

QUEEN ANNE'S REVENGE:
A SYSTEMS ANALYSIS OF BLACKBEARD'S FLAGSHIP

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by
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A Systems Analysis of Blackbeard's Flagship

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Abstract

The goal of this study was to examine the life history of the pirate flagship *Queen Anne's Revenge* using a functional systems approach to observe how the ship affected and was affected by the macrosystems operating around her and the microsystems operating within her. To this end, I examined the archaeological and historical records relating to the ship and divided her life history into four categories: privateer, slave transport, pirate ship, and shipwreck. For each category, I observed or inferred the natural and human-directed changes that the ship experienced and assessed their impact on the internal functionality of the ship and on the wider cultural systems with which she interacted. Using this approach, I was able to improve my understanding of the ship herself and the culture of the period in which she operated. I am now able to draw inferences and form hypotheses regarding the unknown original construction of the ship that became *Queen Anne's Revenge* and the cultural factors that led to the rise and prevalence of piracy during her use-life (ca. 1690-1720). I hope to expand upon this study and test these hypotheses in my future research.

Chapter 1: Introduction

Queen Anne's Revenge is best known for her association with the pirate Blackbeard, but her history and significance go far deeper than her service as a pirate flagship. Before she became *Queen Anne's Revenge*, she was *La Concorde de Nantes*, a French merchant ship used to transport slaves between Africa, Europe and the European colonies; before that, she was the French privateer frigate *La Concorde*, a warship that served in the War of Spanish Succession (Queen Anne's War) during the late seventeenth century (Johnson 1724, Konstam 2006, Konstam 2008, Wilde-Ramsing 2009). This vessel can be used to study the social and natural pressures placed on three specific types, and at least two distinct categories, of ship during her lifetime. The goal of this study is to begin the study of these social and natural pressures through a detailed analysis of the life history of *Queen Anne's Revenge* using the available historical record and archaeological reports and to gain a better understanding of how ships reflected the broader economic and political systems of the crown nations of Europe and the pirates who roamed the Caribbean during this final period of the Golden Age of Piracy. In conducting this research, I hope to show that we may advance both history and archaeology by applying a life history approach and systems framework to significant historical artifacts and features.

Chapter 2: Background

a. Underwater Archaeology

Underwater archaeology refers to the excavation and analysis of submerged archaeological materials. These materials can include underwater cities and land structures such as Alexandria in Egypt and Port Royal, Jamaica as well as shipwrecks from any age of seafaring, from relatively modern vessels such as *RMS Titanic* to classical Greek cargo vessels (Carlson 2003). At its root, archaeology conducted underwater is no different from archaeology conducted on the land; that is to say, the same questions are asked and similar methods are used to answer them (Green 2004). The most significant difference between the two archaeological processes lies in environment. Archaeology performed underwater requires very specific techniques and technologies that are rarely, if ever, used in terrestrial archaeology.

Many of these variations exist to preserve either the artifacts and site or the archaeologists themselves as they explore and excavate. Operating in an underwater environment introduces distinct hazards such as currents, limited visibility, extreme pressure variation, and an absence of breathable air. Most of the concerns to the safety of underwater archaeologists in particular are addressed by their diving gear and other specialized research equipment such as Remote Operated Vehicles (ROVs) used to explore hard-to-reach or deep sites and special air-filled bubbles placed at sites in case of equipment failure (Bass 2006).

The technologies and techniques needed to identify and explore a shipwreck vary greatly depending on the wreck's depth below the water's surface. For shallow wrecks in clear water, a simple visual survey, much like a surface survey in terrestrial archaeology,

may be sufficient to locate and identify a site or materials. In this case, the archaeologist may stand on a boat or on the shore and look into the water to locate cultural materials. An alternative visual survey method, known as tow-boarding, involves a board pulled by a boat. The archaeologist performing the survey holds onto the board and tilts it forward to submerge beneath the water, thus allowing more direct observation of the bottom (Mather 1999). Visual surveying, especially direct and unaided observation, is very limited by the depth and clarity of the water and by how fully buried the wreck in question is.

Fortunately underwater archaeologists are not entirely dependent upon their eyes when locating, identifying, and studying sites and artifacts. Other methods include magnetic sensing, acoustic survey, and various types of robotic- and vehicular-assisted investigation. Magnetic sensing uses an electrical charge that causes hydrogen nuclei present in the water to spin. When the charge is shut off, the nuclei return to their original positions and their movement can be measured. Any anomalies observed at this stage must be caused by the presence of a ferrous material on or below the ocean floor. Magnetic sensing surveys are limited by the size and distance of objects from the sensor. If a very large object is buried very deeply it will show up as a minor anomaly. This method is also limited by its reliance on magnets. If a shipwreck contains no artifacts that respond to a magnetic pull, then this method will be ineffective (Mather 1999).

Acoustic imaging, more commonly known as sonar, uses the movement of sound waves to detect the presence, and in some cases identify the type and map the location of, archaeological remains on or beneath the floor of a body of water. When using this method, archaeologists use an emitter to send one or several high-frequency sound beams

into the water. The sound beams will travel until they come in contact with the floor or with another object at which point they will bounce back to be recorded by a waiting sensor. The sensor will detect the depth to which the beam traveled before bouncing back and will map the water's floor accordingly. This method can sometimes be used to identify and map the boundaries and dimensions of intact shipwrecks before any other investigation is conducted (Mather 1999).

Once a maritime site is positively identified, archaeologists can excavate the site and collect artifacts. There are a few necessary differences between underwater excavation and surface excavation; scuba gear is often necessary and the archaeologists and crew members must know how to operate in an underwater environment with currents and pressure differences, but if the site is not in deep water the basic procedure is the same. Deep water sites often require specialized equipment such as the ROVs mentioned above and special techniques to allow the excavators to surface with no ill effect due to pressure differences between the site and the surface (Bass 2006; Mather 1999).

After artifacts have been recovered from an underwater site, they must be cleaned and, in many cases, stabilized. Wooden artifacts, for instance the hull and masts of a sailing vessel, break down molecularly when exposed to very wet environments or kept completely underwater for long periods of time. When the wood becomes waterlogged and stays waterlogged for many years, it becomes very porous as the cellulose and lignin in the wood cells themselves break down and are replaced by water. As long as these artifacts are kept in the water they will retain their shape but when they are exposed to a dry environment, the water that has replaced the cellulose in the wood will evaporate and

the wood will compact and warp. The wooden artifacts must, therefore, have the water replaced with something to help the wood hold its shape before it can be displayed or studied in any detail. In cases where the wood has been in salt water for a long time the salt must also be removed or the wood will be discolored and any iron artifacts associated with the wood (nails, clasps, bands, etc.) may be damaged (Hamilton 1997).

b. Discovery of *Queen Anne's Revenge*

In 1988, the private firm Intersal Inc. was granted permission by the North Carolina Underwater Archaeology Unit to conduct a search for the wreck of *Queen Anne's Revenge*, the flagship of the infamous pirate Edward Teach, or Blackbeard. Intersal Inc. focused their search in Beaufort Inlet, the area where the ship was known to have run aground and been abandoned (Figure 1). Under the direction of Mike Daniel, they were able to hone their search area to the portion of the inlet that would have been the entrance channel at the time *Queen Anne's Revenge* was grounded. In 1996, they located a shipwreck in the area, which they then scanned using a magnetic gradiometer to detect iron artifacts beneath the seabed. The scans identified many large iron artifacts such as cannons, anchors, and caches of cannonballs, indicating that the vessel was heavily armed when she went down. Teams of divers began excavating the site and removed many artifacts, including a bell bearing the date 1709, that indicate that this is the wreck of a large, heavily armed vessel dating between the late 17th and early 18th centuries. According to the historical record, the only ship of appropriate size and armament that sank in the region during that time period was *Queen Anne's Revenge*. The heavy cannons along with the wreck's size indicate that this was a vessel of war and the varied national origins of the cannons is indicative of a pirate vessel; typical military

vessels had cannons manufactured by their home country, but pirates took cannon from captured ships or traded for them with other pirate captains. While there is no single piece of evidence that concretely identifies the wreck as *Queen Anne's Revenge*, multiple lines of evidence point have prompted the state of North Carolina as well as the researchers and archaeologists involved to confidently conclude that it is indeed the famous pirate's vessel (Lawrence and Wilde-Ramsing 2001, Wilde-Ramsing 2009).

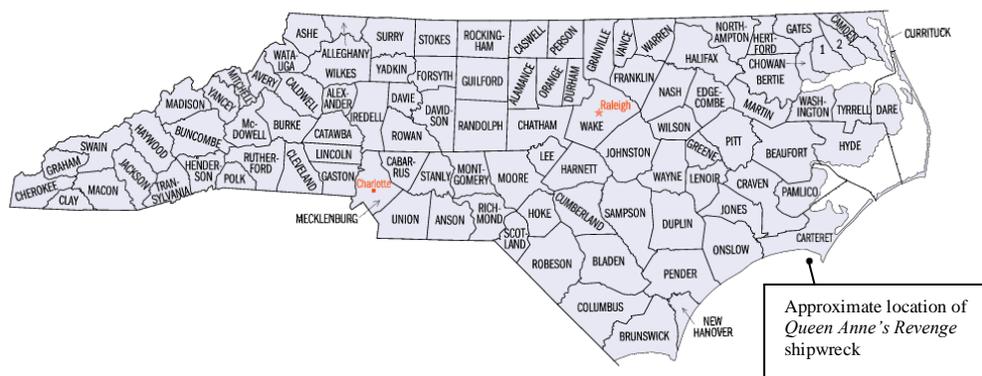
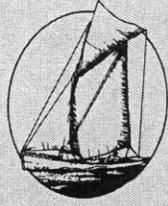


Figure 1: Approximate location of the *Queen Anne's Revenge* site, edited from U.S. Census Bureau map of North Carolina counties.

The site is still being excavated; artifacts and hull sections are being conserved and studied at the Queen Anne's Revenge Conservation Lab in North Carolina or are on display at the North Carolina Maritime Museum, the Graveyard of the Atlantic Museum, the North Carolina Museum of history, or the Smithsonian Institution. A visit to the Queen Anne's Revenge project website, managed by the North Carolina Department of Cultural Resources (NCDCCR), provides a complete list of attractions related to the Blackbeard and his ship as well as a discussion and examples of the artifacts that have been brought up from the wreck.



Tributaries

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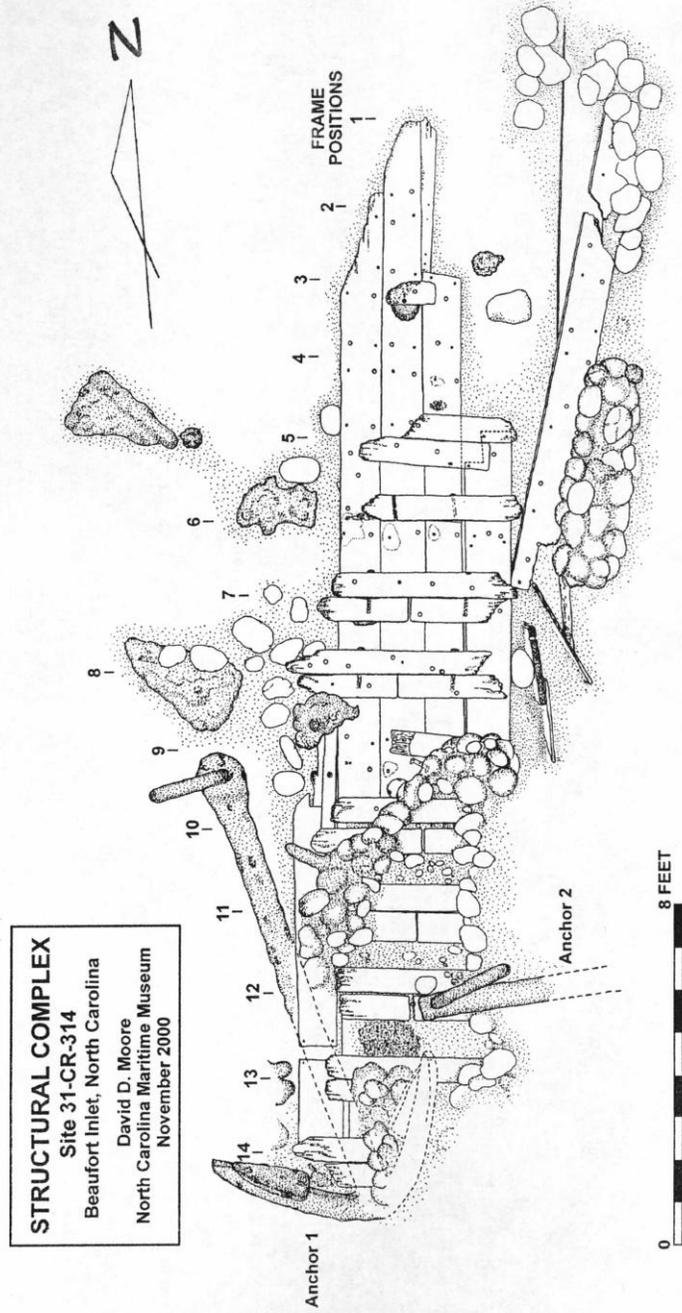


Figure2: Structural Complex Site 31-CR-314 (Moore, 2001).

Most of the artifacts that have been recovered are pieces of the ship herself. Such items include fittings, nails, and hull sections as well as less permanent objects such as ballast stones that would have been taken on or cast off when the ship changed cargo at port to maintain balance in the water (Callahan et al. 2001, Moore 2001). This is unsurprising since the vessel was abandoned after she ran aground and the escaping pirates would likely have carried all personal possessions they could take with them (Wilde-Ramsing 2009). Among the personal possessions that did remain to enter the archaeological record along with the shipwreck are drinking and serving vessels, plates and eating utensils, brass buttons and pins, game pieces, smoking pipes, sword and flintlock fragments, and a small amount of gold dust (NCDCR 2017). Examination of these artifacts could give us a glimpse into the daily lives of Blackbeard and his crew during the height of his infamy.

c. Historical background

i. *La Concorde* and Queen Anne's War

Through the end of the 17th Century and the beginning of the 18th Century, the nations of Europe sought to regulate piracy and privateering in the Caribbean. By 1701, France and England had developed trained privateer navies to fight alongside their official warships. When The War of the Spanish Succession (called “Queen Anne’s War” in the New World) broke out in 1701 with France and England competing for land in the American colonies, the two nations’ privateer forces preyed on one another’s trade and military fleets in the region. During this time, it was possible to amass considerable wealth in cargo and prizes (ships) sailing as a privateer and thousands of willing sailors took to the seas in search of plunder. *La Concorde* was armed and sailed as a French

privateer's frigate during this time (Konstam 2008, Wilde-Ramsing 2009), although it remains unclear whether she was of French origin or whether she had been captured and refitted.

An early interpretation of French records held that *La Concorde* was built in Britain in 1710, but this was found to be a mistake and the British origin hypothesis for the vessel was discarded by the project team (David Moore, personal communication 2017). The earliest records of *La Concorde* are as a privateer during Queen Anne's War. Official French records regarding the construction or acquisition of *La Concorde* are absent, either lost or never made. Wilde-Ramsing (2009) discusses the three most likely origins for the ship: she may have been constructed by the French Navy; she may have been captured as a prize and purchased by the Montaudoin family; or she may have been constructed privately as a privateer frigate and slave transport by the Montaudoins. If she had been constructed at the naval yard, her name would most certainly appear either in the construction records or on the list of ships approved by the king; it does not, so she was not likely constructed by the navy. She may have been captured, either as a merchant or an armed warship, and converted to a privateer. This origin has some support at least in the deposition of Mr. Henry Bostock, who spent time aboard the vessel in 1718; Bostock said she had a "Dutch" look to her, but there is no record of a prize matching the ship's description being taken during Queen Anne's War. Rene Montaudoin may have contracted a local shipyard to construct her as a privateer to sponsor, but no vessel named *La Concorde* appears on the record of ships that were thusly commissioned (Wilde-Ramsing 2009). Regardless, *La Concorde* was acquired by the wealthy slave merchant Rene Montaudoin, sailed from France on July 21, 1710 among a company of 14 other

vessels, and entered service as a privateer preying on British and Spanish ships active in the waters of North America and the Caribbean for the French government.

La Concorde is reported to have been armed with 26 cannons and captained by the French Captain Le Roux. On her first recorded voyage, *La Concorde* was used to seize a Portuguese slave vessel and a Dutch slave vessel before stopping in Martinique for repairs. Once the repairs were complete and Captain Le Roux had sold the slaves acquired from the Dutch and Portuguese merchants, the privateers cruised the waters of the Caribbean accosting English and Dutch merchants before returning home to Nantes, France in November of 1711 (Wilde-Ramsing 2009).

When peace came in 1714, all Letters of Marque, the legal documents that allowed privateers to prey on enemy vessels under the protection of the law, that had been issued for the war were nullified. Without them, the captains and their crews were no longer able to operate under the legal authority of a nation-state. In 1714 no fewer than six thousand privateers found themselves unemployed. The powerful navies of Europe had trained these men to capture merchant vessels, and the war had helped them hone their skills and taught them how to become wealthy feeding on the trade routes of the Caribbean. When their flag nations' navies no longer had use for them, many privateers continued their work under their own flags. These men became the infamous pirate captains of legend: Stede Bonnet, Benjamin Hornigold, Sam Bellamy, Edward Thatch (Blackbeard), and the other villains of this final period of the Golden Age of Piracy. Some held to their old national loyalties and only preyed upon the historic enemies of their former employers, but others – like Blackbeard – would hunt, capture, or sink any vessel for a profit (Cordingly 2006; Konstam 2008).

ii. *La Concorde de Nantes* and the Trans-Atlantic Slave Trade

Even as some privateers turned to piracy, others turned to transporting slaves, another profitable business conducted among the nations of Europe during the 17th and 18th Centuries. Although she would eventually become a pirate ship, *La Concorde* was initially used by the Montaudouin family to transport slaves between Europe and the American and Caribbean colonies. This was the era of the “Triangle Trade” in the Atlantic, with slaves and other goods exchanged between Africa, the European colonies in the Caribbean and New World, and the flag nations in mainland Europe. Large, powerful families such as the Montaudouin slave empire of France used family-owned ships including *La Concorde de Nantes*, which formally sailed out of Nantes, France, to transport slaves between the trading ports. Pirates found that the Spanish treasure fleets from South America were often too well guarded to successfully attack, but that the smaller merchants carrying small amounts of coin and large shipments of goods and slaves could be more easily captured (Konstam 2008). Sometimes the slaves would be freed if they agreed to join the pirates’ crews but often they would either be kept as servants aboard the ship or sold for profit along with the other plundered cargo.

In her new role as a merchant vessel, *La Concorde de Nantes* was altered to maximize storage and transport capacity at the cost of arms and armament, although she did maintain some armament to deal with the ever-present threat of piracy. Between the years 1713 and 1717, *La Concorde de Nantes* completed two successful voyages transporting slaves between Europe, Africa, and the Caribbean colonies. *La Concorde de Nantes* left France on her third and final voyage in March of 1717. According to testimonies from her captain, Pierre Dosset, and his Lieutenant, Francois Ernaud, the ship

encountered trouble from the start; four days into the voyage they encountered terrible weather and ran aground several times before having to jettison an anchor and sail farther out to sea. After taking on supplies at Melin, they put to sea again. A week and a half later, a sailor fell overboard and drowned and the figurehead was lost, presumably in another storm. In June, they arrived in West Africa and took on 516 slaves and a quantity of gold dust (which is the cargo Blackbeard captured later on November 17, 1717). *La Concorde de Nantes* departed West Africa in October and sailed for Martinique.

Unfortunately, the slave trade was plagued with disease due to the abominable conditions kept in the hold and the tightness with which human bodies were piled in to maximize cargo and profit. Crew and cargo would often perish due to spoiled food, starvation, and sickness while sailing from Africa to one of the trading ports. This was the case of *La Concorde de Nantes* during her final, ill-fated voyage to Martinique; they had lost 16 sailors along the voyage and, according to Lieutenant Ernaud's deposition, most of the rest of the crew had fallen ill, leaving only enough men fit to serve to sail and maneuver. The crew was unable to resist any raid so when they encountered pirates who demanded that they hand over their ship and all their valuables, they had no choice but to surrender (Moore and Daniel 2001; Wilde-Ramsing 2009).

Blackbeard and his crew of two hundred pirates or more, in two sloops, one bearing twelve cannons and the other bearing eight, overpowered the beleaguered Frenchmen with little difficulty. They took most of the slaves and gold dust and set the French crew who would not join them in one of their sloops, which they abandoned for *La Concorde de Nantes*. The French crew proceeded to Martinique to file their depositions and the pirates refitted their new ship and gave her the name *Queen Anne's*

Revenge (Moore and Daniel 2001). When she fell to Blackbeard on November 17, 1717, the ship carried between 14 and 16 guns, a far cry from her privateer armament of 26. Blackbeard wasted no time in rearming her as a warship and flagship; an eyewitness who saw the vessel a few days after her capture reported that she bore at least 22 guns and by the time Blackbeard came to Charles Town (Charleston) in May of 1718 she had at least 40 (Wilde-Ramsing 2009).

iii. *Queen Anne's Revenge* and Piracy

Blackbeard made *La Concorde de Nantes* the flagship of his flotilla. She was given the name *Queen Anne's Revenge* and was refitted to again be a war vessel. She was especially valuable to the pirates, since she was fast enough to outrun the warships they did not care to fight, large enough to intimidate merchants and defeat some warships, and had enough cargo capacity to carry a large amount of loot and ammunition. For the seven months following her capture, Blackbeard used her to terrorize the Caribbean and eastern coast of the American colonies. Soon after *La Concorde de Nantes* became *Queen Anne's Revenge*, she encountered and captured a ship named *Great Allen* off the coast of the island of St. Vincent. Blackbeard set the crew ashore, plundered any cargo worth taking, and set the ship aflame. A few days after the burning of *Great Allen*, the pirates encountered the fifth-rate British warship HMS *Scarborough* bearing 32 guns near Barbados. The warship engaged them and they fought for several hours before *Scarborough* broke off and let the pirates pass, finding them too well-manned and armed to easily overcome (Johnson 1724).

Blackbeard then turned his attention toward the Spanish colonies in the Americas. They stopped to take on fresh water near Honduras, where they met with the sloop

Adventure, under the command of David Harriot. When Harriot saw the company of ships sailing beneath the pirates' flag, he struck his sail and surrendered. He and his men were taken aboard *Queen Anne's Revenge* and Blackbeard sent a company of his own men to crew *Adventure*. The pirates lingered in the area for about a week and then set sail. Captain Harriot and his men were likely kept for ransom or released with very light provisions. On April 9th, they encountered a ship from Boston, *Protestant Caesar*, accompanied by four sloops. Again as soon as Blackbeard ran up his flag, the ships surrendered. The vessels were looted, three of the sloops were let go with the crew, and the pirates set fire to *Protestant Caesar* and the remaining sloop. These ships were burnt to spite their masters and their home port of Boston, at which many pirates were hanged. From here, they cruised the Caribbean for a few days, taking and looting several small ships and merchants before turning their bows toward North Carolina (Johnson 1724).

In late May, Blackbeard carried out the most daring act of his career; he laid siege to Charleston Harbor. According to the governor's report to London, the pirate vessels included one large warship of 40 guns and three smaller ships. They blockaded the harbor for five days and looted any vessel that came near. They captured the harbor ferry and eight or nine other vessels with some of the city's most elite citizens aboard. Blackbeard sent a notice ashore that if he did not receive a chest of medicine immediately he would kill them all. Naturally, the governor complied and the medicines were delivered (Johnson 1724, Cordingly 2006).

After blockading Charleston Harbor, Blackbeard appears to have sought shelter in the seclusion of Beaufort Inlet, north of Charleston, where by design or accident, *Queen Anne's Revenge* ran aground on a sandbar in July, 1718. Beaufort Inlet was, at that time,

a relatively inaccessible and lightly-inhabited area, perfect for a pirate to disappear; it is probable that he meant to divide the plunder from Charleston amongst his men and keep out of sight for a few months to avoid pirate hunters and the royal navies of Europe.

Whether he intended to abandon *Queen Anne's Revenge* or not, she struck a sand bar as the pirates brought her into the inlet and could not be freed. One of the accompanying sloops, *Adventure*, was lost in a similar fashion as the crew tried to rescue *Queen Anne's Revenge*. Following the grounding, Blackbeard took 100 crewmen and as much choice plunder as they could carry and escaped aboard one of the remaining sloops (Wilde-Ramsing 2006). *Queen Anne's Revenge* remained there, undisturbed by all but the waves, for nearly three hundred years until her discovery in 1996.

As an archaeological site, *Queen Anne's Revenge* is well preserved for a ship wreck. The artifacts are dispersed over an area of approximately 45.72 meters by 15.24 meters in 7 meters of water. The most visible artifacts at the time of identification included several large anchors, cannons, and a large section of the ship's hull. Subsequent excavations have produced a rich variety of artifacts including medical equipment, likely the remnants of the chest from Charleston; pewter tableware; intact glass bottles; a small amount of gold; iron hoops that are likely the remnants of storage barrels; and a large quantity of pistol shot (Lawrence and Wilde-Ramsing 2001; McNinch et al. 2001).

d. A Brief Introduction to Relevant Ship Classes

i. Frigate

a. Vessel Class Description, Historical and Archaeological Examples

“Frigate” has become an ambiguous term since it was introduced by the French in the mid-seventeenth century. Generally speaking, frigates are warships that favor speed

over massive firepower but favor both speed and firepower over cargo capacity. Clifford (1993) notes that, while they lacked the carrying capacity of strictly transport-oriented craft like the Dutch Flyut, frigates could carry enough cargo to make them profitable privateer ships and could outgun strictly merchant ships while outmaneuvering or outrunning other warships. The first “Frigate” class ships built by the French were square-rigged ships with three masts, no forecastle, and a single deck of cannons that typically held between 26 and 32 guns. They were long and narrow, with a length to beam ratio of 10:3 as opposed to 10:4 or higher as is typical of merchant transport crafts. This made them light and fast and let them cut more effectively through the water. They were thus able to fight in harsher conditions than were larger ships and able to keep full sail in strong winds and storms without fear of flooding through the gun ports. For these reasons, frigates were generally able to function as well alone as in groups and made excellent vessels for hunting enemy merchants, the favored prize of privateers. Frigates were also equipped to combat enemy frigates and smaller warships directly, should they encounter them. Due to their size and armament , a frigate could challenge a better-armed enemy vessel beneath ship-of-the-line grade (50 to 100 guns) with a fair chance of success. This made them ideal both for raiding and reconnaissance (Clifford 1993, Breen and Forsythe 2007).

By the late 17th century, when *La Concorde* was probably built, frigates had become more varied, but their function and some general design characteristics remained constant. Frigates were meant to be fast warships, so they kept their pointed, cutting bow and carried more cannons than a standard transport vessel. They were also meant to be

light and maneuverable, so their length to beam ratio remained relatively the same (Clifford 1993).

b. *La Concorde*

No known historical records have been found to identify the place or year of construction, but *La Concorde* appears to have started its uselife as a typically structured frigate. Because we do not know where or for what purpose *La Concorde* was originally constructed, we cannot know what she looked like or how she was originally arranged, but the historical record tells us that she was a 300-ton ship capable of bearing at least 26 cannons at this time, so it is appropriate to label her a frigate during this first life phase. Given that she was able to sink and seize enemy vessels and cargo, needing only light repairs, before returning safely home, it can be inferred that she was originally constructed in a way that was suitable for making a successful frigate; that is, long and fast with a single deck of guns and plenty of space for crew and ammunition.

ii. Slave Transport

a. Vessel Class Description, Historical and Archaeological Examples

Slave transports during and immediately following Queen Anne's War shared many characteristics with frigates: they had to be fast enough to outrun the privateers and pirates who made their fortunes preying on merchants; they had to be moderately well armed so they could defend against those they could not outrun; and they had to have plenty of space for both crew and cargo. Naturally, these same characteristics were widely sought by pirates and made slave ships all the more attractive (Wilde-Ramsing 2009). One such vessel, *Whydah*, was taken as a prize by the pirate Samuel "Black Sam" Bellamy and converted into a flagship, much as Blackbeard did with *La Concorde de*

Nantes. When Bellamy took her, *Whydah* had enough cargo space to carry 600 slaves and was armed with 18 large cannons and a dozen or so small swivel guns for repelling boarders. She was fast enough that Bellamy and his men had to chase her for three days across open water before they could catch her (Schubert 2006). Pirates favored light, fast vessels such as sloops, so the fact that the slave ships were able to lead them on such a chase is impressive (Konstam 2003). Such speed combined with armament and cargo space made frigates excellent slave vessels in times of peace and made slave vessels ideal prizes for pirates and disenfranchised privateers.

b. *La Concorde de Nantes*.

La Concorde de Nantes appears to have had a somewhat smaller – or at least differently arranged – cargo hold than *Whydah*. Her first voyage, under Captain Isaac Thomas, reported a cargo of 418 African slaves and her second voyage, under Captains Mathiew Denis and Michel Denis, carried 331, while her final voyage, under Captain Pierre Dosset, carried 516. The cargo hold was probably condensed into three small decks between the upper deck and the lower hold to allow more slaves to be transported and provided the crew and officers with a way to separate themselves from their human cargo, in case of revolts or escape attempts. The vessel’s armaments were reduced from 26 cannons to 14 or 16 (Wilde-Ramsing 2009).

iii. Pirate Flagship

a. Vessel Class Description, Historical and Archaeological Examples

“Pirate ship” is a more general class of ships defined by their use, as opposed to their actual form. As a rule, pirates used small vessels such as sloops and schooners, ships that sacrificed armament and size for speed and maneuverability. Merchants tended to

run lightly-armed and had crews that were not as effective at repelling as the pirates were at boarding, so small ships would suffice. However, the truly successful pirates, men like Blackbeard and Bartholomew Roberts who held the very oceans hostage, did so from great pirate flagships that shared many characteristics with frigates and slave ships. Like frigates, pirate ships had to be fast enough to catch their prey and fast enough to outrun the ships sent to hunt them; like slave ships, they had to be able to carry a large number of people subtly and safely, to ensure that most survived the journey to market and could not draw unwanted attention from pirates and privateers in the case of slavers and to ensure that the crew was large enough to man the guns, maintain the ship, and form an effective boarding party while remaining hidden from naval patrols and prospective prizes in the case of pirates (Konstam 2003).

Generally, pirate ships sought a careful balance of speed, maneuverability, crew capacity, and armament. Crew were seen as more vital than cannons, so the smaller pirate ships seldom carried more than ten guns, five to a broadside, and used the ship's remaining space for crew and supplies for effective boarding – cannon shot would damage the hull of the enemy vessel and may well rob the pirates of a prize or at very least a full share of plunder. Pirate flagships were another matter altogether. Whether as an expression of personal pride and boastfulness or as a precaution for naval hunters to come, these juggernauts sailed with 30 to 40 naval cannons aboard, as many as a royal battleship. A flotilla of pirate sloops was cause for concern; a flotilla of pirate sloops accompanying one of these monsters was a merchant's worst fear come to life upon the waves (Konstam 2003, Konstam 2006).

Of course, pirates rarely if ever actually commissioned their own ships, so the flagships were typically refitted merchant ships, slavers, or frigates. Little is known of how pirates went about refitting a large ship for their purposes. There are few written records of such actions and they were always carried out on the open ocean or at hidden ports that remain undiscovered to this day (Konstam 2003). The artifacts recovered from the shipwreck suggest that Blackbeard favored six-pound cannons and swivel guns aboard *Queen Anne's Revenge*, as they did not require as much room for recoil or as many men to fire a broadside, leaving most of the crew free to maintain the ship or combat the enemy (Wilde-Ramsing 2006). As more of the wreck is brought to the surface, we will gain a better understanding of what the ship looked like, where she was originally constructed, and how the pirates altered her for their needs.

e. Predators and Prey of *Queen Anne's Revenge*

The primary predators for *Queen Anne's Revenge* were frigates, discussed above, and large warships like *HMS Scarborough*. In fact, the only time *Queen Anne's Revenge* is known to have directly engaged another ship in battle was her early battle in which she defeated *HMS Scarborough*. No ship is known to have stood against her from that victory to her deposition into the archaeological record (Johnson 1724).

The pirates' primary prey consisted of basic merchant ships and sloops. Clifford (1993) describes "ships" (merchant ships and larger warships) of the 17th century as square-rigged vessels possessing two or three masts whose bow is either ram-like or beak-like and swoops back into a raised forecastle that progresses to a lowered midship area and concludes with a raised sterncastle (Figure 3). Early frigates did not have a raised forecastle. Such ships generally had at least two decks that did not necessarily flow

evenly for the vessel's whole length and would have been armed and outfitted in accordance with the ship's intended function (i.e., warships such as *Scarborough* would carry cannons and ammunition and have many more cannon slots cut into the hull than would merchant transports).



Figure 3: Labeled sections of a historic frigate, edited from Green (ca. 1940)

“Sloops” were more common than “ships” and were Blackbeard’s primary prey (Johnson 1724). These small vessels were fore-and-aft rigged to catch the wind and had a single mast (Clifford 1993). Due to their size, sloops tended to be lightly armed but they were very fast and maneuverable, making them ideal vessels for use by pirates; as long as the sloops could get within boarding range, the men packed aboard could take a prize without needing too many shipboard cannons. Blackbeard kept several sloops in his flotilla while *Queen Anne’s Revenge* was his flagship and escaped aboard a sloop when *Queen Anne’s Revenge* ran aground (Johnson 1724, Konstam 2003). This discussion of ship classes is by no means exhaustive and is meant to give the reader a good, basic understanding of the general types of vessels active in and around the Caribbean at the time of *Queen Anne’s Revenge*.

Chapter 3: Theoretical Framework

My goal in this chapter is to create a framework for studying *La Concorde/Queen Anne's Revenge* using a dynamic, life history approach that will provide insight into how this site was created and the behaviors and natural processes that the site reflects. Given the complex history of this vessel, she cannot be treated as a static feature and instead must be seen as a changing and developing entity that both influenced and was influenced by her environment as she changed hands and purposes. To fully appreciate the interaction between the ship, those who used her, and her world in general I have developed a theoretical and methodological structure that allows me to recognize the natural and cultural forces that guided her development and resulted in the site we see now. This chapter will explain that framework.

a. Life History Approach

The theoretical framework I employ for this study is a life history perspective that treats *Queen Anne's Revenge* not as a static site but as a living artifact. I will trace this ship through her varied forms and note the historical, environmental, and social contexts underlying each change. This historical discussion is simply a framework that provides the basis of an explanatory analysis. In the words of Jones et al. (1998) it is the evolutionary description (what happened) that creates the foundation for an evolutionary explanation (why it happened). My focus here is on the vessel itself (and the behavior it reflects), as opposed to the broader historical context (e.g., why piracy developed at all), although I hope to use the information I gain here to develop broader explanations in future work. To better explain why the vessel took the various forms it did, I have constructed a framework that integrates Flannery's (1967) and Cummins's (1994)

systems and functional approaches as well as Schiffer's (1987) N-transforms and C-transforms model of site formation. This allows me to observe the systems operating around the vessel and put her in context while observing the specific changes within the system of *Queen Anne's Revenge* herself as she progressed through her use life. Schiffer's model allows me to discuss the changes that were made intentionally to fit within a new system or to modify the existing system within and around the vessel (**C-transforms**) and the alterations to the ship that happened as a result of natural influences (**N-transforms**).

b. Systems Theory

Archaeological systems theory, as proposed by Flannery (1967), provides an excellent means of describing and studying archaeological remains and drawing inferences regarding the cultures and environments in which they originally existed. Systems Theory assesses the archaeological record in relation to the cultural and environmental systems that led to an artifact's creation. Viewed through the lens of Flannery's Systems Theory, this vessel acts as a component within the large web of cultural systems operating around her. *Queen Anne's Revenge* served at least three distinct roles during her lifetime: privateer frigate, slave transport, and pirate flagship. The historical record shows that each phase of the ship's life was marked by distinct requirements, pressures, and expectations that she was designed to meet in order to keep the system-web functioning. As Flannery suggested, the components of these systems remained unchanged until acted upon by an outside force – in this case, the ship and the system-web were fundamentally altered once when *Queen Anne's* War ended and once when *La Concorde* was captured by pirates and became *Queen Anne's Revenge*.

Flannery's systems model allows us to observe the broad social and historical contexts that contributed to *Queen Anne's Revenge's* form during the various periods of her life, but it is somewhat less effective at assessing the causes and effects of specific changes on the ship herself. To this end, I have chosen to employ Robert Cummins's (1994) Functional Systems theory, which examines the features of a system (in this case, the structural morphology of a ship) relative to their functions within that enclosed system. More specifically, Cummin's system identifies specific, distinct systems and evaluates how a particular feature functions within them. For example, the ultimate function of the heart is to circulate blood, but Cummin's approach allows one to identify additional systems and evaluate the role the heart plays within them. For example, the heart can also function to sooth a crying infant when held up against the parent's chest, or as a means of diagnosing illness in the context of a doctor's medical evaluation. Cummin's approach will consequently allow me to evaluate the role of specific features of the ship (and indeed the ship as a whole) in various contexts and at different scales. Combining these two systems theory models will allow me to understand how *Queen Anne's Revenge* was altered by her environment and how those alterations directly affected the ship herself.

c. N-Transforms, C-Transforms

I want to study *Queen Anne's Revenge* from her earliest recorded history as the French privateer *La Concorde* to her current form as Shipwreck 31CR314 off the coast of North Carolina. Given both of the systems approaches described above, one would expect changes to the ship as the applicable systems changed (e.g., the shift of the primary use of the ship from warfare to slave transport systems would necessitate changes viewed using

Flannery's framework, while the shifting functional systems of varying degrees of storage or armament requirements would lead to changes within Cummins' framework). Further, the ship was affected by its environment. She underwent many changes during her long lifetime, both culturally-directed and natural. It is important to make the distinction between these two types of change, especially as they relate to the vessel's current form as a recovered shipwreck site. Michael Schiffer's (1987) model of site formation can be used to distinguish changes resulting from human behavior or modification, which Flannery calls "C-Transforms" from changes due to the natural environment acting upon the wreck, called "N-Transforms".

C-Transforms can include structural and functional alterations that were made as the vessel changed hands and shifted roles. The cargo hold and gun decks, for instance, were likely changed to accommodate more space for slaves when she was *La Concorde de Nantes* and were altered again when Blackbeard took her, this time to allow for more guns, ammunition, and crewmen. By contrast, N-Transforms are not culturally directed and will include alterations to the wood, ropes, and metal components caused by water, animals (e.g., barnacles), and plants (e.g., algae) both during her use and post-deposition as she lay submerged.

By combining Functional/Systems theory borrowed from Drs. Flannery and Cummins with Dr. Schiffer's site formation model I am able to fully observe and understand the interactions of *Queen Anne's Revenge* with her own internal mechanisms, with the broader social systems in which she existed, and with the natural environment both during her career and after her deposition into the Archaeological Record. This

framework provides a clear and complete understanding of how the vessel's design was altered throughout her life and for what reasons those alterations were made.

Chapter 4: Analysis

In this chapter, I will assess the vessel's characteristics, both known and inferred from historical context, through the lens of the life-history framework discussed previously. Changes will be classified as either C-Transforms – alterations that are the direct result of human interaction – or N-Transforms – alterations that result from environmental forces acting directly upon the vessel itself. Both categories will be examined using a Systems approach to analyze the role a given change played in macro systems, such as military combat or global economy, and a Functional approach to analyze the function and effects of a given change within the local system of the ship itself (Schiffer 1987, Flannery 1967, Cummins 1994). The information presented here is not different than the preceding narrative, but is instead structured using a performance-based analysis in accordance with the theoretical structure outlined above.

a. Transforms and Internal Systems

The following discussion uses an approach based primarily on Cummins' (1994) view of functional analysis during the discussion of C-Transforms.

i. Systems

Using Flannery's (1967) and Cummins's (1994) models, we can observe a hierarchy of systems operating around and within the vessel at a given stage. The main systems acting upon the privateer *La Concorde* included: 1.) warfare, 2.) seaworthiness, 3.) discipline, and 4.) transportation of goods. These systems are, of course, intrinsically linked but Flannery's framework allows us to arrange them hierarchically relative to the primary function of the ship at this time.

The ship's ability to wage war was, naturally, dependent on the number and strength of cannons she was able to carry. In addition to this, seaworthiness, or the vessel's ability to stay afloat and move on the water, would play a key role in hauling loot or in escaping from a larger, more powerful enemy vessel. *La Concorde*'s seaworthiness was governed by such factors as timber strength, weight dispersal, and how tightly her crew tied the lines to hold her sails and rigging aloft. The ship would be ineffective if her crew was not loyal and disciplined; all must respect the captain and his officers, the officers must respect the captain and gain the respect of the general crew, and the general sailors must know their place and keep the ship sound. Such order was often maintained socially but rank was sometimes denoted by the ship's structure – the captain had his own cabin that was the finest aboard; the officers would have larger more comfortable lodgings than the crew; and the crew would sleep on bunks or hammocks all together. A ship without a disciplined crew risked mutiny, or at the very least inefficiency. Like warfare, the ship's ability to transport goods is a relatively simple but crucial performance constraint. Put simply, a ship's efficiency as a transport vessel for any kind of cargo was tied directly to how much open space was available aboard and not being used to house crew or officers. The size and shape of a ship's cargo hold was, therefore, governed by how much cargo she was expected to carry, how important hauling cargo was relative to her other duties, and the type of cargo to be hauled – slaves, for instance, required a specialized hold layout that would keep them contained enough to prevent an uprising and allow the ship to carry the maximum number of slaves between ports.

ii. Privateer Frigate

1. C-Transforms

At this stage, *La Concorde*'s primary purpose was to inflict damage upon the enemies' economic and military systems by capturing merchant ships and disabling or destroying military ships. The C-Transforms active at this time would have reflected this purpose. It is important to note that the absolute origin of the frigate *La Concorde* is not yet known. If she was built as a privateer vessel at a French port, then she would have been designed to fulfill her role as a merchant hunter and warship as efficiently as possible; if, on the other hand, she was captured from another nation and refitted for this purpose, then her internal system may have had to adjust to meet her new role (Wilde-Ramsing 2009).

Privateers were intended to inflict enough damage to capture an enemy vessel, but not enough to sink it outright before the crew had a chance to surrender, so the privateer frigate *La Concorde* was constructed (or refitted) to keep a careful balance between damage output and crew/cargo space for boarding parties and plunder. When she set sail in July of 1710, the ship was armed with 26 cannons. This armament appears to have been sufficient for her role in the European military/economic system of the time, as she was able to take at least two enemy slave ships as prizes along with all their cargo. Had she carried a greater number of cannons, she would have run the risk of being too slow or heavy to outrun enemy privateers but had she carried too few cannons, she would have been easy prey for pirates, as evidenced by her capture as a slave transport (Wilde-Ramsing 2009).

The primary system acting upon *La Concorde* was warfare. As a privateer, she was a warship and was expected to attack enemy vessels, disabling but not destroying them. If she was unable to do this, then she failed as a privateer and an effective part of the larger warfare system. Immediately following and very closely tied to the warfare system is the seaworthiness system; the ship had to not only float and move but accelerate and maneuver to catch enemy craft. Hierarchically next is the shipboard discipline system; if the captain was unable to maintain order aboard ship, then none of her goals could be fulfilled. Similarly, if the ship was not stocked with the necessary supplies and provisions, while leaving enough room to transport captured cargo, then she could not succeed.

Our knowledge of the vessel is incomplete at this time, as the excavation is still ongoing, but we can apply Cummins's model to what we know historically and assess the relevant characteristics for each active system. This will in turn allow us to examine the essential characteristics of the vessel and infer more information about her general structure and changes at each stage of her use life.

The primary aspect of the ship that reflects the warfare system is her cannons. She had to be more heavily armed than her prey and at least as heavily armed as most of the enemy warships. While we cannot yet be certain that any of the cannons found at the shipwreck site reflect her original armament, we can be fairly certain that they met these basic criteria, as the vessel was able to not only survive her service as a privateer but also to capture at least two enemy ships and sell their cargo.

The ship's seaworthiness is directly tied to her construction and rigging. As noted above, she was likely a square-rigged, three masted ship with no forecastle that was

longer than she was wide. If *La Concorde* was a frigate, then the cannons would have been arranged on a single deck, with one row on each side. This gun deck would have been arranged so the cannons were nearly always above the waterline and at the ready. This is important for her role as a warship but is equally important in terms of general seaworthiness; if the cannon slots dipped too far below the waterline, the ship might take on water and sink, as may have been the case with the Swedish warship *Vasa* (Clifford 1993, Breen and Forsythe 2007, Laursen 2012).

No evidence for the vessel's discipline system at this stage has survived, or at least any surviving evidence has not yet been recovered, but the most direct physical manifestation of the discipline structure would have been seen in the cabins and sleeping arrangements. The captain's main cabin would have been the largest and most comfortable aboard ship, likely located in the sterncastle. If there were any other cabins aboard they were probably assigned to lesser officers such as the captain's Lieutenant. The crew would likely have bunked together under the watchful eye of the quartermaster. It is possible that this arrangement was unchanged during her service as a slave transport but it is also possible that the crew and captain's quarters were relocated to more defensible positions when the hold was restructured for transporting slaves (Wilde-Ramsing 2009).

The supplies and provisions system is reflected in how the vessel's hold was used. As such, we cannot directly observe evidence of this system, but we can infer its layout based on the vessel's performance. Simply put, the ship had to use her hold to store ammunition for her 26 cannons and provisions for her crew with enough space left for cargo to make a profit – and likely bolster the crew's morale. Given her success as a

privateer, we can safely infer that the ship's design allowed for all necessary supplies to be stored with room to spare.

2. N-Transforms

N-Transforms from this period are not readily observable since the ship has changed so much since her initial voyage. The most significant natural forces acting upon her at this time would have been the saltwater environment in which she traveled. The hull would have been affected by creatures such as barnacles that degrade the wood if they are not removed and by the salt water itself. Because of these factors, the crew would have been careful to keep the wood clear and strong while at sea.

ii. Slave Transport

1. C-Transforms

When she was refitted as a slave vessel, *La Concorde de Nantes* shed most of her firepower in favor of expanded cargo capacity. She was now operating as an instrument of the Economic system between Africa, Europe, and the New World known as the Triangle Trade Network. Her primary purpose was to carry human cargo from Africa to the slave markets; the more slaves she could carry the wealthier her owner could become.

In addition to cutting the vessel's armament to 14 or 16 cannons (about a 30% decrease), the internal structure of *La Concorde de Nantes* was modified significantly at this stage. The ship's cargo hold was probably split into three decks to allow more slaves to be transported and to provide the captain and crew with a way to fortify the ship in case of a slave revolt (Wilde-Ramsing 2009).

The internal system of the ship was fundamentally changed. She was no longer a warship and was forced to adjust to her new role. More slave storage meant less food for

boarding and defensive crew, fewer guns, and a smaller defensive crew to repel boarders. Even if they could defend the ship against three hundred starving desperate slaves, it is unlikely that this ship could support a crew capable of holding against two hundred bloodthirsty pirates when she had a full hold and she was certainly not carrying sufficient firepower to keep attackers from boarding. Although she was a moderately successful slave transport, completing two successful voyages and transporting more than seven hundred slaves (Wilde-Ramsing 2009), she was a failed warship and a prime target for pirates.

At this stage, the vessel was no longer meant to be a warship, so the fundamental systems present in the vessel shifted and were reorganized. The seaworthiness, discipline, and supplies systems were still important, but an economic transport system replaced the warfare system as the primary concern.

The transition from a warfare system to an economic system can most clearly be seen in the ship's cannons and the arrangement of her cargo hold. As noted above, the vessel's armament was drastically reduced at this stage to allow her to take on more cargo without becoming too heavy to stay afloat. Her hold would then have been redesigned to allow for the maximum number of slaves to be carried at a time (Wilde-Ramsing 2009)

The next-most-important system aboard the ship as a slave transport was discipline. When the cargo had the capacity to rise up and revolt against the ship and her crew, maintaining discipline among the crew was almost as important to the vessel's functionality as transporting the cargo at all. The redesigned cargo space that was likely present in the vessel at this stage served a dual purpose and is the clearest archaeological

evidence present of the preservation of order. The vessel's refitted interior did not only serve to maximize the number of slaves that could be transported at one time; it also served as security against a slave uprising while the vessel was at sea. When the hold was divided, the quarters of crew, officers, and captain were likely relocated to a fortified area in the sterncastle (Wilde-Ramsing 2009). This would have allowed the crew to quell any uprisings that may occur and may also have reduced their fear of an uprising, since they now had a definite plan and fortifications in place. Most other signs of discipline at this point were cultural or economic. The crewmen were expected to obey the captain and officers; the officers answered directly to the captain and helped him supervise the crew; and everyone got paid as long as each sailor did his part.

The next system in the slave transport's hierarchy was cargo and provisions. It was imperative that the ship be able to carry enough food for the officers and crew, some food for the slaves, and enough ammunition and powder for the cannons. As a slave ship, the food storage and galley would have likely been relocated to the sterncastle along with the sleeping quarters. As a slave ship, greater emphasis would have been placed on food than on armament, as there were significantly fewer cannons and many more people aboard (Wilde-Ramsing 2009).

The operating system that appears to have been least important in this ship's hierarchy at the slaver stage was seaworthiness. Now that she was carrying more cargo, and had been refitted specifically to carry the most cargo possible, *La Concorde* was probably not quite as fast as she was during her privateer voyages. If she was indeed built as a frigate, she would still have been faster than most ships whose primary function was cargo hauling, but she would not have been quite as fast as a "pure" frigate – one that had

not been altered – or a sloop, which was the class of ship Blackbeard was using when he captured her.

2. N-Transforms

Again, naturally-induced transformations are difficult to discern or infer at this stage. The environmental perils mentioned above were an ever-present threat across this vessel's life, and at this stage her hull would have been cleaned when she made port to exchange cargo. A sailor noted that the weather was especially foul during *La Concorde de Nante's* final voyage as a French ship, so the ship probably suffered storm damage and may have required repairs to the hull in addition to the standard cleaning (Wilde-Ramsing 2009).

iii. Pirate Flagship

1. C-Transforms

When Blackbeard took *La Concorde de Nantes* as his flagship in November of 1717, he restored her to her military function. While most pirate vessels were small craft such as sloops or schooners with few cannons and a large crew area for boarding parties, pirate flagships were designed to be warships (Konstam 2003). The new system in which *Queen Anne's Revenge*, as she was now called, operated was Blackbeard's pirate flotilla, usually two or three sloops and the flagship. Warships such as *Queen Anne's Revenge* were excellent for doing battle with large naval craft or threatening towns, but sloops and other smaller ships were better-able to board and capture enemy ships and booty which was the pirates' primary goal in any merchant encounter. Thus, the function of *Queen Anne's Revenge* in Blackbeard's flotilla was to provide additional firepower for the smaller boarding ships in case of an encounter with a naval warship and to increase the

flotilla's capacity to transport pirates and stolen cargo. To this end, Blackbeard increased his flagship's armament to at least 40 cannons.

Not much is known of how pirates repurposed large vessels such as *Queen Anne's Revenge* when they were captured, as the refitting was either done at sea or at concealed ports away from the navies of Europe, but we can infer that Blackbeard was more concerned with cannons, ammunition, and crew than with carrying capacity. Since capturing vessels via boarding and providing defensive fire for the flotilla were his primary aims with *Queen Anne's Revenge*, he probably kept the three-deck hold and knocked down any walls separating the crew area from the rest of the ship so he could transport more pirates. It is likely that he also cut fresh cannon ports along the main gun deck as well as on the next deck down to fit the new guns (Konstam 2003). This would have slightly reduced the speed and maneuverability of the vessel but greatly improved her effectiveness when seizing a merchant transport or combating a naval vessel.

The success of *Queen Anne's Revenge* both in fulfilling her role in the larger system of the pirate flotilla and in maintaining a stable system within the ship itself is evidenced by Blackbeard's exploits once he had captured the ship. A few days after he began refitting the slaver *La Concorde de Nantes* to be his flagship, *Queen Anne's Revenge*, Blackbeard's flotilla encountered the British warship *HMS Scarborough*. The two ships engaged and fought for several hours, but *Queen Anne's Revenge* made the warship retreat. It is important to note here that *Scarborough* was a frigate and that she had not been refitted for transporting cargo, as *La Concorde* had, so she was still operating in a military capacity. That *Queen Anne's Revenge* was able to make *Scarborough* give up the fight and pull away speaks highly not only of the skill of

Blackbeard's crew but also of the efficiency within the ship's internal system as she transitioned back into a vessel of war. Following this encounter, Blackbeard was able to take many smaller ships and laid siege to Charleston harbor without firing a shot. Here, *Queen Anne's Revenge* operated as a persuasive force within the flotilla; while the historical record does not state that the captains cut down their sails and surrendered because they feared the 40-gun warship amidst a company of sloops flying pirate colors, it is a safe inference to make (Johnson 1724; Wilde-Ramsing 2009).

The primary internal systems operating on the vessel at this stage of her use-life were rearranged and redefined once again. The systems of which the hierarchy was composed this time still included seaworthiness, discipline, and supplies, but *Queen Anne's Revenge* was a warship and the warfare system was paramount once more.

The clearest evidence of the renewed warfare system as the head of the hierarchy can be seen in the vessel's armament. Blackbeard captured a trade vessel with fewer than twenty cannons aboard and turned her into a warship carrying at least forty (Johnson 1724, Wilde-Ramsing 2009). Another important factor, although it is not one that can be seen directly in the archaeological record, was the number of men Blackbeard kept aboard *Queen Anne's Revenge*. As a pirate flagship, she was heavily armed but would also have supported a very large boarding party. Though she was never used to capture a ship directly, it is likely that her crew would have been more than capable of overwhelming any given sloop or merchant ship (Konstam 2003).

The next most important system on Blackbeard's flagship was seaworthiness and maneuverability. The men could be hungry and disorderly, but if the ship was able to catch a prize and outrun the royal navies they would not stay that way. If any alterations

occurred to influence this aspect of the vessel, they would probably be observable in the removal of the slave ship's hold modifications and the general streamlining of the main deck (Konstam 2003). As noted previously, *Queen Anne's Revenge* was engaged by a royal warship only a short time after she was captured – probably while Blackbeard and his crew were still reworking her – and she was not defeated (Johnson 1724, Wilde-Ramsing 2009). This fact alone is a clear indication that the warfare and seaworthiness systems were operating very well aboard this ship.

Next on the ship's systems hierarchy was discipline among the crew. While low supplies would undoubtedly reduce the crew's discipline, loyal and organized men can still fight and claim a prize when they are hungry, especially if doing so is likely to replenish their own supplies and fill their bellies. It is unlikely that anything relating immediately to maintaining discipline will be seen in the archaeological record for this ship, since most of the structures in place for maintaining order among pirates were social. One could argue that the discovery of a small amount of gold dust hidden among the artifacts recovered from the shipwreck site is evidence for a slip in discipline since someone was keeping more than his fair share, but it is just as likely that this was all that remained of the gold dust that was hidden aboard the slave ship *La Concorde de Nantes* when she was captured. It is likely that Blackbeard maintained order through his personality and reputation. The historical record shows that he went out of his way to appear fearful and intimidating; the men under his command were probably either impressed with his achievements and reputation and followed out of respect, or they were afraid of his temper and obeyed so they could enjoy the benefits of loot and security

while avoiding the captain's wrath (Johnson 1724, Konstam (2006), Wilde-Ramsing 2009).

The final system on the flagship's hierarchy was the storage and supplies system. While this system was undeniably important to maintaining the large force Blackbeard likely kept aboard, it was not as essential to the performance of the ship herself within the macrosystems of Blackbeard's flotilla and the Piracy System active between the pirates and the navies of Europe. Because they operated outside of the law, pirates were not usually welcome in colonial shops. They could not, therefore, consciously stock up on supplies for voyages in the same way a merchant captain or privateer might in one of his crown nation's ports. Instead, they took what they needed from the ships upon which they preyed. Contrary to popular belief, the pirates' main plunder was not gold or gems but clothing and supplies; Blackbeard committed his famous capture of Charleston Harbor because he wanted a chest full of medicine (Johnson 1724, Cordingly 2006, Wilde-Ramsing 2009). It was, of course, important for *Queen Anne's Revenge* to have room in which to store these supplies and a galley in which to prepare food, but it was far more important that the men be organized and loyal, that the ship be swift and nimble, and that the cannons be loaded and ready.

2. N-Transforms

The natural factors operating upon the vessel at this stage in her life were still primarily based in her saltwater environment. There was probably significant damage from the battle with *HMS Scarborough* that may have exposed previously covered wood to the elements as well, and the refitting process itself may have exposed wood that needed treated and reinforced. The most important difference between this stage and the

two previous is that she was now a pirate ship, operating under a known and infamous captain, so most ports operating under the flags of Europe were not safe for repairs; at the very least, the governor or harbormaster would require threat or bribe before allowing the pirates to dock for repairs (Konstam 2003).

iv. Shipwreck

1. C-Transforms

Direct, intentional human interaction with *Queen Anne's Revenge* probably stopped shortly after she ran aground near Beaufort Inlet. Blackbeard took a few trusted crewmen and as much booty and useful hardware as they could carry and abandoned the ship. The area around Beaufort inlet was sparsely populated at that time, so it is unlikely that the wreck was looted or significantly disturbed before she settled into the ocean (Wilde-Ramsing 2009).

2. N-Transforms

The primary agent of change acting upon *Queen Anne's Revenge* at this point was the movement of the ocean around here as it caused the sand to shift. *Queen Anne's Revenge* did not “sink” in the conventional sense; the sand beneath the vessel settled around her weight and she was engulfed by the sandbar itself. This process caused her to become completely surrounded by sand, but the constant movement of the tide prevented her from being entirely covered at all times. This resulted in an ideal oxygen level that held the ship in near-perfect suspension. While the hull is no longer intact, most of the smaller, delicate artifacts associated with the wreck site are remarkably well preserved and the barnacles and other fauna observed on artifacts such as stones and hull sections were either present at the time the ship settled or represent approximately ten years of

open exposure on the ocean floor. *Queen Anne's Revenge* lay undisturbed except by the sand and tides for nearly three centuries, so we would expect to see more deterioration; the wreck is surprisingly well preserved (Hageman 2001; McNinch et al. 2001).

McNinch et al. (2001) suggest that the movement of the sand around the artifacts as the ship settled led not only to their preservation but also to their settling and discovery as they appear now. They believe that the ship settled in stages until the artifacts reached a depth at which the sand was no longer affected by the regular ebb and flow of the tides, moving only during extreme weather events such as hurricanes. This caused the artifacts to settle on a single horizon instead of being deposited in layers and eventually resulted in the ship being uncovered by such events and detected by the Intersal crew. McNinch et al. note that the ship and associated artifacts are probably in more danger now than ever before not only because they have been exposed but also because the sand is no longer moving in a way that keeps the wreck oxidized but discourages parasite formation.

b. Macrosystems

Using Flannery's (1967) view of systems, *Queen Anne's Revenge* was shaped throughout her life by the environmental and cultural systems acting around her, but she also affected those systems directly and indirectly. By examining the ship's characteristics and recorded performance during her first three life phases, we can infer – and in some cases observe directly – the changes she had on the systems acting upon Europe, the New World, and the pirates active in the Caribbean. As this ship served three distinct roles during her lifetime, we can use her performance during each phase to gain knowledge about *La Concorde/Queen Anne's Revenge* herself and about frigates, merchants, and large pirate flagships during this period in general.

i. Privateer

During her privateer phase, *La Concorde* acted primarily in the military systems of Europe but also impacted the international economic system active between Europe and the New World. As a privateer, her primary duties were to harass enemy merchant vessels and warships. This put strain on the navies and economies of France's enemies. At the same time, the ship helped boost the general French economy and made her owner, Rene Montaudoin, very wealthy by capturing enemy merchant vessels and selling their cargo. The privateer frigate *La Concorde* successfully captured and looted several enemy vessels and was never captured herself, which indicates that she successfully performed her role in these systems (Wilde-Ramsing 2009).

ii. Merchant

The slave transport *La Concorde de Nantes* was redesigned to accommodate an increased carrying capacity at the cost of speed and firepower. As such, she functioned in a purely economic role and was intended to fit into the economic system active between Europe and the Caribbean colonies. Her most obvious influence can be observed in that system, in which she performed relatively well until she was captured – successfully travelling from France to Africa and the Caribbean colonies twice to take on and offload cargo, making her owner a tidy profit, but a merchant ship like *La Concorde de Nantes* had influence that reached well beyond the Triangle Trade and her masters' coffers, as can be directly observed in the world around the ship (Wilde-Ramsing 2009).

When Queen Anne's War ended, the navies of Europe shed their privateer fleets and were generally weakened; this is why *La Concorde* was no longer a frigate, and instead became a heavy merchant vessel. This directly affected the military systems

among European nations between the mainland and the colonies. The pirate forces active in the Caribbean were also affected by this general downsizing of the European fleets; while the crown nations grew weaker, they grew stronger. Many former privateers, finding themselves jobless after the war was over, turned to piracy (Cordingly 2006). The transformation of *La Concorde* from a successful privateer frigate to an increasingly disarmed heavy merchant ship also affected piracy in a more direct way; it made the ship a very appealing target for capture (Konstam 2003).

iii. Pirate Flagship

When Blackbeard's flotilla captured *La Concorde* and refitted her for a pirate flagship, the system interactions that were present during her privateer frigate period were essentially reversed. Now, the navies of Europe were strained instead of strengthened because there was a very powerful and very effective new pirate warship on the water – the only time Blackbeard is known to have used her in combat was against the royal frigate *HMS Scarborough*, and he made the *Scarborough* retreat. The economies of Europe and the colonies were adversely affected, since there was a new ship preying on the shipping lanes. The small macrosystem of Blackbeard's flotilla, however, was impacted very positively. Following the capture and refitting of *Queen Anne's Revenge*, Blackbeard's pirates encountered less resistance from prey and hunters alike until she was lost (Johnson 1724, Wilde-Ramsing 2009).

Chapter 5: Discussion and Conclusions

a. Microsystems

Through analysis of this ship's internal systems and how changes to the ship impacted her performance in each role throughout her lifetime, we can begin to answer questions about the ship's past before Queen Anne's War. Furthermore, understanding the characteristics that were most- or least-effective during each life phase can provide insight into the optimal characteristics for each role she performed during her use.

i. Frigate

During her service as the privateer frigate *La Concorde*, the ship carried 26 cannons and sufficient ammunition to capture several enemy merchant ships and outrun or defeat any enemy warship she encountered. Her primary function at this time was clearly as a military vessel, though her captain kept enough space in the hold to store and transport any stolen cargo from the merchants whose ships they did not claim as prizes. At this stage, we do not know where the ship came from, so we do not know her overall shape or outfitting prior to her privateer commission. If she was built by the French, we can infer that she looked like a light French frigate and had her guns split between two broadsides on a single deck with the main form of the vessel designed to promote speed and maneuverability while still carrying a significant amount of firepower. No record of the French building a frigate named *La Concorde* during Queen Anne's War exists. If she was a captured enemy merchant, she probably had to be refitted prior to her privateer service and her shape will remain unknown until we are able to raise enough of the hull to reassemble her. An eyewitness who spent some time aboard while Blackbeard was her captain remarked that she looked like a Dutch ship, which suggests that she was probably

larger and slower initially but had ample storage room for ammunition, cannons, and cargo. Unfortunately, no record of an enemy vessel from any nation being captured and renamed *La Concorde* during that time period has survived (Wilde-Ramsing 2009). We can infer that the ship served her military role successfully, since she was able to take several enemy ships and their cargo and was not defeated or captured during her service; in fact, I argue that the ship was originally designed as a warship, whatever her nation of origin may have been.

ii. Merchant

When she transitioned from the frigate *La Concorde* to the slave transport *La Concorde de Nantes*, the only recorded change to the vessel is a reduction in the number of cannons she carried. It can be safely inferred that this was accompanied by a major structural refitting of the hold to carry more cargo, since she was now primarily a merchant ship. Though she successfully completed two voyages as a slave transport, *La Concorde de Nantes* was not as successful as a merchant ship as she was during her military phase; during her third voyage she was undermanned and insufficiently armed when she encountered pirates on the way to Martinique and the ship and all her cargo were lost (Johnson 1724, Wilde-Ramsing 2009). This suggests that the optimal merchant transport should have favored cargo capacity over guns and speed, but to a lesser extent than happened with *La Concorde de Nantes*. It is important to note that the crew in this case were not in optimal form to fight off a pirate attack and that a more hardy band of sailors may have put up greater resistance, but it is unlikely that a merchant vessel so poorly armed as *La Concorde de Nantes* could have successfully repelled a boarding

crew of several hundred bloodthirsty raiders dependent on such ships for their food and supplies and whose captain wanted to make the merchant ship his own (Konstam 2003).

iii. Flagship

Under the command of Blackbeard, the ship resumed her role as a military vessel and enjoyed great success. Pirates often made significant alterations to the ships they claimed, especially the large ships that were used as flagships by the likes of Blackbeard and Bartholomew Roberts. Unfortunately, these alterations were made at sea or in hidden ports so no records exist detailing the changes her new owners made (Konstam 2003).

The primary change made to the vessel when she became Blackbeard's *Queen Anne's Revenge* was a sweeping increase in the number of cannons she carried. The success of the vessel in her renewed role as a vessel of war is readily apparent; she was able to outgun a royal frigate within her first few days under Blackbeard's flag and there is no record of the pirates having to fire a shot in combat as long as *Queen Anne's Revenge* was in the flotilla after their defeat of *HMS Scarborough* (Johnson 1724, Wilde-Ramsing 2009).

b. Macrosystems

Analysis of *Queen Anne's Revenge* in relation to the larger network of social, economic, and military systems in which she operated over her lifetime demonstrates the far-reaching impact that a single artifact can have on the world around it. Furthermore, my analysis of the two major recorded transitions – from frigate to merchant and from merchant to pirate – suggest that individual ships may have played a significant role in allowing the final and best-known period of the Golden Age of Piracy to occur as it did.

During her first recorded period as the privateer frigate *La Concorde*, this ship acted alongside other such vessels on both sides of Queen Anne's War to impact the economic and military systems of the nations involved. Many of the greatest pirates of this time began their careers as European privateers during this war and helped combat the existing pirates in the Caribbean and American colonies (Cordingly 2006). When the war ended, many privateer fleets were disbanded and pirates had less to fear.

When the privateer fleets were dissolved, many of the captains turned to piracy, and ships like *La Concorde* were refitted and given a new purpose. In the specific case of *La Concorde*, she became a merchant slave transport and shed most of her cannons in favor of cargo space. Though she successfully completed two voyages without incident, the pirates were able to capture her with little effort on her third voyage (Wilde-Ramsing 2009). This suggests that this ship was not well-suited to merchant work and that the pirates saw her potential for a warship and a badge of power.

When Blackbeard's Flotilla captured the slave ship *La Concorde de Nantes*, the pirates returned her to her military function and increased her firepower from 14 or 16 cannons as a merchant to at least 40 as their flagship. Shortly after she was captured, the newly refitted *Queen Anne's Revenge* successfully engaged and defeated a royal warship. After her battle with *HMS Scarborough*, the historical record indicates that Blackbeard used her more as a tool of intimidation than as a weapon of war, but her performance in this battle showed that she was an effective warship (Johnson 1724, Cordingly 2006, Wilde-Ramsing 2009). This appears to suggest that the merchant *La Concorde de Nantes* was not only a fat prize with light defenses but was a ship with the makings of an ideal

pirate flagship that could both defend the fleet and be used to persuade enemy captains to strike their sails.

During the two “warship” periods of her life, this vessel successfully engaged with enemy captains and was neither captured nor destroyed; her performance as a warship was exemplary. When she was turned to merchant work, *La Concorde de Nantes* successfully completed two voyages in which she encountered no violent resistance; one could argue that she performed well as a merchant, but as soon as pirates engaged with her on voyage number three the ship was lost. Her crew and the environment were markedly unfavorable during the ship’s last merchant voyage, but an efficient vessel being put to her true purpose should be expected to perform reasonably well in unfavorable circumstances; *La Concorde* the privateer successfully engaged and captured enemy ships and cargo and *Queen Anne’s Revenge* the pirate flagship was engaged by a naval warship crewed by professional soldiers fighting for their crown and the pirates prevailed, but *La Concorde de Nantes* the merchant transport was unable to withstand a single battle situation on her own (Johnson 1724, Cordingly 2006, Wilde-Ramsing 2009). The crew may have been to blame for the merchant ship’s shortcomings, but her efficiency as a warship seems to stand on its own.

c. Conclusions

My analysis of this ship’s performance and changes in performance as a result of microsystem alterations lead me to suspect that *La Concorde* was either built by the French as a warship from the start or was an enemy warship that was captured and refitted under the French flag. While her interior construction could be altered to fit more cargo and to improve the crew’s security in the case of a slave revolt, her performance

with fewer cannons and lower overall speed due to cargo weight suggests that she was not originally designed for use as a merchant craft. Her exemplary performance during both military phases of her career is further testament to this being her ideal function (Wilde-Ramsing 2009).

Regardless of her particular specialization, it is evident that *La Concorde* – if indeed that was her original name – was built as a specialized vessel to work in concert with a fleet or flotilla. During her time as a privateer, she sailed with other warships and performed admirably; during her time as a pirate flagship, she sailed with a company of sloops and performed admirably; on the merchant voyage during which she was captured, she sailed alone. As a privateer, her purpose was to support larger warships and catch enemy vessels. As a pirate, her purpose was to provide covering fire for the smaller ships and intimidate enemy captains. On her doomed third merchant voyage, the ship had to perform all transport, combat, and support roles on her own; she failed as a generalist vessel after a history of success as a specialist (Johnson 1724, Wilde-Ramsing 2009).

This ship's interactions with the larger systems network around her suggests that, while the navies' treatment of their privateer captains certainly contributed to the rise of piracy in this period, their handling of privateer ships may have been a significant enabling factor. When *La Concorde* was removed from naval service, she became a target. As her armament decreased during her merchant years, she became a very attractive target. This ship had been designed and built to fight and run and steal ships and cargo from enemy nations, the very things pirates did to survive (Cordingly 2006, Wilde-Ramsing 2009). By slashing the number of cannons such ships carried, their

owners were practically begging the pirates to claim and refit them to terrorize the trans-Atlantic trading routes.

References cited

Bass, George F.

2006 New Techniques of Archaeology and Greek Shipwrecks of the Sixth and Fifth Centuries BC. *Proceedings of the American Philosophical Society* 150(1): 1-14.

Breen, Colin and Wes Forsythe

2007 The French Shipwreck La Surveillante, Lost in Bantry Bay, Ireland, in 1797. *Historical Archaeology* 41(3): 39-50.

Callahan, John E., William J. Miller, and James R. Craig

2001 Ballast Stone Studies From North Carolina Shipwreck 003 BUI, The Queen Anne's Revenge: Hand Specimen, X-Ray, Petrographic, Chemical, Paramagnetic And ^{40}K - ^{40}Ar Age Results. *Southeastern Geology*, Vol. 40(1): 49-57.

Carlson, Deborah N..

2003 The Classical Greek Shipwreck at Tektaş Burnu, Turkey. *American Journal of Archaeology* 107.4 (2003): 581–600.

Clifford, Shelia A.

1993 *An Analysis of the Port Royal Shipwreck and its Role in the Maritime History of Seventeenth-Century Port Royal, Jamaica*. Master's Thesis, Department of Anthropology, Texas A&M University, College Station.

Cordingly, David

2006 *Under the Black Flag: The Romance and the Reality of Life Among the Pirates*. Random House Trade Paperbacks, New York.

Cummins, R.

1994 Functional Analysis. In *Conceptual Issues in Evolutionary Biology*, edited by E. Sober, pp. 49–70. Bradford Book, MIT Press, Cambridge, Massachusetts.

Flannery, K.V.

1967 Culture History v. Cultural Process: A Debate in American Archaeology. *Scientific American* 217 (2): 119-122.

Green, Allan C.

ca. 1940 DENMARK [full rigged] [picture]. Melbourne. State Library of Victoria.
Electronic Document,
https://commons.wikimedia.org/wiki/File:Denmark_frigate_SLV_Green.jpg,
accessed February 25, 2017.

Green, Jeremy

2004 *Maritime Archaeology A Technical handbook*. 2nd ed. Elsevier Academic Press, San Diego.

Hageman, Steven J.

2001 Encrusting Invertebrate Faunas and Shipwreck Histories: Ballast Stones from North Carolina Shipwreck 0003BUI Queen Anne's Revenge. *Southeastern Geology*, Vol 40, No 1, February 2001, p. 60-65.

Hamilton, D.L.

1996 Basic Methods of Conserving Underwater Archaeological Material Culture. *U.S. Department of Defense, Legacy Resource Management Program*, Washington, D.C..

Johnson, Charles

1724 *A General History of the Pyrates, From Their First Rise and Settlement in the Island of Providence to the Present Day*. London.

Jones, George T., Robert D. Leonard, and Alyssa L. Abbott

1995 The Structure of Selectionist Explanations in Archaeology. In *Evolutionary Archaeology Methodological Issues*, edited by Patrice A. Teltser, pp. 13-32.

University of Arizona Press, Tucson.

Konstam, Angus

2003 *The Pirate Ship 1660-1730*. Osprey Publishing, Oxford.

Konstam, Angus

2006 *Blackbeard*. John Wiley & Sons, Hoboken, NJ.

Konstam, Angus

2008 *Pirates The Complete History From 1300 BC to the Present Day*. Lyons Press, Guilford, CT.

Laursen, Lucas

2012 Vasa's Curious Imbalance. *Archaeology*, 65(4): 42-45

Lawrence, Richard W., and Mark Wilde-Ramsing

2001 In Search of Blackbeard: Historical and Archaeological Research at Shipwreck Site 0003BUI. *Southeastern Geology*, Vol 40, No 1, February 2001, pp. 1-9.

Mather, R.

1999 Technology and the Search for Shipwrecks. *Journal of Maritime Law and Commerce* 30(2): 175-184.

Moore, David D.

2001 Blackbeard's *Queen Anne's Revenge*: Archaeological Interpretation and Research Focused on the Hull Remains and Ship-related Accoutrements Associated with Site 31-CR-314. *Tributaries* October: 49-64.

Moore, David D. and Mike Daniel

2001 Blackbeard's Capture of the Nantaise Slave Ship La Concorde: A Brief Analysis of the Documentary Evidence. *Tributaries* 11: 14-31.

North Carolina Department of Cultural Resources

2017 Artifacts From the Queen Anne's Revenge. Electronic document, <http://www.qaronline.org/conservation/artifacts>, accessed June 15, 2017.

North Carolina Department of Cultural Resources

2017 Blackbeard Museum Exhibits and More. Electronic document, <http://www.qaronline.org/visit/museums-and-more>, accessed June 15, 2017.

Schiffer, Michael B.

1987 *Formation Processes of the Archaeological Record*. University of New Mexico Press, Albuquerque.

Schubert, Sara

2006 Piracy, Riches, and Social Equality: The Wreck of the Whydah off Cape Cod. *Historical Journal of Massachusetts* 34(1): 18-38.

United States Census Bureau

2006 File: North Carolina counties.gif. Electronic document,
https://commons.wikimedia.org/wiki/File:North_Carolina_counties.gif, accessed
July 3, 2017

Wilde-Ramsing, Mark

2009 Historical Background for the Queen Anne's Revenge Shipwreck Site.

Research Report and Bulletin Series QAR-R-09-02.