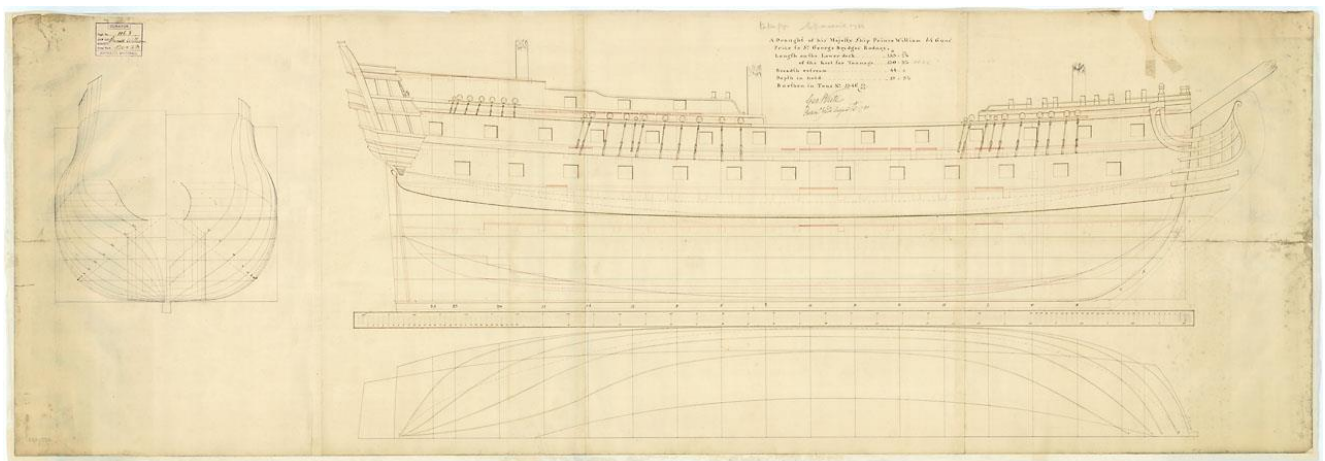


Figure 6: *Guipuzcoano* body plan as a captured Spanish Third Rate prior to refitting in the Portsmouth Dockyard. Signed by George White, Master Shipwright of the Portsmouth Harbour, 1780 (White, 1780).

In 1740, the British captured the *Princesa* a 70-gun Spanish prize. This vessel came to be enhanced into the British 74-gun vessel. The British then captured a Spanish 64-gun vessel which led to the improvement of the Royal Navy's 60-gun ship. Comparisons between both of these adaptations of these Third Rate ships that the British modified from the Spanish navy showed very similar designs. They were, however, vast improvements from previous British models. The vessels' dimensions were very similar, yet some modifications on cannon arrangements were found. It was in cases like this that the British held naval superiority over the Spanish since the Royal Navy was known for having better tactical military naval skills as well as a higher-quality and better trained crew. The design of the 64-gun ship was only used by the British until the end of the eighteenth century before it was considered to be too small for the line (Lavery, 1984).

Chapter 4: Draft analysis

When the British captured Spanish ships and brought them back to the Royal Navy Dockyards, the prizes were first carefully inspected. Then, they were purchased by the Admiralty who would have the ships examined and drafted. Plans were made before refitting them for duty. Since the Spanish and French did not have the limitations of the Royal Navy Board, their models were always changing and growing in size. Once the Establishments were no longer impeding the shipwrights, these Spanish designs were incorporated to the British Navy to create larger and stronger vessels (Lavery, 1987).

The 74-Gun Ship

Capturing the *Princesa* ship was an immense achievement for the British. This Spanish Third Rate, as well as five 74-gun French vessels became British prizes in the 1740s. These ships, primarily the *Princesa*, since it was the largest and most capable, came to be the leading models into the creation of the English 74-gun vessel (Dodds & Moore, 1984). As previously stated, the British Royal Navy Board had maintained antiquated methods of ship construction and had been very uncooperative with the master shipwrights on their effort to build new vessels using foreign ship designs (Lavery, 1987). It was during the period of capture of these ships that the Royal Navy's Establishments were beginning to relinquish their old ways and accept more modern alterations.

There were several ships constructed in the 1740s and 1750s which were either modified to fit the assembly specifications of the *Princesa* or were built entirely to her image. As a result of the lack of work by the British constructing larger ships, the shipwrights working on the new vessels constructed to the image of the *Princesa* were still unable to

produce large enough ships to resemble the *Princesa's* exact dimensions and were therefore slightly smaller (Knight, 1993). A detailed body plan of the *Princesa* can be seen in Figure 7 prior to its refitting in the Portsmouth Dockyard.

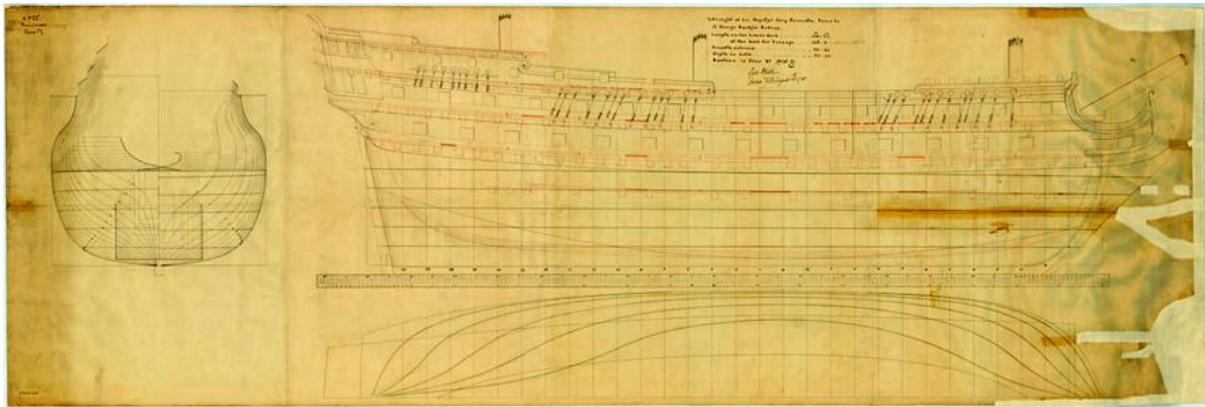


Figure 7: Body Plan of the *Princesa*, a Spanish 70-gun ship captured by the British. This body plan was done prior to refitting at the Portsmouth Dockyard in 1780 (White, 1780).

The *Hero* and the *Thunderer* were two of the first English 74-gun ships entirely built to the *Princesa's* image. It was at this point that the British 74-gun two-decker ship became the pillar of the Royal Navy because of its superior fire power over all the lower rated vessels but increased manoeuvrability in comparison to all the higher-rated three-decked ships. The Admiralty soon began to consider the 74-gun two-decker ship, the perfect combination of strength and speed to work at its maximum effectiveness. The final design of the *Hero* can be seen in Figure 8 while a comparison in dimensions between the *Princesa*, the *Hero*, the *Thunderer* and a pre-*Princesa* British 80-gun ship can be seen in the table on Figure 9. The table shows the smaller ship dimensions of the 80-gun vessel from the Royal Navy prior to the 1745 Establishment. This can then be compared to the *Hero* and the *Thunderer*, as both of these ships were built after the Establishments period in resemblance to the *Princesa* (Dodds & Moore, 1984).

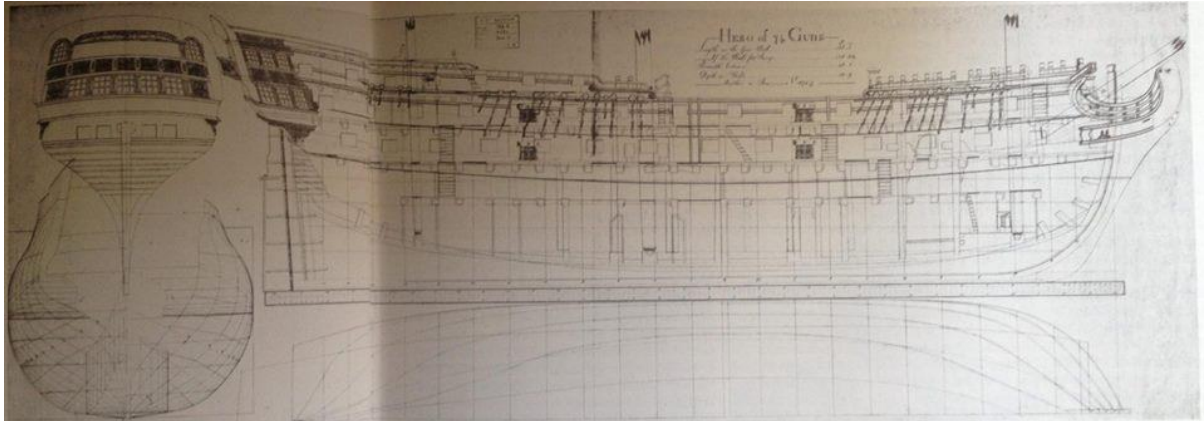


Figure 8: HMS Hero: Constructed as one of the first British 74-gun ships with the new Spanish design (Dodds & Moore, 1984).

The HMS *Thunderer* came to be regarded as a very resilient ship of the line for the British. Her measurements far exceeded previous 74-gun vessels built prior to the capture of the *Princesa*. She had a hull length of 166 feet 6 inches; her bowsprit making the length of the ship far longer. She had a keel which measured 136 feet and a total breadth length of 47 feet 2 inches. The depth in hold was of 19 feet 9 inches giving it a significant increase from previous models. This allowed her to carry a total of 1,609 tons. All of these measurements can be seen in Figure 10, depicting the draught of the *Thunderer* by Sir Thomas Slade in 1756 when he designed it (Dodds & Moore, 1984).

The final cost of the vessel after construction, fitting and equipping was £30,155 16s 2d and close to £70,000 on rigging, refitting and repairs. This was a significant amount of money that the Admiralty had trouble spending because of the Royal Navy budget of £5million per year. Building these new models based on Spanish design was an influential factor on the £80 million national debt that had risen by the end of the eighteenth century (Dodds & Moore, 1984).

Comparing the design of the *Princesa* prior to refitting with those of the HMS *Thunderer* and *Hero* can be quite challenging as a result of the vast similarities. The Spanish prize was slightly larger than both of these ships in its dimensions which led it to carry

almost 500 tons more than the British adaptations. There was a difference of placement of cannon on board the ships. The Spanish placed higher-calibre guns on their decks and fitted seventy guns on board the *Princesa*. In the gun deck, twenty-eight 32-pounder guns were placed; on the upper deck thirty 18-pounders were positioned; the last 12 cannon were 9-pounders and they were located in the quarterdeck. Contrarily, the British placed twenty-eight 32-pounder cannon in the gun deck; twenty-eight 24-pounders in the upper deck; fourteen 9-pounders in the quarterdeck and four 9-pounders in the forecandle (Lyon, 1993).

Ship	Guns	Length (ft)	Breadth (ft)	Tons	Launched
<i>Princesa</i>	70	178	51'9 ½ "	2,046	Guarnizo, Spain 6/2/1740
<i>Hero</i>	74	166.6	46'8"	1,564	Plymouth 2/3/1759
<i>Thunderer</i>	74	166.6	47'2"	1,609	Woolwich 19/3/1760
Common 80-gun British ship during 1719 Establishment	80	158	44.6	1,350	

Figure 9: Table comparison of the dimensions of the *Princesa*, the *Hero* and the *Thunderer* ships' as well as a standard British 80-gun ship following the 1719 dimensions (Dodds & Moore, 1984) (Lavery, 1984).

British ships utilized space differently than the Spanish. The size of the captain's cabin for the British was smaller and was constantly rearranged to make sure every inch of a Royal Navy ship was organized to give the ship its maximum potential. Particularly, this was the case in the amount that cargo ships could carry since the British were able to spend as much as six months away from the coast without a need to resupply. This gave the British an advantage over long-distance travel, specially the colonies in the Pacific and Indian Ocean (Lavery, 1987).

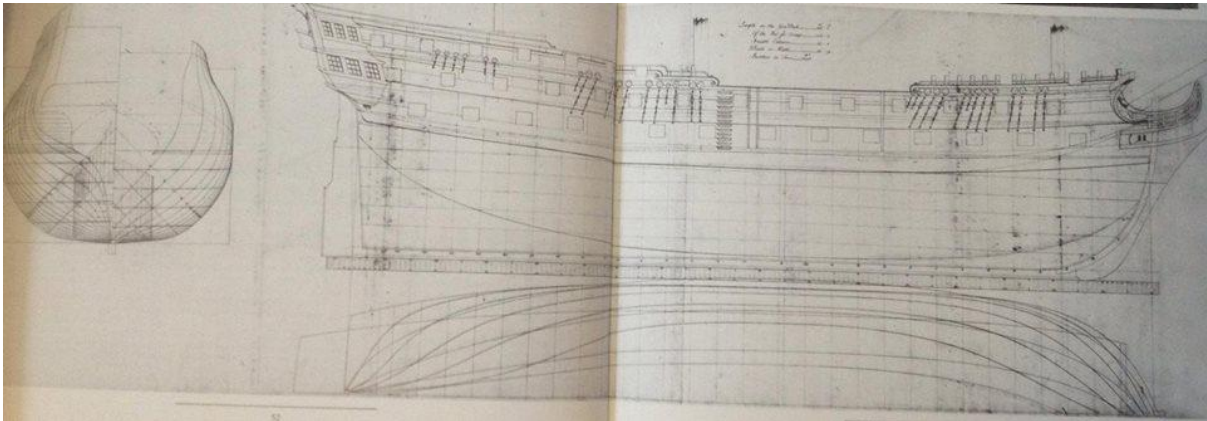


Figure 10: Draught of 74-gun Thunderer designed in 1756 by Sir Thomas Slade and launched in 1760 (Dodds & Moore, 1984).

The Spanish were more focused on setting up short term supplies on board their ships and instead of carrying a significant amount of supplies for long journeys, they equipped their vessels with stronger fire power and heavier guns. This came to be an immense problem for the more secluded colonies such as Pensacola. This colony needed to obtain constant supplies from abroad and few were brought at any specific time. It became especially worse when all the supply convoys sent to relieve the colony were captured or sunk by privateers from England (Morales, 1797). Close to the end of the eighteenth century, however, ships increased their cargo on supplies significantly. The Spanish schooner *Adelaida*, was captured by the British while trying yet again to relieve Pensacola. When captured, it was holding 1,000 pounds of gun powder, 106 barrels of flour, 35 barrels of rice, 25 barrels of cow meat and another 25 of pig meat, 1 barrel of salt, 2 large barrels of aguardiente, 1 large barrel of vinegar, 2-3 pounds of candles, 1 large barrel of red wine, 465 pounds of broken sugar, 7-8 pounds of soap, 63 hens, and 2 sheep (Morales, 1801).

In 1780, the Spanish had nearly perfected their 74-gun ships. The *Fenix* was a stellar example as it was longer, narrower, shorter and lighter than the *Princesa*. Ideally, these attributes would have vastly improved its sailing quality; however, the *Fenix* became famous

in the British navy for its mediocre sailing quality (Gardiner, 1996). It had a length of its gun deck of 178 feet 10 inches; a length of its keel for tonnage of 144 feet 5 inches; a breadth moulded of 52 feet 11 inches; and a depth in hold of 22 feet 1 inch. It also weighed 2,157 tons (Lyon, 1993). These features combined to make it prompt to “rolling” as well as significantly slowed the vessel down. Figure 11 depicts the *Fenix*’s body plan after it was refitted.

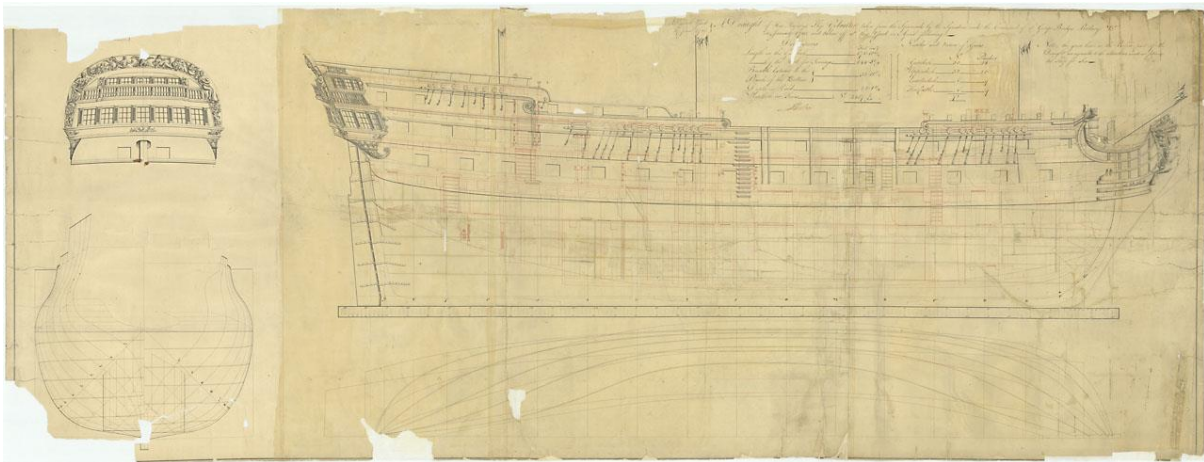


Figure 11: Body plan of the *Fenix* after refitting showing alterations made by John Henslow, Master Shipwright in the Plymouth Dockyard in 1780 (Henslow, 1780).

The *Fenix* was captured by Admiral Sir George Rodney off Cape St. Vincent in 1780 and was reclassified as a Second Rate by the British as a result of its dimensions. It was renamed *Gibraltar* and modified to fit 80 guns: thirty 24-pounders were positioned in the gun deck, thirty-two 18-pounders were set in the upper deck, twelve 9-pounders were placed in the quarterdeck, and six 9-pounders in the fore-castle (Lyon, 1993). In Figure 12, the *Fenix*’s deck plans are depicted.

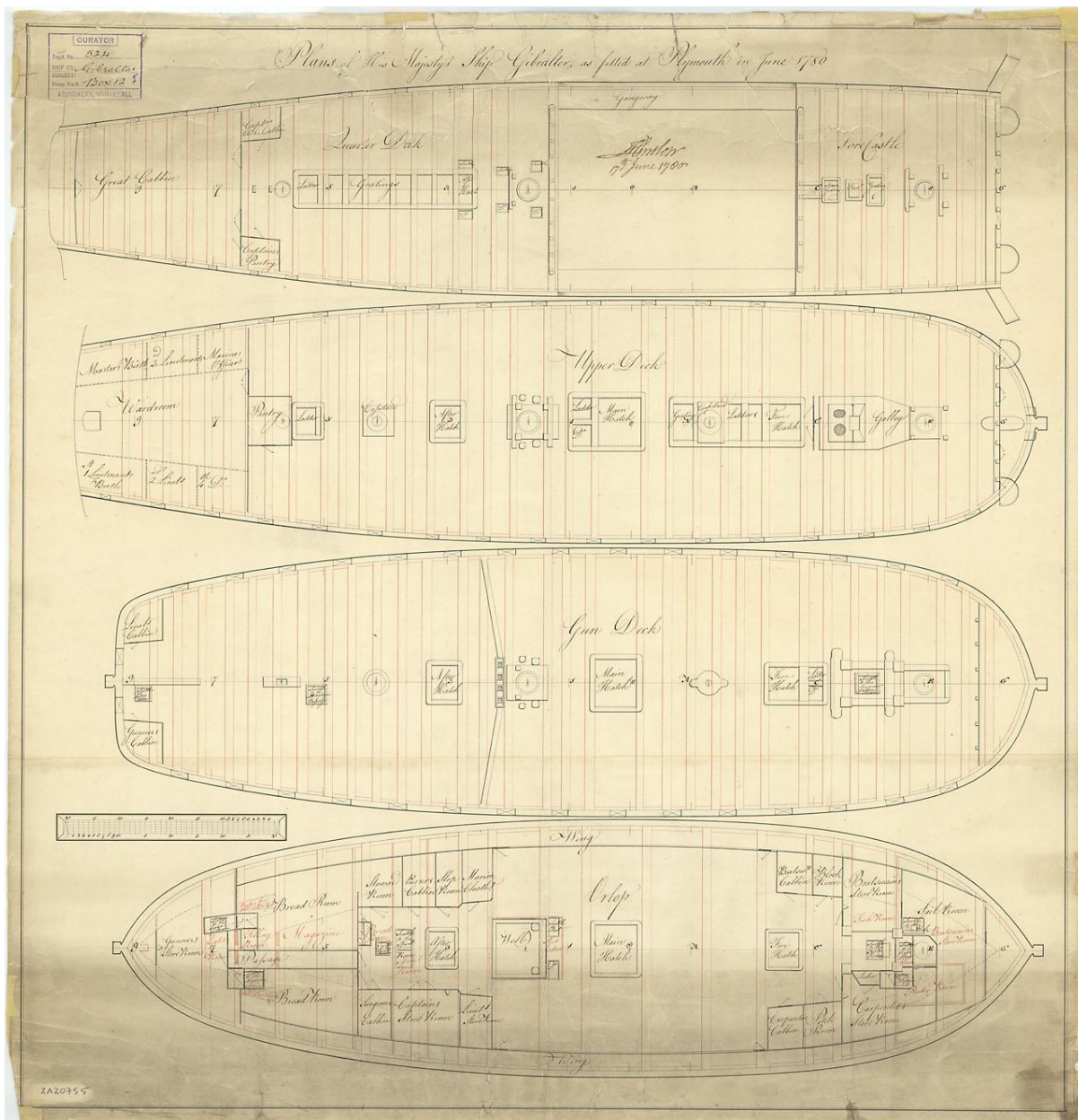


Figure 12: In order from top to bottom, the quarterdeck and forecastle, the upper deck, the gun deck, and the orlop deck plans for the *Gibraltar* Spanish Prize after refitting in the Plymouth Dockyard in 1780 (Henslow, 1780).

The *San Miguel* was a Spanish prize captured by the British in 1782. It was a 74-gun third rate ship with improved dimensions for sailing quality that previous models such as the 74-gun *Fenix* did not have. The length of its gun deck was 182 feet 1 inch; the length of its keel for tonnage was 149 feet 7 inches; the breadth moulded was of 48 feet 11 inches; the depth in hold was of 20 feet 8 inches; and its tonnage was of 1,908. This meant the ship was longer, narrower, shorter in height, and lighter than models previous to this period including

both the *Princesa* and the *Fenix*. Its cannon placement was twenty-eight 32-pounders on the gun deck, thirty 18-pounders in the upper deck, twelve 9-pounders in the quarterdeck, and four 9-pounders on the forecastle (Lyon, 1993). Figure 13 depicts the body plan of the *San Miguel* prior to refitting in the Portsmouth Dockyard in 1783.

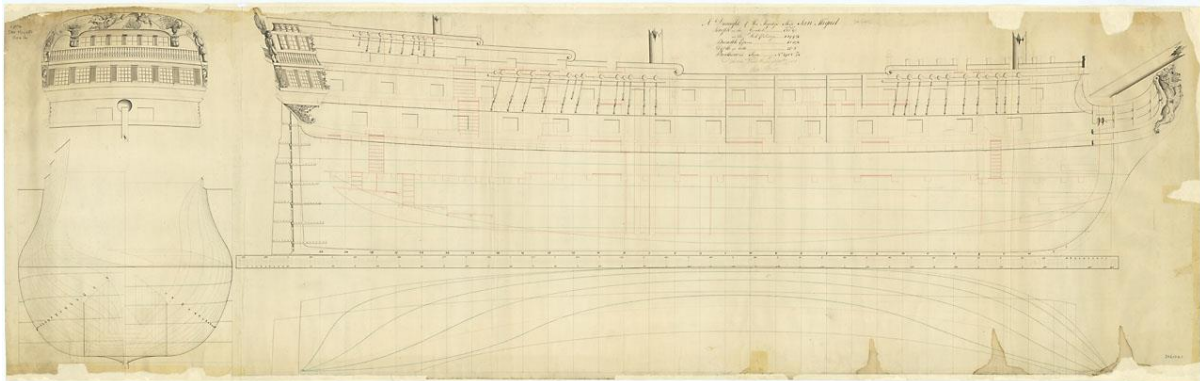


Figure 13: Spanish San Miguel 74-gun ship prior to refitting in the Portsmouth Dockyard in 1783 (White, 1783).

The 112-Gun Ship

In 1797, during the French Revolutionary War, a Spanish First Rate ship was for the first time captured by the British, the name of this vessel was the *San Jose*. With each capture, the British kept adapting new techniques onto building longer, narrower, and lighter ships. This would be the largest Spanish prize captured by the British in the eighteenth century; it would also be one of only two First Rates to be captured, the other being *Salvador del Mundo*. In Figure 14, a table shows the ship dimensions of some of the largest Spanish ships captured including both of these First Rates.

Ship Name	Ship Rate	Length of Gun Deck	Length of Keel for Tonnage	Breadth Moulded	Depth in Hold	Tonnage
<i>San Jose</i>	112-Gun First Rate	194'3"	156'11"	54'3"	24'3"	2,456
<i>Salvador del Mundo</i>	112-Gun First Rate	190'	152'11"	54'3"	23'3"	2,397

<i>San Miguel</i>	74-Gun Third Rate	182'1"	149'7"	48'11"	20'8"	1,908
<i>San Nicolas</i>	82-Gun Third Rate	179'9"	148'4"	49'7"	20'1"	1,942
<i>San Isidro</i>	72-Gun Third Rate	176'	144'1"	48'11"	20'1"	1,836

Figure 14: Table of ship dimensions of largest Spanish prizes captured by the British (Winfield, 2007).

Both the *San Jose* and the *Salvador del Mundo* First Rates were captured in St. Vincent in 1797; however, owing to severe damage, the *Salvador del Mundo* was never fitted for sea by the Royal Navy and was finally broken up in 1815. Therefore, the *San Jose* was the only First Rate prize to have served in the Royal Navy. It contained 114 guns divided in three separate firing decks. In its gun deck, the *San Jose* carried thirty-two 32 pounders; in its main deck, the ship contained thirty-two 24-pounders; in its upper deck, thirty-two 12-pounders; in its quarterdeck, twelve 9-pounders; and in its forecastle, six 9-pounders. It was refitted in 1801 to fit 112 cannon, two less than the Spanish model in the gun deck. It was then renamed the HMS *San Josef* before being commissioned as flagship of Admiral John Thomas Duckworth. It was not until 1849 that she was broken up (Lyon, 1993). Figure 15 depicts the *San Jose*'s body plan prior to being refitted.

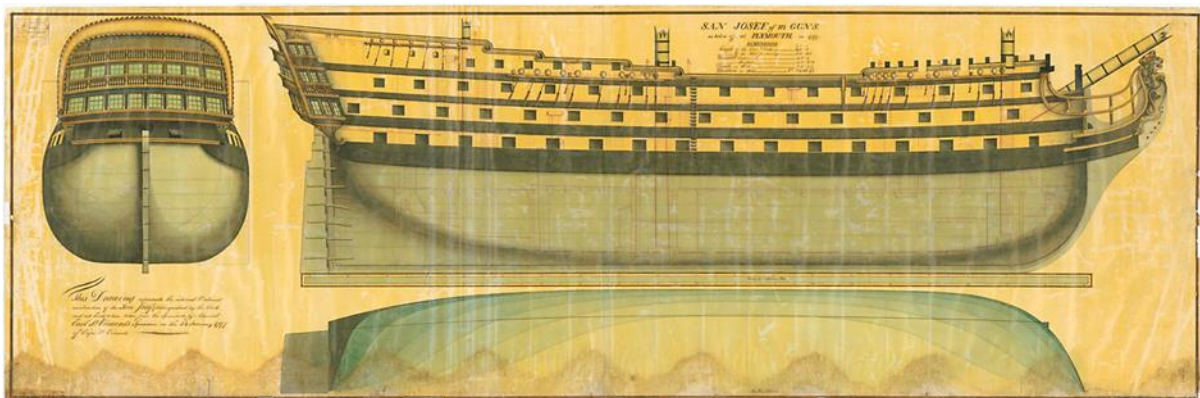


Figure 15: *San Jose*'s body plan prior to alterations and refitting. As a result of the glorious capture and size of this prize the Admiralty draughts were coloured, something very rare in this time period (Anon., 1799).

The capture of the Spanish ship *Princesa* revolutionized the Royal Navy's ship designs

to come. These new ships would be stronger, longer, narrower, and shorter than previous models granting them more power and manoeuvrability than ever before. The better understanding that longer two-decked ships were superior to short three-deckers as the centre point of gravity was lowered, allowed these ships to encounter heavier storms while maintaining stability (Lavery, 1987). Ships were becoming larger and larger for both the Spanish and the British and soon the Royal Navy had such large vessels that for the first and only time, they were able to capture two of the Spanish First Rate ships and place the HMS *San Josef* under service of the British navy.

Chapter 5: How are these captures/adaptations reconstructed today from the archaeological record?

Maritime archaeology has been a fundamental part of uncovering the history behind past societies and their relation to the sea. Few captured ships have ever been found, excavated and recorded by archaeologists. There are, however, two main excavations of captured prizes. The first is the *Santa Monica*, a Spanish 25-gun frigate captured and refitted by the British in 1779 and sunk near St. John in the U.S. Virgin Islands in 1782 (Rodgers, et al., 2002).

The Second excavation is that of the HMS *DeBraak*, a 16-gun brig-of-war. This was not a Spanish vessel but it had an interesting history worth mentioning in this paper. The HMS *Debraak* was a British cutter captured by the French who sold it to the Dutch in 1781. It was then recaptured by the British in 1795 and converted into a brig meant to make its way to North America as part of a convoy. After a storm, this ship was lost before reappearing in Delaware with a captured Spanish prize. It was here that strong winds hit the ship unexpectedly and quickly capsized and sank it with a large portion of its crew (Beard, 1989).

Excavating the Santa Monica

The HMS *Santa Monica* was a 25-gun Spanish frigate captured by the HMS *Pearl* in 1779 during the siege of Gibraltar. As a result of the higher-calibre guns the Spanish used on their ships, the Spanish vessel was refitted by the British and converted into a 36-gun frigate holding more guns of lesser calibre, as can be seen in the picture in Figure 16. The ship had a length of 145 feet, a beam of 38 feet 7 inches, and a draft of 11 feet 8 inches while serving a

crew of 202 men. After refitting her, she sailed for service of the Royal Navy in the Caribbean (Rodgers, et al., 2002).



Figure 16: Painting of the HMS *Santa Monica* in 1779 by Thomas Whitcombe (Rodgers, et al., 2002).

The HMS *Santa Monica* sank off the coast of St. John after striking a rock on April 1, 1782. She was patrolling the southwest area of Norman's Island with orders to attack five American ships which had unsuccessfully raided the British Virgin Island of Tortola. Along with a convoy, it was sent to retaliate when it hit an unseen rock which quickly filled the hull with water. John Linzee, captain of the frigate decided it best to run the vessel ashore at Coral Bay, the nearest harbour, on the island of St. John. Just one hundred yards off the coast in Round Bay, the vessel sank unable to reach the shore in time, at a depth of approximately 25 feet of water (Gleason, 2006). A map of the location of the HMS *Santa Monica* can be seen in Figure 17.

In 1968, a project to identify all the U.S. Virgin Island shipwrecks was compiled by Edward L. Towle the director of the Caribbean Research Institute in the U.S. Virgin Islands. It was not completed but it included 134 shipwrecks from the sixteenth up until the nineteenth centuries. This list included names of ships, country of origin, wreck date, and any other additional information found in the British and Spanish National Archives (Towle, et al., 1976).

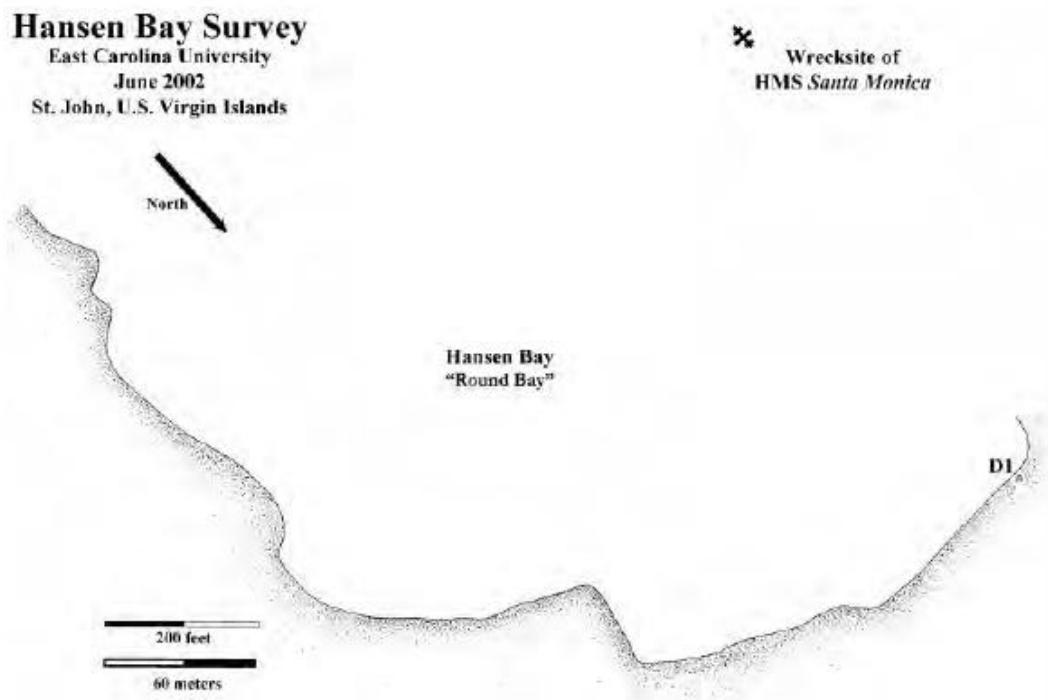


Figure 17: Map of HMS Santa Monica in Hansen Bay (Rodgers, et al., 2002).

Three years later, in 1971, Alan Albright a researcher that had previously worked on the 1968 project conducted a new excavation primarily focused on the *HMS Santa Monica*, one of the shipwrecks assembled on the 1968 list. The excavation was conducted outside of the wreck as well as on anything laying on top of the wreck; the ship however, was meant to be left undisturbed (Albright, 1973).

The *HMS Santa Monica* seemed to be split into two main sections. The first was the main body consisting of 60 feet of wooden hull to be lying at a depth of 19-24 feet. This was roughly 20 feet forward from the main mast to about 40 feet behind it, resting on the sand

of the seafloor. The second part was the stern of the ship, which stuck out of a ledge until degradation broke it apart and it fell into deeper waters. An excavation in the mid-section of the vessel led to the discovery of several artefacts including glass bottles, metal wares, ships fittings, and pottery. Using an airlift, all of these objects were extracted. The ceramic collection had a large variety of pieces (Albright, 1973).

In 2002, a two-part investigation was made by East Carolina University at the west end of the island of St. John, in the U.S. Virgin Islands. The first part, consisting of a remote sensing survey which included side-scan sonar and a magnetometer, took place in the winter. The main aim of this project was the mapping and identification of submerged cultural resources found in this part of the island. The second part of the investigation took place in the summer. This portion of the research included an excavation of the previously mapped sites to properly identify them. Several targets were re-surveyed and divided amongst three main sites: Leinster Bay, Coral Bay, and Hansen Bay. The main section of the Hansen Bay site to be studied was the HMS *Santa Monica* (Gleason, 2006).

The remains of the *Santa Monica* wreck measure 46 feet in length and 20 feet in width. Concretion in the bottom of the hold area contains many artefacts still concreted under the hull including several casks still imprinted on them. A detailed site plan of the cask impressions as well as the vessel's hold can be seen in Figure 18. The concretion likely holds in place less than 20% of the much degraded planking floors, keel, keelson, and outer hull. In the magnetometer readings, a large portion of the iron ballast is still anchoring the ship in its resting place (Rodgers, et al., 2002). The magnetic survey of this ship can be seen in Figure 19.

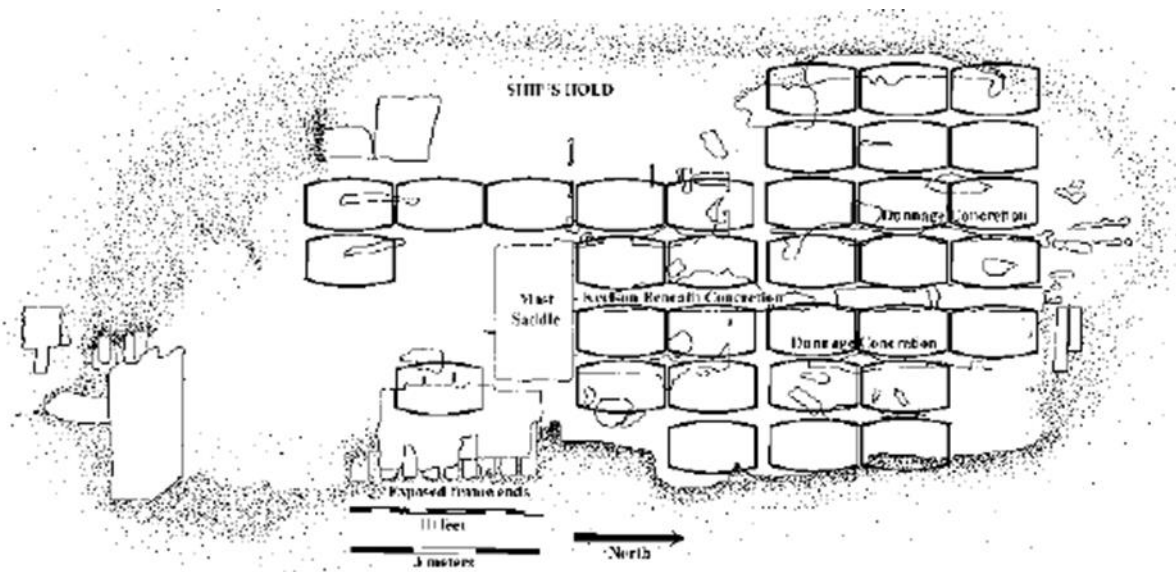


Figure 18: HMS *Santa Monica* site plan with overlaid arrangement of casks inside the wreck's hold (Rodgers, et al., 2002).



Figure 19: Magnetic survey of the HMS *Santa Monica* (Rodgers, et al., 2002).

There is no archaeological or historical evidence to contradict the possibility that the remains of a ship in Hansen Bay are actually the ruins of the Spanish and then British frigate HMS *Santa Monica*. All the archaeological material suggests that this is indeed the 36-gun frigate. Most significantly, the mast saddle is indicative of an eighteenth century ship (Rodgers, et al., 2002). The bottles and ceramics analysed were identified as late eighteenth century (Albright, 1973). The lack of space suggests a heavily built warship even though no cannon have been identified. Furthermore, the ship is oriented northbound, which fits the historical accounts of it heading directly for the shore to attempt grounding. Finally, an analysis of the coral just south of the wreck indicates it was crushed indicating that the vessel was drawing lots of water right before it sank (Gleason, 2006).

The H.M.S. *DeBraak*

The HMS *DeBraak* I worth mentioning in this paper because of the analysis that can be made between the information found in the National Archives in London and the archaeological data found in the wreck. Therefore, the main objective of this section is to identify the ship's information gathered from the drafts made in Plymouth in 1797 during the vessel's refitting. This will then in turn be compared to the information extracted from the wreck. The examination will then bring aim to promote research on shipwrecks relating to captured prizes as a result of the important information that this research can bring to light.

The *DeBraak* was built as an English cutter in the late 1770s quite possibly fit for duty as a privateer. In 1781, the French captured the ship and sold it to the Navy of the Dutch Bavarian Republic. The cutter was refitted here and became part of a convoy for the Dutch

Navy. In 1795, declarations of war were made between the British and the Dutch as a result of the new allegiance between the Dutch Bavarian Republic and France, Britain's enemy. These relations were broken while the ship sailed near the Falmouth Harbour in the south-western corner of England and was captured by the Royal Navy. In 1797, it was officially commissioned as a member of a convoy intended to sail to North America. Once it had reached Delaware, strong winds caused it to capsize and sink almost immediately (Beard, 1989).

Prior to the 1797 refitting in the Plymouth Dockyard, the DeBraak went through a detailed survey. The vessel showed that the ship was 84 feet long on the upper deck, had a keel for tonnage of 57 feet, a beam length of 29 feet, a depth of hold of 11 feet, and 255 tons of burden. The ship was then stripped from all its cargo including guns, stores, furnishings, mast, and rigging and sent to the dry dock for the drawing of the ship's plans before any alterations were made (Beard, 1989). The vessel's plans prior to its modifications can be seen in Figure 20.

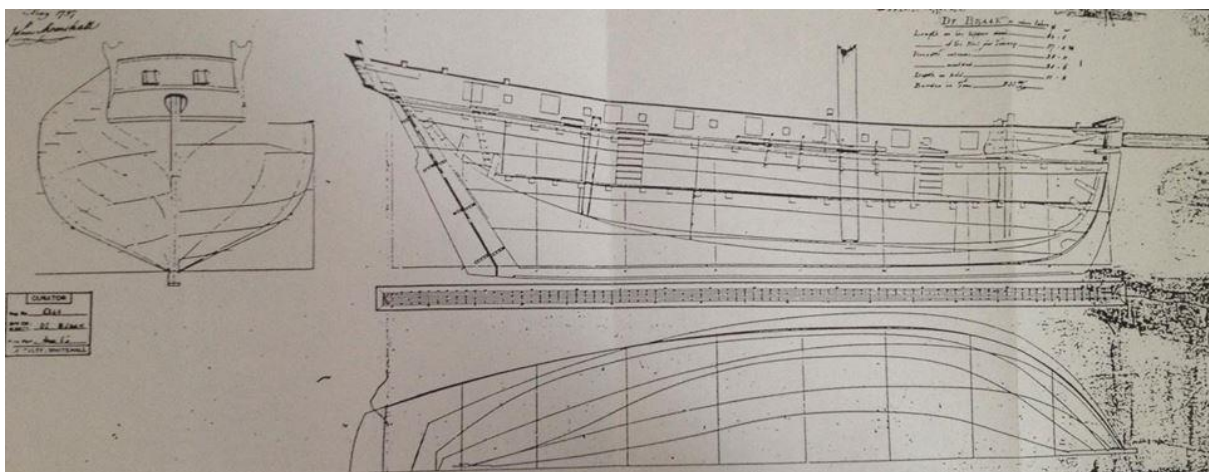


Figure 20: HMS DeBraak prior to conversion to brig-of-war in 1797 (Beard, 1989).

The *DeBraak* cutter underwent widespread refitting and was converted from a cutter into a brig of war. The primary modification to the ship was converting it from a single-masted cutter into a two-masted brig in order to lower the man power required to manoeuvre the sails. These alterations were mainly accomplished by rearranging the interior of the ship but also included modifying the rake of the bowsprit and removing the bowsprit step and posts for the addition of the fore mast (Beard, 1989). Figure 20 shows the *DeBraak* prior to the alterations made in Plymouth in 1797. Figure 21 shows the plans for the alterations to be made to the vessel.

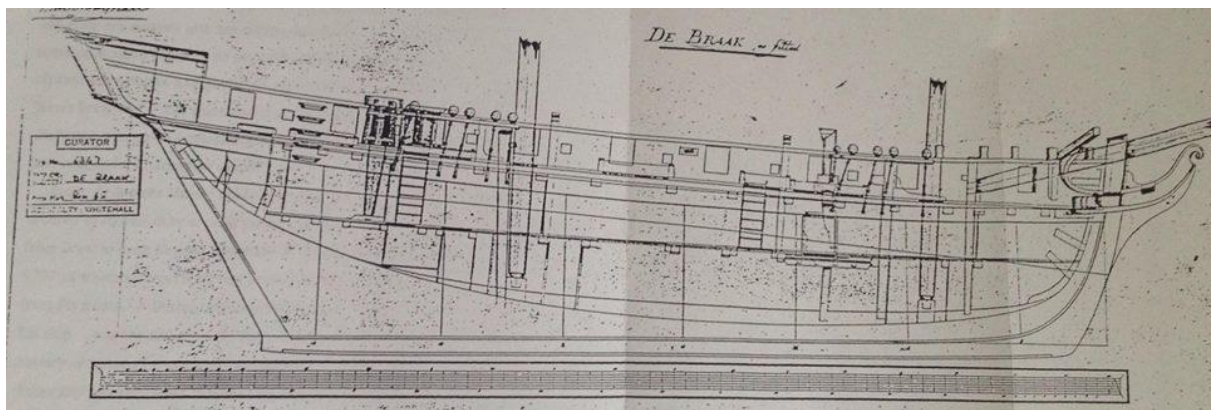


Figure 21: Plans for alterations of the HMS *DeBraak* in Plymouth, 1797 (Beard, 1989).

Changes to the stern can be seen in Figures 20 and 21 as the ship went through major renovations. Prior to 1797, the ship had maintained an even sheer from bow to stern; additions were made on the port and starboard by expanding them 6 feet 6 inches. This took place for the insertion of 3 feet 6 inch cabins which were made in the stern section of the upper deck. The port cabin was the captain's pantry, while the starboard cabin was the clerk's office. The aft ladder way was replaced for a hatch slightly freeing some of the space on the ship. The original pumps were also detached and were substituted by a new ladder way that was added to the officers' quarters. In addition, in the lower deck, two large cabins on the port and starboard of the ship were replaced by six officers' cabins: on the port side

the gunner, the surgeon and the purser; while on the starboard side the lieutenant, the master and the captain's clerk. Two more cabins were added on the bow, one for the carpenter, the other for the boatswain. Finally, a galley which included a stove was added for the journey across the Atlantic (Beard, 1989).

These changes did not influence the cannon capacity as the *DeBraak* continued to carry sixteen 24-pounder carronades in its main deck. There was however, one more alteration to the ship; the hull was sheathed in copper to protect it from marine worms which commonly bore inside the timber in tropical waters where the HMS *DeBraak* was headed (Maurer, 1950).

The HMS *DeBraak* sailed to North America in 1798 when strong weather separated it from the rest of the fleet. Captain James Drew, commander of the ship, continued to sail west hoping to reunite with the convoy when it spotted and captured the Spanish merchant ship *Don Francisco Xavier*. The *DeBraak* was running short on supplies, especially fresh water, and was forced to stop to resupply in the Delaware Bay. It was here that a storm unexpectedly hit the ship sinking it almost immediately and causing most of the crew, including the captain, to perish. The survivors quickly made their way to the Spanish prize and sailed to the Lewistown Harbour. Exaggerated stories by the survivors began to spread about the legendary treasure of the *DeBraak*. Since 1889, treasure hunters sought this lost treasure. It was not until 1984 that a salvaging company by the name of Sub-Sal, Inc. discovered the wreck at the bottom of the Delaware Bay. (Ward, et al., 1986)

The Nevada-based salvage company, Sub-Sal located the *DeBraak* and from 1984 to 1986 an excavation was led to uncover the mythological treasure. In 1986, the hull was extracted with a crane. This was poorly executed and the cables cut deeply into the hull's

timbers. During the extraction, all the sediment-bearing artefacts inside the hull fell out, leading to a devastating loss of archaeological data. Once extracted, the ship was transported to a storage unit for conservation. Some loot was recovered, but no treasure was ultimately found and the destruction of the HMS *Debraak* became a martyr for maritime archaeologists against treasure salvagers (Ward, et al., 1986).

An analysis was made by archaeologists for the next three years to study the hull and the remains of the HMS *Debraak*. From the remnants, 40% of the starboard side remained as well as a minor segment of the port side. In these areas, parts of the keel, keelson, sternpost, stem works, framing, ceiling and hull planking, knees, riders, rudder, bowsprit, mast steps, shot lockers, deadwood and several other pieces were catalogued (Beard, 1989).

The *DeBraak* belonged to three separate European powers that used very different naval construction techniques. This meant that the ship went through an unimaginable number of fittings to fall into the specifications of the French, the Dutch, and the British. As stated earlier in the chapter, the *DeBraak* was probably constructed as a privateering vessel by the British, in the 1770s. It was then captured by the French and sold to the Dutch who refitted and used her as a naval vessel to convoy or patrol for the Dutch Bavarian Republic. Subsequently, it was recaptured by the British and sold to the Admiralty for refitting and service in the Royal Navy as a brig of war. Even with the refitting information from the body plans made in Plymouth, the archaeological record is essential for investigating a ship that was part of so many refits by separate nations (Beard, 1989).

The archaeological data was recorded for the most part by archaeologists examining the HMS *DeBraak* after the salvaging company Sub-Sal had already left. Some of the

construction techniques from England and the Dutch Bavarian Republic were analysed in the ship's remains. The keel was attached by two vertical scarph joints, these are 4 feet 6 inches, the exact specifications used for British ships. The stern construction showed some of the original deadwood used when building the vessel; some of the pieces had decomposed through time (Beard, 1989).

Several additions from the last fitting in Plymouth in 1797 were identified in the wreck. The capstan, with its spindle and all of its components, was added at this point and parts of it survived and could be identified as parts of the fitting process in the *DeBraak's* Admiralty plans. The rudder was another identifiable piece of equipment added in Plymouth; its four components survived the wreckage and were salvaged along with the hull. The fasteners had the name FORBES stamped on them. This was a company which supplied copper fittings to the Royal Navy in the late eighteenth century. Finally, copper sheathing was the last identifiable remnant of the wreck which gave British provenience. The sheathing contained stamps which indicated that the copper had been applied to the ship on the Plymouth Dockyard in June, 1797 (Beard, 1989).

There were several other identifiable objects aboard the HMS *DeBraak* which gave Dutch provenience. Several of the rooms were added during the last fitting and indicate possible Dutch modifications as a result of the vast irregularity that can be observed in the framing of the ship. Unlike the keel scarphs, the keelson's scarphs measured 3 feet 7 inches; these do not fit the British Admiralty's specifications which could lead to the conclusion of a refit by the French or Dutch (Beard, 1989). Along the length of the keel ran a hog made out of timber, in this specific situation, the timber probably came from Malaysia. If this was the

case, the timber could be a Dutch refit when the ship travelled to the East Indies (Goodwin, 1988). Most of the other surviving pieces had no identifiable origin.

The study of captured ships in the archaeological record has proven that there is much yet to be learned. It is necessary to continue searching for ships and to conduct careful methodological excavations to record these vessels and learn about their past as well as their evolution through the processes of refitting these prizes. Wrecks like the HMS *DeBraak* and undoubtedly many more have been sacked and destroyed by looters and salvagers moving every last piece in the search for treasure. These careless processes led to the ultimate destruction of the truly important treasure, the context of the artefacts and the information that these sites can give archaeologists. A great deal of information was still gathered from the *DeBraak* but it was far exceeded by the amount of information lost. On the other hand, excavations such as the *Santa Monica* have become immense sources of information. This site is a prime example of what archaeologists should do and why regulations need to be maintained in order to excavate correctly and achieve the extraction of the maximum amount of information possible.

Conclusion

In the eighteenth century, the British navy went through several changes in ideologies of ship construction. These changes began through a movement in the Royal Navy shipyards to adopt foreign ship designs from captured Spanish and French prizes. The Spanish influence on ship construction led the British to refit most of their fleet and modify all future designs of their vessels. These alterations to the Royal Navy produced a new and improved naval fleet which by the end of the eighteenth century would be considered the strongest in the world.

Spanish ships were considered to be larger and stronger than British ships for the first half of the century. The British had superior crews to the Spanish as most seamen and officials were experienced sailors prior to joining the Royal Navy. The Spanish on the other hand, had a harder time finding experienced seamen to man their vessels. When the British adapted Spanish ship design and began constructing vessels of the same quality, size, and strength; the Spanish no longer had the upper hand in battle and the outcome of a skirmish relied heavily on the crew and the tactics used. It was during this time that the British navy was finally able to prove its impressive crew by engaging same type vessels of Spanish origin and coming out victorious for the majority of the battles (Gardiner, 1996).

For the first half of the century, a set of Establishments, which had begun in the early 1660s, were being implemented by the Royal Navy Board. These Establishments aimed to standardize vessel production to specific dimensions as well as fit the Royal Navy ships with a specific amount of guns of a certain calibre (Lavery, 1987). These implementations would ultimately give an identical layout to all British ships of specific ratings. Training could then

become standardized and officers and crew members could become easily familiar with all ships (Gardiner, 1996).

Owing to a lack of mathematical knowledge at the time, most of the inventions developed for sailing vessels were made through trial and error. Spanish and British ship designs were vastly different as their developments went their separate ways to best fit their diverse needs. The British favoured ships with greater breadth, depth, and height. The Royal Navy assumed that increasing a ship's breadth would grant it more stability while simultaneously increasing the size of the vessel's hull to fit more cargo. Expanding the depth and height of the ship would further increase the hull space, granting more comfort for the officers aboard the ship (Lavery, 1984). Expanding the hull space was also essential for British ships as they were primarily designed for long voyages around the world. A major disadvantage to the short length of British ships was the centre of gravity of the vessels which was too high, lowering ship stability and causing the vessel to "roll" significantly. This high centre of gravity also incremented the chance for the ship to capsize during heavy storms. Finally, a major flaw in ship design by the British was the construction of short three-decked Third Rate vessels. These ships were considered to be the worst in the navy attributable to their extremely poor sailing qualities (Lavery, 1987).

Spanish ships were vastly superior to British ships for the first half of the eighteenth century since the Spanish constructed larger and more potent vessels. These ships however did not lead to overwhelming victories. The Spanish navy constructed their ships for speed, and were therefore longer, narrower and shorter in height than those of the Royal Navy. Unlike those belonging to the British, the Spanish Third Rate ships were significantly longer and only contained two firing decks. The hull space was lower than British ships since these

vessels were meant for traveling shorter distances. For the most part, these journeys were limited to the Atlantic and ships would stop to resupply in several locations along the way; thus, there was no real need to be independent of the shore for a significant amount of time. As the eighteenth century progressed, Spanish vessels continued to increase in size (Gardiner, 1996).

In 1740, during the War of the Austrian Succession, the Spanish Third Rate ship *Princesa*, was captured by the British. This was a vessel with seventy guns distributed amongst two long decks. The ship was then brought to England for inspection by the Admiralty. This model proved to be ideal for naval warfare as a result of its excellence in fire power exceeding all ships of lower rating, while at the same time maintaining greater sailing qualities than any higher rated vessel (Dodds & Moore, 1984). The *Princesa* was therefore the beginning of a new era in Britain's navy.

The ship plans for the *Princesa* proved invaluable and were adapted to the British models. Soon 80-gun vessels carrying three gun decks were modified into longer 74-gun ships containing only two gun decks. These alterations proved themselves to be vast improvements from previous vessels and all sorts of rated ships began to be constructed using the new Spanish layout (Dodds & Moore, 1984).

As increasing numbers of Spanish ships were captured by the British, more of the Spanish naval architecture became incorporated to the Royal Navy. British ships were being built longer than ever before as this alteration proved essential to improving the sailing quality of the vessel. Just as the Spanish continued incrementing the size of their ships, so too were the British. Naval warfare was revolutionized when the outcome of the battle was no longer defined by the nation with the larger vessels but instead by the crew and the

tactics of the vessels themselves. The British always had a higher skilled crew and employed better naval warfare tactics. Adding larger ships to the Royal Navy furthered the chances of victory by the British transforming them into the most powerful navy in the world (Gardiner, 1996).

Archaeological work has proven essential for the identification of the process of refitting in captured ships in the eighteenth century. This is the best record for analysing the influence of foreign ship design on the Royal Navy. Work on the HMS *Santa Monica* is invaluable for its identification of a Spanish captured prize by the British and its refitting process in England. This vessel is the only excavated Spanish prize and retains a vast amount of information on the adaptations done by the British on captured Spanish ships. The HMS *Santa Monica* is the only vessel of its kind found so far, and amongst so many captured ship designs, it is the only archaeological site found and excavated for the study of its evolution (Gleason, 2006).

Contrarily, the excavation of the HMS *DeBraak* by a salvaging company led to the obliteration of an immeasurable wealth of archaeological data. This excavation by the salvaging company Sub-Sal caused severe damage to the hull of the wreck as well as the artefacts found along with it in the search for a non-existent treasure. Archaeological work after the extraction of the hull and its associated artefacts proved how valuable this ship was. Its architecture showed British, French and Dutch influence as it belonged to all of these nations at separate times and went through endless amounts of alterations for the separate purposes it served each of those nations during the late eighteenth century (Beard, 1989).

Historic shipwrecks are the most threatened archaeological resource as so many salvagers and treasure hunters try to exploit them for financial gain. It is important to enact legislations to protect these and to have archaeologists study them for the information that they can contribute to the field. Future research and excavations should aim to elucidate the degree of influence of Spanish ships on the British navy. As a result of the heavy emphasis on the French influence to the British, the impact of Spanish ship design on the Royal Navy has been understudied. It is by further studying Spanish prizes and British wrecks of the second half of the eighteenth century that a more detailed analysis can be conducted on the effects that British captures of Spanish ships had on the Royal Navy and its ship designs.

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