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Institutionalized Piracy and the Development of the Jamaica Sloop, 1630-1743

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INSTITUTIONALIZED PIRACY AND THE DEVELOPMENT OF THE
JAMAICA SLOOP, 1630-1743

By

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For my parents.
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ABSTRACT

English colonists on the island of Jamaica in the seventeenth century struggled with adversity while attempting to establish a permanent settlement. At the time, England lacked the infrastructure necessary to support a prolonged military presence in the Caribbean and English colonists were left to defend themselves amidst hostile neighboring islands. Privateers and pirates operating from Tortuga were lured to Port Royal, Jamaica, and their presence provided a source of security to the colony. Money spent by the privateers also supported the local economy. As the economy of Jamaica stabilized, pirates who once protected the island began preying upon Jamaican shipping. Colonists, influenced by the geophysical environment, economics and politics, were stimulated by piracy to improve upon inadequate ship designs and create an adapted design to mitigate their vulnerability to piratical attack at sea. The resulting ships, known as Jamaica sloops, became renowned for speed and maneuverability.
CHAPTER 1
TECHNOLOGY, ADAPTATION AND THE COLONIAL CARIBBEAN:
EXAMINING PAST HUMAN BEHAVIOR THROUGH SHIPS

The “Golden Age of Piracy,” occurring from the seventeenth century into the early eighteenth century, has become a romanticized period of Caribbean history (Konstam 1999:94). The fanciful world of piracy created by novelists and playwrights belittles a reality in which pirates were more than colorful scoundrels. Sailors who lived this life played an active role in shaping the politics and economics of the areas where they operated. Throughout history, pirates have waged a form of guerilla economic warfare, robbing and pillaging while simultaneously supplying goods otherwise too expensive to be obtained legally. In most cases, governments initially viewed piracy as little more than a nuisance, with only cursory measures offered for its suppression. It was only when the pirates became an economic impediment that their victims acted to eradicate the problem, usually with swift and far-reaching consequences. In Jamaica, English colonists vulnerable to piratical attack adapted their technological systems in order to alleviate economic stress. An example of this was the creation of a ship type known as the Jamaica sloop, designed specifically for regional conditions utilizing local resources. When piracy threatened to interfere with the capitalist world-economy, colonists took an active role in developing technology that would lessen their vulnerability to predation.

Ships have played an important role in the development of human history, transporting people and cargoes into ever-increasing spheres of interaction. Humans have relied on ships for practical matters such as transportation and communication, but ships have also served important ceremonial functions from as early as 3,050 B.C. (Ward 2004:19). Shipwrecks, by definition, represent technological failure because the vessel did not survive to deliver its contents to the next area due to condition, inadequate design, accident, negligence, malicious intent or storm. Wreck sites may contain a multitude of artifact types, the largest being the ship itself, which archaeologists utilize to make inferences about past human behavior (Gould 1983:5). As Gould states (1983:6)
“generalizations about various ways the human species has adapted to the conditions of voyaging and its use of the maritime habitat may be possible on the basis of evidence provided by shipwrecks.” Ships are most often associated with transportation and trade, but their archaeological remains yield greater significance when viewed within the context of “the greater system at large” (Schmidt and Mrozowski 1983:143). Using an example from the colonial Caribbean, locally developed Jamaica sloops were more than just a means of conveyance. Jamaica sloops were an expression of colonial adaptation and technological innovation necessitated by political, economic and geophysical processes related to piracy.

**Colonial Adaptation**

European colonialism in the seventeenth century was marked by the imposition of existing systems onto new landscapes (Blanton 2003:191). Colonists arriving in the Caribbean faced several hurdles in adapting to their new environment. The first was the immediate reaction to landfall after weeks or months at sea. As Blanton (2003:193) suggests, overseas colonists could not make gradual adjustments or process information in the same manner as overland travelers. Instead, overseas colonists were deposited into a radically different environment than the familiar European cultural landscape of rural and urban areas “connected by a network of relatively good roads and improved waterways” (Blanton 2003:193). As Meltzer (2003:225) argues, local knowledge accumulated by pre-existing populations benefits new colonizing populations. English colonists in Jamaica had to adapt to new environments, but benefited from Spanish experience and indigenous knowledge of Caribbean islands. Knowledge barriers could be overcome, but the geophysical environment presented different obstacles to successful colonization. In Jamaica, the physical terrain of the island facilitated slaves in running away, slowing the establishment of plantations because of labor instabilities (Craton 2003:22). Also of concern to the colonists was an extensive island coastline vulnerable to attack (Craton 2003:22). This is not to suggest that successful colonialism was impossible, but rather than it required a learning curve and appropriate action. Colonists
must be flexible enough to assimilate local knowledge and creative enough to survive in their new landscape, be it cultural, physical or economic.

<table>
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<tr>
<td>Resident population</td>
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<tr>
<td>No interaction</td>
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<td>Limited or hostile interaction</td>
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<td>Full (non-hostile) Interaction</td>
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<tr>
<td>Use existing landscape cues; acquire information and resources from resident population(s).</td>
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<tr>
<td>Rate of Learning</td>
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<td>Slowest</td>
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In the process of colonizing new environments, successful colonists must “learn the local resources and adapt extant procurement strategies and technologies” (Meltzer 2003:238). In the Caribbean this meant successfully utilizing local flora and fauna as well as adapting to the tropical climate. It also meant increased interaction with political rivals due to the close proximity of neighboring islands and overlapping spheres of interaction through the use of shared waterways. The presence of Spanish settlers within the colonizing area reduced the ecological knowledge barrier for the English, since the Spanish population had already discovered or introduced items necessary to succeed in the environment (Rockman 2003:16). Social barriers, specifically political and economic rivalry, presented serious challenges to the success of Caribbean colonies.
Difficulties inherent to colonization, coupled with hostilities (both economic and political) created an environment conducive to piracy in the seventeenth- and eighteenth-century Caribbean. The wars between European nations affected the Caribbean as Spanish, English and French forces sought to establish and protect their overseas colonies. Contentious relations contributed to fluidity among Caribbean colonial borders, and alliances between governments and privateers (Pawson and Buisseret 1975:22). The chaos and upheaval caused by European wars created an atmosphere in which pirates thrived.

**Maritime Technology and the Caribbean**

English shipbuilding in the seventeenth century reflected conditions in European waters and was slow to adapt to other environmental considerations. England’s foreign policy was predominantly concerned with protecting the English Channel (Davies 1992:25). English, French and Dutch navies maintained fleets of large, heavily armed vessels in the North Atlantic and Mediterranean (Lavery 1983a:35), but these same ships were not mechanically suited for service in the Caribbean. Pirates utilized small, fast craft capable of out-maneuvering larger British ships (Cordingly 1995:160). Pirate ships during this era carried more personnel than naval vessels, creating a situation whereby workloads were significantly less than those carried by naval seamen (Rediker 1987:256-257). England lacked the infrastructure to maintain a prolonged Caribbean presence in the seventeenth century.

Steele and Rockman (2003:132) state that it is a “truism that humans modify their habitats by technological means to make them more favorable to habitation.” Reflecting this principle, English colonists in Jamaica modified their existing ship technologies and developed a new ship type, adapted specifically for the Caribbean, capable of transporting commodities with less risk of being overtaken by pirates. Using local resources and knowledge of the geophysical region, Jamaica sloops achieved equilibrium between speed, maneuverability and cargo capacity. The resulting vessels earned an enviable reputation for speed and seaworthiness (Cordingly 1995:163).
Archaeological research involves the analysis of material remains, items constructed or altered by humans. Ships in the archaeological record, including their cargoes and extant hull remains, may inform models of past human behavior.¹ In the colonial Caribbean, English settlers developed an adaptive strategy to mitigate their vulnerability to pirates. Social constructs and behavior do not exist in the archaeological record, but artifacts can inform hypotheses of these abstract behavioral patterns. The process of causation, or agency, as suggested by Ortner (1984:127) and reiterated by Dornan (2002:324), is a mechanism for identifying “the intersection of individual intention with resistance to or incorporation of particular social structures” at a given point in time. Dobres (2000:135) argues that agents (in this case English colonists in Jamaica) and structures (the material, social, and symbolic conditions within which people exist and through which they reproduce and transform themselves) are relational. Any attempt to understand the agent must consider the structures in which it operates to avoid misinterpretations of the agent’s, or more generally, human behavior.

It is no sure bet that agents will act just because they can or should. In other words, not acting is still a form of agency [Kegan Gardiner 1995] – and context is the only means by which to understand these nuanced qualities of agency. What this generally means for technology studies in particular, but archaeology more generally, is a new and different interest in the question of material patterns of variability juxtaposed against norms [Wobst 1997] (Dobres 2000:135).

From Dobres’ point of view, the underlying question is not who made the object, or how they made it. Instead, an agent-based archaeological inquiry examines the degree of variability between the object and its normative equivalent. Agent-based studies are concerned with the process of causation. If seventeenth- and eighteenth-century English sloop data is used to create a normative equivalent for sloop construction, then this baseline may be compared with the stimuli necessitating Jamaica sloops to identify areas of potential variability. As Bass (1983:97) implies, particularist data extracted from shipwreck sites is essential to create reconstructions of the behavior of people associated with the ship. English colonists in the colonial Caribbean were threatened by piratical

¹ Shipbuilding and nautical terms not defined in the text are listed in Appendix A, Glossary of Selected Ship Terms. For further discussions refer to Steffy 1994 or Desmond 1998.
attack and their vulnerability stimulated the intentional development of an adapted ship
technology. Jamaica sloops were a unique product of spatial and temporal conditions,
and they can be identified by their unique design and construction.

Agency and Cultural Ecology

The identification of Jamaica sloops is complicated by the lack of a clear and
precise definition of their form. Plans or lines for either seventeenth- or eighteenth-
century Jamaica sloops do not exist, and most descriptions of their form are derived from
a later ship type, the Bermuda sloop. Several archaeological excavations have been
conducted on Jamaican sloops dating to the seventeenth and eighteenth centuries, but
excavations of these wrecks, found at Readers Point, Jamaica, and Pensacola, Florida, do
not explicitly identify them as Jamaica sloops (Bense 1988; Cook 1997; Finegold 1990).
Processes of causation maintain an explicit focus on the development of Jamaica sloops
as a product of human behavior. Related processes assist in identifying the actor(s)
responsible for Jamaica sloop development, but a complete understanding requires a
refined description of Jamaica sloop design, accomplished by superimposing agents and
cultural ecological models.

Agents make decisions based on their experiences within an existing set of
structures. These structures are similar to the variables that influence adaptive systems in
cultural ecological models. I argue that Jamaica sloops were a specific, adaptive
response by English colonists in the Caribbean intended to minimize their vulnerability to
piratical attack. Colonists intentionally modified existing ship designs and used local
resources to create a vessel specifically for their environment. To support this argument,
it is necessary to analyze each of the three structures or interactive variables of the
adaptive system outlined by Karl Butzer (1982:286), technology, social behavior and
resource opportunities. An effective examination of past human behavior requires a
reflexive analysis of “structural events and patterns of practice” (Dornan 2002:325).
Jamaica sloops are an observable consequence of historically unique microprocesses of
Caribbean geophysics and English colonization and broader macroprocesses of
international economics and policy (Dornan 2002:235). It is necessary to examine Caribbean geography, economics and politics as they relate to piracy in order to determine the scope of piracy in the region and identify how ship designs could have been successfully altered to improve their functionality.

In the following chapters I will demonstrate that the scope of piracy affecting Jamaican colonists was exacerbated by deficiencies within existing political and technological systems. Historians agree that Jamaica sloops were uniquely suited to the Caribbean environment (Baker 1966:111; Chapelle 1967:67; Cordingly 1995:163). Their use of the typology “Jamaica sloop” implies a specific combination of design characteristics that are not explicitly defined. It is highly probable that structural deficiencies of contemporary ships prompting the development of Jamaica sloops were addressed in an adaptive design, and may be used to construct a matrix of Jamaica sloop characteristics. Contemporary English sloops were not built specifically for conditions (geographic, economic or political) found in the Caribbean, but information pertaining to their construction and design formed a common knowledge base drawn upon by shipwrights in Jamaica. I will argue that English colonists, as the agents in the system, adapted existing sloop designs to improve deficient characteristics.
CHAPTER 2
BOUNDARIES OF CARIBBEAN PIRACY: IDENTITY AND GEOGRAPHY

A fluid boundary separated Caribbean pirates and privateers in the late seventeenth and early eighteenth centuries, with sailors easily, and at times unknowingly, moving between the two identities depending upon the circumstances of their venture. Variable identities are difficult to distinguish in the archaeological record because pirates and privateers had similar appearances, employed similar tactics, and utilized the same ports, harbors and vessel types. They were a subset of Caribbean culture and came from diverse backgrounds, but pirates were confined by the same physical boundaries as other sailors. This chapter will begin by differentiating between privateers and pirates and will discuss the confusion between these two identities.

Geographic characteristics helped define the cultural landscape of the Caribbean. The second part of this chapter will introduce the geophysical attributes of the region, demonstrating how over time it became advantageous for some maritime ventures to employ a ship type built specifically for the environment utilizing available resources. Jamaica sloops represented a conscious technological adaptation by Caribbean colonists to maximize speed and maneuverability in the surrounding environment, but economics and politics stimulated adaptations. To understand Jamaica sloops as an adaptive response, this chapter will introduce a theoretical approach to analyzing geographical and sociocultural characteristics as they affect dynamic systems.

Transition from Privateers to Pirates

European powers vied for control of territory in the Caribbean during the late seventeenth and early eighteenth centuries. Spain had fought to establish and maintain its vast empire west of the Tordesillas Line\(^2\) since 1494 (Greenwood 1991:17). Pirates and

\(^2\) The Tordesillas Line was a boundary established by the Pope to separate Spanish and Portuguese territories in the New World. It gave Spain all territory west of a line placed 370 leagues west of the Cape
privateers played an integral role in helping the French, Dutch and English to establish territorial footholds in the Caribbean.

Figure 1. Map of the Caribbean (Parry 1963:329).

Privateers were state-sanctioned marauders operating under the commission of imperial powers. Captains of privateering ventures received a license to attack vessels and ports of specific nations or sworn enemies; this license was granted in the form of letters of marque and reprisal, official document to be carried by the captain at all times (Cordingly 1995:xvii; Pawson and Buisseret 1975:20-25). In exchange for this authority, privateer captains were expected to relinquish all goods captured, and a portion of the total value was given to the sovereign and the remainder divided between the captain and crew (Cordingly 1995:xvii; Karraker 1953:44-45; Pawson and Buisseret 1975:20-25; Rediker 2004:6-8).

Verde islands and extending from the North to the South pole, effectively giving Brazil to the Portuguese and leaving the remainder of South and Central America and the Caribbean islands to the Spanish (Greenwood 1991:17).
In the sixteenth and early seventeenth centuries, English privateers were heralded as national heroes for their actions against the Spanish (Andrews 1978:135; Lane 1998:33). The commissions paid by privateers added to the wealth of nations attempting to establish themselves in the predominantly Spanish Caribbean. Privateering ventures had direct economic consequences, but they also constituted nationalistic propaganda in the sixteenth century when the Caribbean was at the periphery of an ideological war between the Protestant nations in Europe and Catholic Spain (Lane 1998:33, 62-63).

Sixteenth- and seventeenth-century privateers, such as Piet Hyne, Francis Drake and Henry Morgan considered themselves patriots (Cordingly 1995:28). Drake, for example, sailed with an English commission and attacked Spanish trade in the name of Queen Elizabeth, his ship sailing under the English banner of St. George (Cordingly 1995:28). Privateers were celebrated as national heroes by their countrymen and faced few reprisals from their own governments. Andrews (1978:135) states that Caribbean privateering was an extension of European political hostilities and “Spain’s European enemies sought to injure her” by attacking outlying colonies in the Caribbean. Spain decried the privateers’ actions and used them to justify its own licensed ventures, including those conducted by Portuguese captain Manuel Rivero Pardal against English Caribbean colonies (Cordingly 1995:50; Lane 1998:117; Smith 2000:91). Privateers conducted maritime assaults in times of war, but their assaults during times of peace could lead to the renewal of hostilities. According to Karraker (1953:29), “open wars would dwindle to guerilla warfare and piracy, which in turn led to open war again.” The victims of privateers often identified their aggressors as pirates, but the aggressors intentionally functioned under both identities.

**Between Pirate and Privateer**

The letters of marque and reprisal that granted privateers royal authority to attack vessels of enemy nations were not a carte blanche to plunder any vessel at sea. Instead, the letters were specific about the vessels that could and could not be seized, and were dependent upon the political climate; the ratification of a peace treaty was supposed to nullify licenses against the ratifying nations. The most well documented case of a
privateer convicted of piracy was Captain William Kidd. In 1695, Kidd received a letter of marque from England’s King William III to capture French vessels and a second commission to capture “pirates, freebooters and sea rovers” (Cordingly 1995:181). Some of the captain’s actions at sea were cited in his indictment of piracy; Kidd attacked a vessel sailing under English flag, killed one of his own men during an argument, and fraternized with known pirate and mutineer Robert Culliford (Cordingly 1995:183-185). Upon arriving in the West Indies in 1699, Kidd learned that the English government had declared him a pirate and issued a bounty for his capture. Kidd attempted to negotiate his freedom with a former business partner, who was also governor to the colony of Massachusetts, but was arrested. During his subsequent trial, Kidd attempted to explain that one of the vessels he was accused of taking as a pirate had given him French passes, which meant that under the terms of his letter of marque he could capture the vessel legally (Cordingly 1995:189). The passes and letters were not located, and Kidd was convicted of piracy. The example of Captain Kidd illustrates the precarious boundary between piracy and privateering, outlaw and hero.

Spain was the primary target of nationalistic privateering in the sixteenth and early seventeenth centuries, but England increasingly suffered the effects of piratical activity as the extent of its Caribbean territory increased during the late seventeenth and early eighteenth centuries (Lane 1998:57, 96-125). As Marcus Rediker (1987:116-152; 2004) has discussed at length, Atlantic pirates in the seventeenth and eighteenth centuries developed from a marginalized population of merchant and naval sailors into a wage labor force, preying indiscriminately upon vessels and ports in the Caribbean. Many of these pirates had acted as privateers during times of war, but turned to piracy when their services were no longer needed.

Some seafaring contemporaries of William Fly had worked during the War of Spanish Succession as privateers – that is, they labored in private men-of-war, with commissions from the King, to attack, capture, and plunder enemies in wartime. Leaders of European nations used privateers to supplement naval power, to disrupt supply lines and commercial circuits, and to accumulate wealth at the expense of their rivals. But when the war ended, they found that they could not control the privateers they had once employed (Rediker 2004:6-7).
The relationship between pirates and colonial governments in the Caribbean was contingent on the political climate. Pirates were commissioned by early Jamaican governors to act as privateers against the Spanish, their crimes overlooked in exchange for the protection they offered to the tenuous colony (Pawson and Buisseret 1975:20-36). As the scale of Caribbean piracy increased, and British shipping and trade was negatively impacted, colonial governors attempted to dissuade pirates from a criminal lifestyle by offers of pardons. These pirates, who were lacking nationalistic predation, were known as *hostis humanis generis* or “villains of all nations” (Rediker 1987:254-287; Johnson 1998:362). Piracy was an attractive alternative to the merchant or naval service, and it flourished within the Caribbean. Pirate strongholds developed in close proximity to major ports, and pirates utilized the various natural resources, and sparsely populated areas to elude capture.

**Physical Landscape of the West Indies**

The Caribbean islands are comprised of two sets of island chains. The Greater Antilles extend from Cuba in the west to Puerto Rico in the east. The Lesser Antilles include all of the islands east of Puerto Rico and extend along a southern arc to Trinidad and Tobago, located off the northern coast of Venezuela. The main focus of this thesis will be the Greater Antilles, since the majority of intensive English and Spanish colonial government infrastructure was located in this region, including courthouses, government buildings, shipyards, and garrisons. Although the Bahamas are physically located in the Atlantic Ocean and are not geographically a part of the Caribbean, they are historically tied to the region and for the purposes of this thesis will be considered a part of the Greater Antilles.
Islands and Reefs

The islands of the Caribbean were formed during intense periods of violent volcanic and seismic activity. The first such episode began 100 million years ago during the Cretaceous period and lasted for several million years, forming Mexico and most of Central America and the Greater Antilles (Macpherson 1963:1-2; Richardson 1992:15). Tectonic shifts created mountain chains including the Sierra Maestra of Cuba (1,972 m / 6,740 ft), the Blue Mountains of Jamaica (2,257 m / 7,405 ft) and Pico Duarte in the Dominican Republic, which at 3,175 m (10,417 ft) is the tallest mountain in the Caribbean. Seismic activity produced not only mountains but also deep underwater trenches, including the Bartlett Trough, which passes between Cuba and Jamaica and extends to a depth of 6,096 m (20,000 ft) below sea level (Macpherson 1963:2). The southern islands of the Lesser Antilles were formed during a subsequent period of
worldwide seismic upheaval, during which the Himalayas, Andes, Rockies and Alps were also formed (Macpherson 1963:3). Unlike other major island chains like Hawaii and the Galapagos, the Antilles were never connected to another major landform, instead developing in geological and ecological isolation. The islands of the Lesser Antilles lie along an arc at the intersection of two of the earth’s crustal plates (Richardson 1992:16). Active volcanoes are not present in the Greater Antilles (Hedges 2001:18). Volcanic eruptions and earthquakes periodically occurred, causing extensive damage in the historic period. One of the most devastating earthquakes happened in 1692 and destroyed most of the Jamaican town of Port Royal (Macpherson 1963:36; Pawson and Buisseret 1975:120-124).

The islands of the Caribbean are incredibly dynamic. In addition to seismic processes, materials are continuously captured by the sea and integrated into the landmass in a variety of ways. Mangroves trap silt, mud and sediments as waves move among their root systems, and cays grow among coral reefs as sand is deposited on top of the reefs by wave actions (Macpherson 1963:4). Four distinct types of coral reef are present in Caribbean waters. Fringing reefs are the most common, and usually touch the coast of an island or are located in very close proximity, separated by shallow water. Barrier reefs, such as those off Belize and the Bahamian island of Andros, are sometimes located several miles offshore, and are usually separated from the mainland by water at depths of over 30 m (100 ft). Bank reefs are built on “broad, shallow submarine platforms” unattached to the primary landform (Macpherson 1963:5). The last type of reef is the atoll, a coral island surrounded by deep water. Fringing, barrier and bank reefs protect islands from the detrimental effects of tidal erosion, but also serve as navigational hazards for sailing vessels. Early navigational charts of the Caribbean were often inaccurate, and reef and even island positions were plotted differently on various maps. The privateer William Dampier believed that most maps overestimated the latitude of the Caribbean by as much as ten degrees, a distance of approximately 600 nautical miles (Cordingly 1995:83). The combination of rapidly rising sea floors, low-lying islands, shallow reefs, and inaccurate maps meant that even the most experienced pilots could

Figure 3. The Cayman Islands were plotted differently. At top, a 1780 map of the West Indies shows the Cayman Islands in a northeast-southwest orientation. At bottom, a 1579 map of the West Indies shows the Cayman Islands in a west-east orientation.

**Trade Winds and Currents**

Travel between the Caribbean and Europe was aided by a combination of winds and water currents. Seasonal winds known as trade winds create a reliable sailing route for ships traveling from the west coast of Africa into the Caribbean Sea, the Antilles and ultimately the coasts of the Caribbean and Central and South America. Blowing westward across the Atlantic for 300 days of the year, trade winds maintain a near constant speed, and rarely exceed 14 knots, creating ideal sailing conditions (Greenwood...
Trade winds influenced early routes and also naval strategy. According to Macpherson (1963:7), “Voyages from west to east could take five to ten times as long as those from east to west. An easterly situation was therefore both economically and strategically valuable.” Surface winds were not the only means of propulsion. The North and South Equatorial currents merge in the Atlantic to flow westward into the southern Caribbean, fluctuating between speeds of five and eight knots. Once on the leeward side of the Lesser Antilles, vessels were sheltered from trade winds and utilized a system of water currents. These currents flow clockwise, following first the South and then Central American coastlines until passing through the Yucatan Channel (Greenwood 1991:13). At the Yucatan Channel, the powerful Gulf Stream flows from west to east along the Gulf coast, carrying ships towards the Florida Straits and back out into the open Atlantic, where strong eastward winds called westerlies aided ships sailing out of the Caribbean to Europe (Greenwood 1991:13). Hurricanes typically follow this wind and current pattern. Caribbean hurricanes generally form in the Atlantic Ocean, near the Cape Verde Islands off the West African coast, have an average diameter of 600 km to 800 km, and move at a relatively low rate of speed (Bolay 1997:65). Hurricanes have been problematic for populations since the prehistoric period. The indigenous people of Hispaniola, the Taíno, labeled these storms “huaracans,” from which the English word “hurricane” is derived (Rouse 1992:171). Hurricanes have plagued Caribbean settlements continually, often affecting the placement of colonies. Christopher Columbus moved his first planned colony on the island of Hispaniola from La Isabela in the north to Santo Domingo because a southern location offered more protection from hurricanes (Deagan and Cruxent 2003:63-64, 66).
Figure 4. Ships sailing into and from the Caribbean region utilized a reliable system of water currents and winds (Greenwood 1992:12).

In the Caribbean, capital towns were usually founded on the protected leeward sides of the islands (Richardson 1992:19), and throughout the region, ports were strategically established in defensible locations along the sailing routes. Early ports included Santo Domingo on the southern coast of Hispaniola, Cartagena on the northern coast of Tierra Firme (present day South America), Nombre de Dios and Veracruz along the eastern Central American coast, and Havana on Cuba’s northwestern coast. These early Spanish possessions were points of trade for sailing vessels, and the majority of the wealth in the New World passed through these areas, making them attractive targets for pirates and privateers.

Island Ecology and Natural Resources

The islands of the Greater Antilles, with their large landmass and diverse flora and fauna, have supported human populations for approximately 7,000 years (Rouse
Biogeographers have attempted to model the ecosystem that supported prehistoric populations of Taino, Arawak, Lucaya and Carib with varying degrees of success (Wilson 2001:522). Subsequent colonizing populations have altered the ecosystem significantly through the destruction of certain autochthonous elements and the introduction of exotic species (McNab 2001:55). On the island of Jamaica, fewer than 30% of all plant species are endemic (Johnson 1988:57), the Dominican Republic retains only 36% endemic species, and Puerto Rico retains only 14% of its endemic species (Bolay 1997:98). Early explorers and missionaries documented their travels, providing evidence for the ecology of the islands during the early period of European exploration and colonization. Manioc, sweet potatoes, plantains, bananas, guava, and pineapple were some of the edible plants mentioned in these accounts (Fuson 1987:85, 233-235). In fact, European colonists introduced many of the plant species now considered to be stereotypically Caribbean; breadfruit, coffee and sugar cane were cultivated as cash crops. Abundant varieties of saltwater fish, shrimp and sea turtles were recorded, and while there were various species of reptiles, the Caribbean islands lacked large mammals. The hutía, a member of the rodent family, was one of the few game animals encountered (Bolay 1997:114).

The pre-Columbian populations of the Greater Antilles lived in a delicate balance with their ecosystem, but European explorers and colonists saw the islands as a resource waiting to be tapped. During the early stages of colonialism, European food staples including goats, pigs and cattle were introduced to the islands and significant portions of forested area were cleared for pasture (Bolay 1997:115-116; Wilson 2001:524-525). During colonial times, Cuba, Jamaica and Hispaniola supported large areas of dense forest, including mahogany, rosewood, sandalwood, lignum vitae, ebony, lancewood, and cedar (Platt et al. 1941:11). An excerpt from Charles Leslie’s (1740) letters from Jamaica in the 1730s enumerates the natural ecology of the islands:

You see a thousand various kinds of trees adorning the brow of every hill, irregularly mixing their different branches, appearing in a gay kind of confusion, forming groves and cool retreats: the cedar, the lignum vitae, the mahogany, and unnumbered others mingling their boughs; …The sugar cane, the ginger, and the others, which are better to their owners than a share in the mines of Potosi; these are produced and cultivated here. We can likewise
boast of the finest orange and lemon trees, in great plenty. Fruits are so common that few mind them. On the way sides you may pick the star apple, the guava, the citron, the mamee, and others. One would be apt to imagine we were here in a kind of paradise. But these advantages are balanced with some things that are disagreeable enough. The rivers contain the dreadful alligator, the fens and marshes, the iguana and galliwasp; the mountains are some of them impassable, and breed numberless snakes and noxious animals. We are exposed to the scorching heat of a sultry sun, and the warm climate makes the place sickly (Leslie 1740).

The plantation crops mentioned by Leslie were cultivated at the expense of the indigenous vegetation. Forested areas were cleared so that the arable land could be used for sugar cane plantations during the late seventeenth century; the forests that once covered over 60% of Cuba represented only 10% of the total area of the island in the mid-twentieth century (Macpherson 1963:136). In addition to dangerous reptiles, alligators and snakes, the warm waters of the Caribbean were home to a number of wood-eating marine organisms that damaged ships and marine structures. Shipworms, or *Teredo navalis*, are bivalves that live and mate within submerged wood and are particularly damaging to ships (Kaplan 1988:261). They are prevalent from Canada to Florida, Texas and the West Indies. Other wood-damaging organisms in the Caribbean include Gould’s shipworms (*Bankia gouldii*), wood piddocks (*Martesia cuneiformis*) and striated wood piddocks (*M. striata*), which all bore and burrow into submerged wood surfaces (Kaplan 1988:258, 261). Gribbles (*Limnoria tripunctata*) are crustaceans that incidentally damage wood by creating small burrows across the wood’s surface as they feed on wood-dwelling fungi (Kaplan 1988:261). The careening of ships’ hulls (exposing the ship’s hull to the air, removing marine growth and replacing rotten timbers) was a standard practice, and did not develop because of conditions in the Caribbean, but warm water that hosted aggressive wood-eating organisms meant that Caribbean ships had to be careened much more frequently than their European counterparts (Smith et al. 1999:134-137).
Cultural Geography of the Caribbean

In the Caribbean, trade winds and water currents provided opportunities for inter-island transportation while natural resources and indigenous flora and fauna created an environment that could sustain large, permanent populations. The Spanish were the first Europeans to establish ports and colonies along the trade routes, but the English, French and Dutch soon followed, establishing their own footholds in the Caribbean. The smaller islands provided opportunities for the colonial newcomers to establish themselves in areas that the Spanish ignored. In the mid-seventeenth century, England sought to invade Cuba, but lacking the resources to successfully invade this Spanish territory, invaded the less-protected Jamaica (Lane 1998:102-106; Pawson and Buisseret 1975:6). Although Spain did not formally acknowledge England’s claim to Jamaica until the 1670 Treaty of Madrid, there were few organized attempts to retake the island, and it became England’s first large holding in the western Caribbean (Lane 1998:104; Pawson and Buisseret 1975:6). Pirates too were able to use the endless small islands, cays and harbors to their advantage. The islands of Turks and Caicos, and Tortuga, did not have any permanent inhabitants in the seventeenth century and their position northward of western Hispaniola and southeast of the Bahamas, was ideal for pirates to lay in wait for the Spanish galleons returning to Europe with rich cargoes (Greenwood 1991:39). Pirates of all nations used the Cayman Islands and British Virgin islands as staging points; small islands with sufficient resources for occasional provisioning but not enough for a self-sustaining permanent colony, they were strategically located along prime sailing routes and proved to be excellent strongholds for pirates and privateers (Greenwood 1991:40).

Pirate Strongholds

Peter Galvin (1991:113) has divided pirate strongholds into three categories. The first of these consists of small, remote islands or archipelagoes with abundant fish, turtle, game, wood and water such as those of the Bahamas. The second category includes shorelines with marshy conditions that were economically limited so as to render them sparsely populated if not totally uninhabited. The Honduran and Nicaraguan coasts of Central America proved valuable to English, French and Dutch pirates and privateers
because of their abundant careenage areas, fresh water, sympathetic natives and the availability of fresh food (Galvin 1991:75). The third type is the fortified port, such as Port Royal, Jamaica. Fortified ports demonstrated that pirate strongholds were not isolated to marginal regions. Early English governors of Jamaica encouraged privateers and pirates to attack Spanish trade from the point at Kingston Harbor known as Port Royal (Pawson and Buisseret 1975:22-34). The port quickly became a rendezvous for pirates and privateers, and associated businesses emerged to capitalize on the money flowing through the port. Between the years 1665 and 1685, 19 taverns and alehouses were registered in Port Royal (Lane 1998:105-106). Port Royal lacked military protection after the initial campaign that captured the island, but the presence of the pirates aided island defenses against the Spanish. Once the English infrastructure was secured the town was incorporated into the legitimate colony because of its economic viability (Galvin 1991:113).

It should be understood that pirates did not build their own vessels, but instead captured ships as prizes. They often targeted vessels that would allow them access to a variety of areas, maneuvered well and were fast in the water. They did not live on their vessels at all times, but their ships had to be able to access habitation areas they deemed secure. Pirate encampments had three factors in common: maritime physiography, natural resources and proximity to the lines of commerce (Galvin 1991:114). Pirate strongholds suited to careening, or cleaning and repairing the ship’s hull, were the most desirable since this task had to be completed every two to four months. A proper careenage area needed to be secluded and defensible since the entire ship was unloaded and the crew exposed on the beach. The surrounding harbor needed to be deep enough to haul the ship on its side for cleaning, but too shallow to permit large man-of-war vessels to enter while the pirates were vulnerable to attack (Galvin 1991:132). Pirates needed ships capable of sailing into these restricted and shallow waterways. Eventually, in response to piratical activity, the Royal Navy would depend on shallow-drafted sloops to allow access to these areas in pursuit of pirates.
Defending Against Attack on Land and at Sea

It was necessary for colonial settlements in the Caribbean to defend themselves against attacks. Earlier in the sixteenth century, the Spanish fortified their ports by increasing their garrisons and maintaining a strong terrestrial defense system to protect against maritime attack (Galvin 1991:53). The next step in the defense of Spain’s colonies was the establishment of the convoy, or flotilla system for shipping items between the Caribbean and Spain, but instead of decreasing attacks the flotilla system essentially gave pirates a guaranteed schedule of shipping activities (Lane 1998:18). Terrestrial fortifications could only defend against raids made on the land or within the immediate firing range of cannon, and this shortcoming was easily exploited. In 1628, Piet Heyn, Admiral of the Dutch West India Company, designed an attack on the Spanish treasure flotilla. Attacking the ships in port was dangerous since the two staging ports were well fortified; the port at Veracruz was protected by the castle on San Juan de Ulua, and Havana harbor was located behind the garrison at El Morro castle. He therefore decided to attack the ships on open water (Galvin 1991:71). Heyn’s successful attack resulted in the capture of four treasure galleons, twelve smaller vessels and a prize of over 11,500,000 guilders (a modern equivalent of approximately $6,600,000 U.S.) (Galvin 1991:73).

Beginning in 1513 the Casa de Contratación in Seville had assigned two guarda costas (caravels) to patrol the Cuban coast (Galvin 1999:34). Large vessels with a plethora of armament could protect merchant ships at sea. Armed escorts were traditionally vessels reallocated to Caribbean service, and ill-suited to the specific climatic and geophysical conditions of the warm tropical environment (Lyon 1993:37-61). Pirates in smaller vessels could outrun and outmaneuver a more heavily armed merchant escort. Pirate vessels typically sailed with double and even triple the number of crewmen as similarly-sized merchant or naval vessels. The increased number of hands meant that collectively, pirate crewmen had a lighter workload than either merchant or naval sailors (Rediker 1987:259-261). If a pirate crew had to board another vessel in order to seize it, their increased numbers were again to their advantage. Crew size
combined with faster ships gave pirates a distinct advantage when seizing a prize
(Reidker 1987:259).

Environment, Culture and Technology

Early in the twentieth century, cultural anthropologists documented reciprocal
relationships between human cultural behavior and the surrounding environment.
Anthropologists Leslie White (1949), Julian Steward (1955) and Roy Rappaport (1968)
argued that human behavior was limited by and used to control available ecological
resources. These behaviors, or adaptive strategies, have been defined as “conscious or
unconscious, explicit or implicit plans of action carried out by a population in response to
either external or internal conditions” (Moran 1982:325). This theory was adapted for
archaeology by Karl Butzer (1982:6) who used “basic principles of systems theory” to
integrate ecological factors within contextual archaeology. In doing so, Butzer
(1982:286) developed a conceptual model of the interactive variables of an adaptive
system. Butzer’s model depends upon feedback loops of both biophysical and
sociocultural stimuli in order to enact change; any change in one system will require
adjustments in the others.

Butzer’s model and theoretical approach can be applied to the development of
Jamaica sloops in the Caribbean, illustrating the relationship between geographical,
economic and political conditions that resulted in the adaptive strategy of innovative
technology. In this model, external and internal factors influence feedback loops so that
changes in one system cause corrections in the other. Biophysical factors at work in the
Caribbean include unpredictable hazards (earthquakes, hurricanes, sailing conditions,
pirates) inherent to colonization of a new environment, while sociocultural stimuli
include intergroup competition from either warfare or migration, and diffusion of new
information, generated outside of the ecosystem, through trade (Butzer 1982:289-283).
The development of Jamaica sloops, using Butzer’s model, was an innovative response to
a unique combination of interrelated environmental, economic and political processes at
work in the Caribbean during the seventeenth and early eighteenth centuries. Maritime
technology, and specifically ship design, is at the heart of the adaptive system when approached from this theoretical viewpoint.

Figure 5. Technology, social behavior and resource opportunities influence adaptive systems. The geographic characteristics of the Caribbean as presented in this chapter represent resource opportunities in this system. Butzer’s (1982:286) model describes resource opportunities as biotic competition, disease, temporal variability, and spatial variability. Caribbean resource opportunities include available timber species and wood-damaging organisms, intensive and extensive habitation in the Caribbean region, and variability of the geographic and environmental attributes of the Caribbean (water depths, reef systems and other navigational hazards).
Voyages in the Caribbean

At the end of the seventeenth century European ships were generally designed with northern Atlantic or Mediterranean conditions in mind. Restricted shipping channels at the Straits of Gibraltar hindered Mediterranean pirates, but Caribbean pirates operated in a permeable environment (Galvin 1991:38). Although some portals were more important or more heavily used than others, the geographic location of islands within the Greater and Lesser Antilles allow larger ships multiple options for crossing from the Atlantic into the Caribbean Sea (Galvin 1991:39). Galvin’s research identifies no fewer than 19 “choke points” in Caribbean waterways (1991:41-42).

Figure 6. Multiple choke points around the Caribbean restricted access through narrow channels (adapted from Galvin 1991:37).

Bottlenecks allowed access into the Caribbean, but prevailing winds made egress to the Atlantic and the return to Europe more difficult by forcing vessels to travel through
a restricted passage. Prevailing winds followed a semi-circular pattern, following the Central American coastline from Veracruz north, northeast along the Gulf Coast, and past the Florida Keys through the Florida Straits. While wind patterns were well documented, contemporary maps often mischarted smaller islands, and those with low profiles often proved to be navigational hazards. The islands in the Bahamian archipelago, the Florida Keys, and the Cayman Islands claimed hundreds of ships due to navigational error (Galvin 1991; Leshikar-Denton 1993; Lyon 1993). Throughout the Caribbean, water depths change abruptly, as in the case of Grand Cayman Island where the water depth offshore of the East End increases from 4 m (13.2 ft) to well over 1,800 m (5,940 ft) in a distance of 400 m (Caribbean Geology and Tectonics 1998). Ships with shallow drafts could evade shallow shoals, sandbars and reefs more easily. Larger vessels faced with sudden depth changes often found themselves run aground. Shallow water hazards that threatened ships under sail were often incorporated into the design of port and harbor facilities as an added, natural defense against foreign attack.

Since the earliest voyages of exploration, the Caribbean was considered a ship trap. During the sixteenth century, nations often allocated older, less valuable vessels for New World voyages to minimize potential losses. The Emanuel Point shipwreck, thought to have been one of the 1559 Spanish colonization vessels sent to Pensacola, Florida from Veracruz, was identified as an older vessel with multiple New World repairs (Smith et al. 1999:134, 137). The strategy of sending older vessels minimized the financial risk of the investor at the expense of crew safety.

The phrase “form follows function” can be used to describe English shipbuilding in the seventeenth century, when European naval ships were built for the purpose of carrying large armaments (Lavery 1983a:35). Ships were designed with regard to their function, and environmental conditions in the Caribbean were not a significant factor. English shipbuilding favored larger and more heavily armed ships in order to defeat their rivals in European waters (Davies 1992; Harding 1995:80-86; Lyon 1993; Chapelle 1967:65-68). The French navy paralleled this trend, and by 1688 boasted a fleet of ships of the line that outnumbered England’s (Harding 1995:93), but not all European shipbuilding followed this pattern. In the 1660s Dutch shipbuilders abandoned the
construction of large three-decked gun ships because extremely large vessels were incompatible with the shallow waters of the estuaries along their coastline (Harding 1995:86). As a result English ships of the line created a formidable defense, but smaller Dutch vessels outran and outmaneuvered them, foreshadowing the development of Caribbean vessels.

Table 2. Comparison of the number and size of vessels in the English, French and Dutch navies. Note that as the number of large vessels within the French navy increases, the Dutch navy includes fewer ships of significant tonnage. (Harding 1995:86)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Displacement (tons)</th>
<th>Number of English ships</th>
<th>French ships</th>
<th>Dutch ships</th>
</tr>
</thead>
<tbody>
<tr>
<td>1660</td>
<td>671</td>
<td>131</td>
<td>26</td>
<td>97</td>
</tr>
<tr>
<td>1665</td>
<td>713</td>
<td>143</td>
<td>47</td>
<td>115</td>
</tr>
<tr>
<td>1670</td>
<td>804</td>
<td>104</td>
<td>120</td>
<td>129</td>
</tr>
<tr>
<td>1675</td>
<td>863</td>
<td>110</td>
<td>134</td>
<td>110</td>
</tr>
<tr>
<td>1680</td>
<td>992</td>
<td>133</td>
<td>135</td>
<td>93</td>
</tr>
<tr>
<td>1685</td>
<td>1154</td>
<td>117</td>
<td>132</td>
<td>95</td>
</tr>
<tr>
<td>1690</td>
<td>1137</td>
<td>109</td>
<td>131</td>
<td>74</td>
</tr>
</tbody>
</table>

The success of Caribbean colonization required that Europeans be able to adapt social, cultural and technological systems to the new environment. The failure of Columbus’s colony at La Isabela has been attributed to a combination of factors including the imposition of a new social order upon citizens unwilling to assume a different social identity, an inhospitable environment, and technologies that were ineffectual (Deagan and Cruxent 2003). As demonstrated by the failure of La Isabela, colonists could not simply transfer existing social and technological systems to a new environment. In addition to mastering a new landscape, colonies must be able to successfully navigate a “technology landscape, whose fitness varies with the environmental problems that the technology must solve” (Steele and Rockman 2003:132). European vessels were not designed for Caribbean environmental conditions,
but were utilized until piracy negatively impacted the economy to the point that an adaptive strategy was necessary.

**The Geography of Caribbean Piracy**

The boundaries that separated privateers and pirates were transient, and sailors sometimes shifted between these two identities. Pirates and privateers operated within the same environment as other sailors and all crews had to contend with omitted and erroneously charted reefs, islands, and other obstructions, and wood-eating, warm-water parasites. The geography of piracy is closely linked to the geography of the colonial system, and pirates and privateers were instrumental in breaking Spain’s monopoly on the Caribbean. The conceptual model of interactive variables within an adaptive system developed by Karl Butzer will be used in the following chapters to demonstrate the linkages between ecological and social conditions and their impact on behavior.

An analysis of the development of an adaptive strategy for countering the effects of piracy must consider other practical issues aside from sailing. European trade monopolies maintained tenuous links in the New World. Ports served as a very loose cog in the system of trade. Only the largest of New World ports were fortified, yet pirate strongholds were usually located in close proximity to them. As European nations fought frequent wars with one another, monopolistic trade was often disrupted. In the Caribbean, smugglers and pirates moved trade goods between colonies and played an active role in the proliferation of the contraband trade. The following chapter will discuss the economics of the Caribbean region in the global perspective and at the local scale, and discuss piracy as an independent economic system.
CHAPTER 3
PIRACY, CAPITALISM AND TECHNOLOGY: CARIBBEAN ECONOMICS IN THE SEVENTEENTH AND EIGHTEENTH CENTURIES

Piracy and trade exist in a symbiotic relationship; in order for piracy to exist commodities must be vulnerable to attack. In the seventeenth and eighteenth centuries a network of shipping routes crossed the Caribbean Sea, part of a world-economy in which multiple states interacted through trade. Various models (Anderson 2001; Wallerstein 1980) address the economic implications of trade and piracy on both the global and local scale. This chapter considers the global scale by evaluating the Caribbean’s role in the capitalist world-economy and the implications of capitalism for technological innovations. Shifting from the global to the local, the chapter will then examine Caribbean piracy as systems of economic exchange. Jamaica sloops were a specific reaction to local conditions within a global system, so the global economic framework must be established in order to adequately address the local implications of piracy and any resulting adaptations.

The European Core and Peripheral Caribbean

For the first 150 years following Columbus’s discovery of the Caribbean, the islands served mainly as a transit route between Spain and its resource-laden territories in Central and South America (Richardson 1992:4). Trade goods from the East Indies were transported from the Pacific Ocean across the Isthmus of Panama to Caribbean ports, and together with raw materials extracted from the mainland, shipped to European markets (Galvin 1999:27). Dwindling indigenous resources were replaced with introduced crops, and plantations brought economic viability for colonists of the Greater Antilles (Richardson 1992:4). Growing plantations within the Caribbean required trade goods and supplies as islands at the periphery of European imperialism were slowly incorporated into a global system of trade between 1600 and 1750. (Richardson 1992:4). The piracy
that affected the region during the seventeenth and eighteenth centuries was, in part, a reaction to the success of Caribbean trade.

Imperial prominence in the Caribbean followed a “hegemonic sequence,” the rise of England and the decline of Spain as core states, during the colonial period (Chase-Dunn and Grimes 1995:390). Patterns of Caribbean trade demonstrated interdependence between nations, qualifying it as a world-system (Chase-Dunn and Grimes 1995:390). The framework of world-systems theory, as developed by Immanuel Wallerstein, provides a paradigm and terminology with which to dissect economic relationships among states and colonies (Wallerstein 1980). The colonial Caribbean, using world-systems theory, was a market-based, capitalist, world-economy, where capitalist is defined as a system that emphasizes the “endless accumulation of capital” (Wallerstein 2004:92) and world-economy refers to a “large axial division of labor with multiple political centers and multiple cultures” (Wallerstein 2004:99). In addition to terminology, the main contribution of world-systems theory in the study of historical economies is an emphasis on macro-processes. The core-periphery concept is relational (Wallerstein 2004:28). The very term “world-system” refers to a “spatial/temporal zone which cuts across many political and cultural units, one that represents an integrated zone of activity and institutions which obey certain systemic rules” (Wallerstein 2004:17). The seventeenth and eighteenth century marked the beginning of the modern capitalist world-economy. Not only was there a relationship between core (England) and peripheral (Caribbean) production areas, but mechanisms rewarded individuals seeking the endless accumulation of capital through proper channels, penalizing those operating outside of the system and eventually eliminating them from the social scene (Wallerstein 2004:24).

Phillip Gosse (1932:1) has categorized widespread piracy as that of an “independent nation” but pirates were a marginalized group operating at the periphery of state organization. According to Wallerstein (2004:99) the concept of a world-economy is used to describe the nature of trade relations among states and does not imply an integrated system of production, nor does it recognize non-state entities like pirates. The
Caribbean represented a world-economy because several polities coexisted “within a single economic exchange network” (Hall 1986:390). According to Hall (1986:391) state or nation is intended as “a society with institutional means of political regulation” including law and government that can finance the employment of full-time specialists to support the system. World-systems theory can be used to examine the economic relationship of trade between colonizing nations in the Caribbean but omits several key components in the analysis of Caribbean piracy. It cannot accept pirates as a legitimate part of this system. Pirates had an extremely fluid social organization at odds with bureaucratic systems. Although world-systems theory shifts the focus to the interaction between core and periphery areas, it does not allow for the introduction of non-state entities. Plunder and piracy create power relationships between pirates and states, but “by itself plunder does not constitute effective incorporation” (Hall 1986:392). As Hall argues, world-systems theory does not account for drastic catalysts of localized social innovation like piracy (1986:391).

Utilizing Butzer’s model of the adaptive system as a result of the interrelationship of geographic, economic and political systems, the economic framework of world-systems broadens the focus from the state to the interaction among states (Hall 1986:391) but it ignores the implications of technological change.

Several variations of this trade, however, linked the Caribbean, Europe, Africa and North America. Molasses from the Caribbean often went to North America, for example, and then rum from North America to West Africa. Sailing ships from North America also hauled lumber and salt fish south to the islands, beating their way against the easterly crosswinds and taking care not to be caught in open waters during the July to October hurricane season. And, although the ‘triangular trade’ terminology is useful and vivid, the importance of the trade was that it represented a commodity flow that tied together far-flung zones in different corners of the Atlantic. The ships themselves – as some more unromantic scholars have pointed out – often did little more than alternate back and forth between two areas or ports (e.g., Wallerstein 1980:238). (Richardson 1992:39)

Richardson’s argument demonstrates the utility of a world-systems framework in analyzing trade relations, which can then be used to enhance a discussion of the economic motivations of piratical activity and counter-measures. Although his interpretation failed to recognize ships as an adaptive reaction within the system,
Wallerstein (2004:17) states that the capitalist world-economy predicated “a need for constant technological change, a constant expansion of frontiers – geographical, psychological, intellectual, scientific.” Technological change increases at a dramatic pace under capitalist systems, because its utility is determined solely by its production efficiency, without regard to any potential disruption of existing social structures (Chase-Dunn and Grimes 1995:400). Any social effects of technological change are generally ignored because the developers are primarily interested in raising their profit margins against aggressive competition (Chase-Dunn and Grimes 1995:400). Against the backdrop of Caribbean trade and piracy, Jamaica sloops were quickly adopted and co-opted because they increased their owners’ profits by moving trade goods between ports more quickly and were (initially) less-likely to be captured by pirates. In the capitalist world-economy an adaptive innovation like Jamaica sloops would have rewarded colonists with endless opportunities for the accumulation of wealth. The investment of resources required to develop and construct Jamaica sloops was necessitated by adverse conditions created by piratical activity, but the long-term benefits outweighed the initial expenditures.

Piracy and Economics at the Local Level

World-systems and the capitalist world-economy refer to a global scale of economic exchange, and represent macroprocesses influencing conditions in the Caribbean. Piracy consists of acute, individual episodes, the accumulation of which influences actions and reactions at the local level. John L. Anderson (2001:86) introduces an explanatory model of piracy, categorizing it by its form and expression:

It may be parasitic, dependent on the extent of seaboarne [sic] trade or the wealth of vulnerable littorals; episodic, occasioned by a disruption or distortion of normal trading patterns; or intrinsic, a situation in which piracy (or at least predation) is part of the fiscal and even commercial fabric of the society concerned.

Utilizing Anderson’s explanatory model of piracy, it is possible to determine how socio-cultural factors contributed to specific categories of economic and trade-related
Caribbean piracy at the local level. Technological adaptations, such as the development of Jamaica sloops, may then be examined as a reaction to specific adverse conditions.

**Parasitic Piracy**

According to Anderson (2001:86), piracy functioned within a parasitic relationship with trade that continued until trade reached a certain level of prosperity, at which time intervening steps were taken to protect commerce. Parasitic piracy, as represented in the Caribbean, benefited states “by preying upon the commerce of political and commercial rivals” (Starkey 2001:109). An example of this type of piracy occurred during King William’s War between France and England (1689-1697). In 1693, French pirates attacked Jamaica and attempted to take the island while it was recovering from the devastating aftermath of the 1692 earthquake. The pirates were unsuccessful in capturing the island, but they brutalized the economy of the southeastern coast (Lane 1998:169-170). As a result of the attack, 50 sugar mills and 200 homes were destroyed, 100 English soldiers were killed and over 1,300 slaves were reported missing and presumed stolen (Lane 1998:170).

Parasitic piracy was nearly identical to privateering, which Nadal (2001:125) defined as “a violent, but institutionalized, maritime activity.” Legitimate or not, piracy was a successful method through which countries could weaken their foreign rivals and gain wealth from the West Indies trade without intensively investing their own limited resources (Ritchie 1997:10; Lane 1998:97). English, Dutch and French privateers had “geopolitical and financial motives” in attacking Spain’s Caribbean possessions and plate fleets (Davies 1992:16).

In the sixteenth and seventeenth centuries, ships transported Caribbean privateers who focused their assaults on terrestrial settlements. Francis Drake and Henry Morgan attacked the customs house and storehouses of Nombre de Dios and Porto Bello, but Peit Hyne recognized the vulnerability of ships at sea and orchestrated the capture of 16 vessels (Galvin 1991:71). Ships were the workhorses of colonialism and transported
everything from raw materials and finished goods to slaves and colonists. By the seventeenth century, pirates regularly targeted ships at sea.

In terms of European expansion, the most important cargo transported by ships was bullion. By the 1660s, bullion imported from the New World was the main source of liquid assets to European nations; land and agriculture were the main sources of wealth, but bullion was the main method through which to “mobilise [sic] the fixed resources of society” (Harding 1995:79). Pirates procured most of their own necessities through plunder and, while bullion was desirable, anything of value was taken.

As Anderson (2001:86) has argued, piracy was not allowed to continue unabated. Privateers and pirates assisted the English in protecting their nascent colonies by attacking Spanish trade (Lane 1998:105-107), but as English power in the Caribbean increased, so did English vulnerability to maritime predation. Beginning around 1650 the English navy began to see the protection of merchant trade as its primary responsibility (Harding 1995:82), but patrols were concentrated in the English Channel. Although North American trade was important in funding England’s naval campaigns, it was not economically feasible to support a permanent presence in the region. Colonists were often left to defend themselves, unaided by the state. In 1686 a treaty of neutrality was signed to protect the colonies in the Americas from European powers, but this peace did not last. In the 1690s William III sent English forces to protect Spanish holdings in the West Indies and antagonize French forces as part of an alliance between Spain and England (Harding 1995:109). As Harding (1995:92) stated, “English shipping and trade formed the crucial ‘sinews of power’ in any struggle, be it commercial or ideological.”

The economic implications of piracy extend beyond the immediate losses incurred as a result of attack. Anderson (2001:85) suggests that the cost of piracy includes an assumption of decreased assets available for trade. Starkey (2001:109) argues that piracy exploited market deficiencies and acted as a rival and predator of shipping, but increased shipping did not always indicate a rise in the instances of piracy.
Direct losses of labor and capital occurred through the destruction of ships, loss of cargo items or murder or desertion of ships’ crews. Items stolen through acts of piracy reduced the amount of commodities available to legitimate markets (Anderson 2001:85). Indirect losses included the resources allocated for protection, resources that could have been used in other applications such as profitable trading ventures. Economic losses could be countered in one of two ways, either a reduction in the instances of piracy or the costs associated with protection (2001:86). Protection costs could be reduced through the use of fewer but more efficient warships (2001:86).

During the seventeenth and eighteenth centuries in the Caribbean, piracy reached near epidemic proportions. Estimates vary, but Starkey (2001:111) has reported that there were up to 5,000 pirates active in North American piracy, including Blackbeard, Stede Bonnet and Bartholomew Roberts. Caribbean piracy was accompanied by an “anarchic, antiauthoritarian strain” that emboldened sailors seeking a more lucrative profession (Starkey 2001:111).

**Episodic Piracy**

Episodic piracy resulted because of either a “disruption or distortion” of regular trade (Anderson 2001:86). In the Caribbean, this usually occurred after the cessation of European hostilities (Anderson 2001:95). Increased instances of piracy followed peace treaties between England and Spain in 1603 and between Spain and the Netherlands in 1609. Although the Treaty of Utrecht ended European hostilities in 1713, piracy increased at an alarming rate and by 1718 brought trade along the North American coast and the West Indies “to a virtual standstill” (Anderson 2001:95).

Trade and prosperity in the Caribbean represented economic opportunities for pirates. Wages among naval and merchant sailors did not adequately compensate them for the arduous labor expected of shipboard crews. Piracy, with its higher dividends and lighter workload, was an attractive alternative. The physical toll of life at sea was readily apparent from a sailor’s constant exposure to the elements. Limbs and appendages
scarred from hauling rigging and cargo and tattoos obtained in exotic ports were characteristic of sailors (Rediker 1987:12). The average workday on board merchant and naval ships revolved around shifts of four hours of sleep, limited rations of food and cramped living quarters. A sailor’s journey began with the loading of supplies and cargo, and shore leave was withheld until that cargo had been unloaded at its destination (Rediker 2004:43-44). Sometimes the greatest success of the voyage was survival. Thomas Gage (1929:369) wrote that during the annual trade fairs at Porto Bello, thousands of sailors would arrive with the fleets and nearly a third would die from yellow fever.\(^3\) William Funnell, a mate on the voyages of William Dampier, concluded his account of the voyage by stating that of the 183 sailors who began the journey, only 18 survived the duration (Turley 1999:14). In 1722, the Royal Navy ships *Weymouth* and *Swallow* were dispatched to the Caribbean to patrol for pirates in the Caribbean, *Weymouth* sailing with a complement of 240 men. By the end of the patrol, epidemics, scurvy and consumption had claimed 280 sailors (Rediker 2004:44). A well-known adage of the time said “those who would go to sea for pleasure would go to hell for pastime” (Rediker 1987:13). The sailor’s life was one not readily understood, nor desired among the landed English, but the financial rewards could be irresistible to men who lacked the means for other vocations.

**Piracy as Wage Labor**

Sailors were wage laborers in a market economy and for many of them the lure of piracy was economic (Rediker 1987:116). Merchant and naval sailors received a non-negotiable salary whereas pirates received a variable percentage of the total prize captured, based on their duties and service in the endeavor. In Charles Johnson’s *General History*, originally published in 1724, he relates the articles of shipboard conduct for the pirate captains Roberts, Lowther and Phillips. Roberts’ crew agreed that wages and injuries would be compensated in the following manner.

> No Man to talk of breaking up their Way of Living, till each had shared a 1000 £. If in order to do this, any Man should lose a Limb, or become a Cripple in their Service, he was to have 800 Dollars, out of the publick Stock, and for lesser Hurts, proportionably [sic]. The Captain and

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\(^3\) For an in-depth discussion of colonial public health issues see Knaut 1997.
Quarter-Master to receive two Shares of a Prize; the Master, Boatswain, &
gunner, one Share and a half and other Officers, one and a Quarter

Pirate captains Lowther and Phillips had similar agreements. Lowther and his
crew allocated two full shares to the Captain, one and a half to the Master, and one and a
quarter to the Doctor, Mate, Gunner and Boatswain. Injured sailors were compensated
for the loss of a limb in the amount of 150 £ (Johnson 1998:278). Phillips’ crew agreed
that the Captain should receive one and a half shares, and the Master, Carpenter,
Boatswain and Gunner would receive only one and a quarter shares. Injuries incurred
during engagements were compensated with either 400 pieces of Eight (loss of a joint) or

Social conditions among sailors in the merchant and royal navy were abhorrent,
and many men were more than willing to risk their lives for better conditions as part of a
pirate crew. Roberts characterized the advantages of service on a pirate ship over
merchant or naval vessels.

In an honest service there is thin Commons, low Wages, and hard Labour;
in this (piracy), Plenty and Satiety, Pleasure and Ease, Liberty and Power;
and who would not Ballance [sic] Creditor on this Side, when all the
Hazard that is run for it, at worst, is only a sower Look or two at chaoking.
No, a merry Life and a short one, shall be my motto (Johnson 1998:213-
214).

Sailors were not always willing participants in naval endeavors. As England
entered the eighteenth century, sailors were in short supply for naval service against the
French and Dutch (Rediker 1987:31). Press gangs roamed port towns and wharves,
forcibly taking sailors and entering them into service with a naval patrol. Impressed
sailors were often kept on board ship while in port, their wages held for months and even
years at a time for fear that they would desert at the first opportunity to go ashore
(Rediker 1987:31). For sailors who were unwilling laborers in the naval service, the
economic advantage of being a member of a pirate crew could be overwhelming.
Hostis humanis generis

The pirates of the seventeenth and eighteenth centuries rejected the nationalist tendencies of buccaneers and privateers of the sixteenth century who reserved their attacks for vessels of foreign nations (Rediker 1997:37; Lane 1999:129). Catholic Spain was no longer the shared enemy that united privateers and merchants; instead pirate crews were nationally heterogeneous, and victims selected without sole regard to their colors (Rediker 1987, 2004). These “villains of all nations” have been referred to as Hostis humanis generis (Johnson 1998:362).

A Pyrate is Hostis humanis generis, a common Enemy, with whom neither Faith no Oath is to be kept, according to Tully. And by the Laws of Nature, Princes and States are responsible for their Neglect, if they do not provide Remedies for restraining these sort of Robberies. Though Pyrates are called common Enemies, yet they are properly not to be term’d so. He is only to be honour’d with that Name, says Cicero, who hath a Commonwealth, a Court, a Treasury, Consent & Concord of Citizens, and some Way, if Occasion be, of Peace and League: but when they have reduced themselves into a Government or State, as those of Algier, Sally, Tripoly, Tunis, and the like, then they are allowed the Solemnities of War and the Rights of Legation.

Episodic piracy frequently occurred after the cessation of hostile actions. Pirates, as described above, were not considered a legitimate entity and were excluded from peace negotiations between states. Another factor contributing to episodic piracy was the sudden unemployment of thousands of sailors following the official recognition of treaties. It was common for naval ranks and merchant fleets to swell during times of intense maritime hostilities. The Treaty of Utrecht, signed in 1713, marked the end of the War of Spanish Succession (Turley 1999:25). The newly established peace between England and France that resulted from the treaty stabilized trade but ended lucrative, legal privateering (Turley 1999:25). In some cases, privateers turned to piracy by mutinying against their captain and transitioning from “plundering for others, to do it for ourselves” (Rediker 2004:44). Starkey (2001:118) has estimated that nearly 50,000 sailors were employed in the naval campaigns against the Dutch during the reign of Queen Anne, but that the Navy reduced its ranks to 14,000 within a year of the cessation
of hostilities. The sudden downsizing of the military and lack of legal privateering licenses resulted in an increase in unemployment and rise in piratical activity.

Although episodic piracy in the seventeenth- and eighteenth-century Caribbean has been attributed to the cessation of European hostilities, it must be noted that swollen ranks of sailors are insufficient to explain all periods of increased piracy. Treaties signed in 1748, 1763, and 1783 were not followed by outbreaks or increased instances of piracy (Starkey 2001:113). Other factors were involved with creating a situation conducive to piracy.

**Intrinsic Piracy**

Intrinsic piracy is dependent upon an aspect of trade that makes piracy, or some aspect thereof, desirable to legitimate markets (Anderson 2001:86). In the seventeenth and early eighteenth centuries, Caribbean pirates supplied an illicit network of trade goods that were necessary to supplement imperial markets. European powers established trade monopolies with their Caribbean colonies, but in many instances supply ships came only once or twice a year and did not supply enough goods to satisfy the colonists’ needs (Andrews 1978:194-195). Imperial trade ships visited only large fortified New World ports, including Cartagena and Porto Bello (Pérotin-Dumon 2001:45). Secondary ports depended upon coastal trade to link the goods received at larger ports to the outlying New World colonies (Pérotin-Dumon 2001:45). “Contraband had to make up for the chronic undersupply and exorbitant prices imposed by chartered commercial companies and state-controlled trade circuits” (Pérotin-Dumon 2001:45). As European nations fought frequent wars with one another, monopolistic trade was often disrupted, which meant that contraband trade between islands and merchants was necessary to supply the colonies when their own state-sanctioned merchants would not or could not provide needed goods (Pérotin-Dumon 2001:46). According to Richardson (1992:27), piracy against English, Dutch and French trade created a market and active trade network that eventually developed into “colonialism in the eastern Caribbean.” Pirates near primary ports were well situated to supply contraband trade.
Contraband Trade in the Caribbean

Between the late-sixteenth and early-seventeenth centuries, privateers were tolerated and in some cases welcomed in foreign markets. Pérotin-Dumon (2001:34-35) relates the English privateering voyage of John Hawkins in 1562 as an example of market encroachment. After assembling a cargo of slaves in West Africa, Hawkins sailed for the island of Hispaniola where he secured a trading license from officials. He was allowed entry to the market only after a “sufficient show of force to provide the excuse they (officials) would need” to receive the king’s pardon for granting an English vessel permission to conduct trade on their island (Pérotin-Dumon 2001:34-35). In exchange for his slaves, Hawkins received sugar, hides, gold, ginger and pearls (Pérotin-Dumon 2001:35). Privateers required commissions from a nation in order to legally plunder enemy ships but many sailors were willing to sail without these papers. Privateers like Hawkins knew that merchants in need of supplies were willing to trade with them despite their lack of official trade authority (Ritchie 1997:12). Foreign merchants and colonial governors were caught in a tangled web of nationalism. Although they threatened the use of force to either gain access or deny entrance to the ports, the privateer cargoes often brought much needed supplies to islands neglected by their state merchants (Pérotin-Dumon 2001:35).

Pirates and illicit merchants filled a void within Caribbean supply lines (Starkey 2001:115). Colonists in the Caribbean, be they Spanish, Dutch, French or English, all faced supply shortages. Trade laws restricted merchants in dealing only with official suppliers, but illicit trade was often welcomed when the state’s monopoly failed to meet the colonists’ needs (Galvin 1991:55). Emboldened by lax naval patrols, pirates became such a problem for England that they forced a shift from procedural legislation dealing with punishments for those convicted of piracy to a proactive campaign to eradicate pirates (Rediker 2004:33-35).

The greatest single shift in maritime trade and piracy began when merchants rescinded their own arms and relied upon the state to protect commercial trade with convoys and escort ships, in exchange paying taxes to be a part of the system of state
regulated shipping. It was primarily the more established New World merchants who had already made their own fortunes from private shipping who increasingly put political pressure towards excluding foreign markets and thus retain a “monopoly of provisioning and marketing in the colonies” (Pérotin-Dumon 2001:41). Even as merchants were paying for military protection, piracy was reaching epidemic proportions. Rediker (2004:33) has estimated that Caribbean pirates captured approximately 2,400 vessels in the early eighteenth century. In the cycle of piracy, naval participation in the suppression of piracy usually indicated the involvement of a political force with a vested interest in the scale of trade being affected (Anderson 2001:89).

**An Independent Nation of Pirates**

Piracy and trade have coexisted for thousands of years (Gosse 1932:1). The Mediterranean, Caribbean, South China Sea and North Atlantic have all been scenes of intense piratical activity (Pennell 2001).

As surely as spiders around where there are nooks and crannies, so have pirates sprung up wherever there is a nest of islands offering creeks and shallows, headlands, rocks and reefs – facilities in short for lurking, for surprise, for attack, for escape (Gosse 1932:1).

Gosse (1932:1) identified a universal cycle of piracy. The cycle began when marginalized individuals at the periphery of society banded together and pooled their resources to attack small or poorly defended merchantmen. Over time successful bands or individuals were able to accumulate large amounts of wealth, and Gosse (1932:1) suggests that more successful pirates either assimilated weaker pirates or deterred them from piracy. The accumulation of wealth and power created an organization of pirates similar to a state. Pirate entities could then ally with a recognized state entity against a common enemy, and legitimize their piratical activity as naval warfare (Gosse 1932:2). Victory on one side of the conflict generally resulted in the disbanding of the defeated state-pirate alliance, and pirates were once again marginalized into small bands. Using Gosse’s model, Caribbean piracy began with the buccaneers.
Buccaneers were a marginalized group of hunters on the north coast of Hispaniola (Lane 1998:97). Their name was derived from the French boucaniers, a term describing the multinational men by their method of preparing meat over a grated fire (Lane 1998:97). Primarily hunters, buccaneers would band together and attack small vessels trading in the area when the opportunity arose, typically during the seasonal trade fleets. Between fleets, buccaneers would disband and return to hunting until the next opportunity to attack shipping (Galvin 1991:79). As buccaneers continued to raid and accumulate wealth, they established semi-permanent bases on the island of Tortuga, off the coast of northern Hispaniola (Lane 1998:97-98; Galvin 1991:188). The buccaneers of Hispaniola gave rise to the Caribbean pirates of the eighteenth century.

Pirates served three specific consumer bases. First and foremost, pirates met their own basic needs by raiding ships in a demand-led venture (Starkey 2001:113-114). Surplus cargo created a market in which stolen goods were sold to merchants, who in turn resold the items to established, respectable markets and communities (Starkey 2001:114). In the Caribbean, this system of redistribution diverted significant quantities of primarily Spanish goods throughout colonial North America (Starkey 2001:114). The state composed the third consumer base, usually in the form of weak authorities and nascent colonies that utilized pirates as a supplement to their own insufficient maritime resources (Starkey 2001:114).

**Economic Implications of Foreign Policy**

Anderson (2001:99) writes that piracy in any form – parasitic, episodic or intrinsic – continues to function if sailors with criminal intent can operate within “maritime zones of ineffective law enforcement.” The explanatory model of piracy offered by Anderson, Gosse’s cycle of piracy, and the theoretical framework of world-systems theory provide an understanding of the economic implications of piracy. Piracy operated in a symbiotic relationship with trade, and Caribbean trade represented international interdependence and cooperation. Pirates were not a recognized political
entity but they operated across political boundaries, simultaneously assisting and attacking legitimate political states. Capitalist world-economies promote technological change that results in increased profits but also inhibits those who attempt to accumulate wealth by functioning outside of legitimate systems. Pirates were not a formal entity, and operated at the periphery of legal markets. Their negative impacts on local merchants stimulated technological changes that resulted in faster ships, but pirates were not incorporated into the world-economy.

Piracy arises in areas undergoing political change, where a state has been previously weak or nonexistent, or where two states are struggling for trade dominance (Pérotin-Dumon 2001:26). “The prize of piracy is economic, but as a historic phenomenon, the dynamic that creates it is political” (Pérotin-Dumon 2001:26). Pirates accumulated wealth outside of any appropriate methods. They were an intentionally self-marginalized population attempting to function within a capitalist world-economy. Their actions were overlooked while states benefited from their actions. Once piratical activity outlived its utility to the state, pirates were penalized and eventually eliminated from the system.

Geographical characteristics and economic patterns alone are insufficient in explaining the technological reaction to the problem of Caribbean piracy. Jamaica sloops were developed out of a necessity to either evade or capture pirate vessels, but developing a new technology required an intensive investment of resources from an already weakened group. Active interdiction of piracy required both capital investment and political infrastructure to coordinate and conduct suppressive measures. In order to understand the need for an adaptive system of technology it is imperative to understand the political and procedural methods, ineffectual and otherwise, implemented in the interdiction of Caribbean piracy. The next chapter examines England’s foreign policies and abilities to protect outlying territories and discusses local policies enacted by Jamaican governors.
National policies, both domestic and international, are dynamic structures intended to protect the interests of the state. During the late seventeenth and early eighteenth centuries, military weakness and invasion were the two primary threats to English security (Black 1992:39). Piracy, a complicated issue, variously threatened and aided the security of English interests, and, therefore, policies cannot be polarized as either prohibitive of or conducive to acts of piracy. As this chapter will discuss, the security of England was the foremost concern of the state, and policies aimed at strengthening national defense were often at odds with the interests of outlying colonies such as Jamaica. “Both ministers and the political nation in general were acutely concerned about the strength and intentions of other powers and of British vulnerability in face of them” (Black 1992:40). Naval patrols of the English colonies were infrequent until naval infrastructure was strong enough to support overseas deployments, and colonial contributions to the English economy necessitated their protection. Until then, colonies such as Jamaica were often left to defend themselves against maritime predation.

**Naval Infrastructure and National Defense**

During the reign of Queen Elizabeth, England experienced a maritime renaissance, highlighted by the defeat of the imposing Spanish Armada in 1588 (Tunstall 1972:54). The English navy, praised for its victory, afterwards fell into a state of neglect, although its superior reputation persisted (Tunstall 1972:54). By the beginning of the seventeenth century, corruption, disrepair, and neglect characterized the once formidable English fleet.

Under the leadership of King James I, Parliament appointed a commission to investigate the state of the navy in 1618, provoked by pirates disrupting coastal English trade (Tunstall 1972:55). The Cranfield Commissioners recommended the immediate
construction of 30 new ships to supplement the meager 15 serviceable ships in the standing fleet (Tunstall 1972:55). Further recommendations led the King to appoint George Villiers, Earl and later Duke of Buckingham as the new Lord Admiral of the Navy and the commission members to a naval advisory board (Tunstall 1972:55). Although he had the support of the King, Buckingham was unable to improve conditions within the navy. Buckingham’s lack of leadership skills was apparent after a failed mission against the French in 1627. The fleet returned to Portsmouth “in a shocking condition, with the crews and soldiers unpaid, vilely fed, sick, demoralized, and semi-mutinous, and with the ships foul and leaky and their sails and ropes rotten” (Tunstall 1972:58). Despite this failure and the demoralized condition of the crews, Buckingham was convinced he could defeat the French and attempted to reorganize the fleet until his murder (Tunstall 1972:59).

In 1624 King Charles I inherited a defunct navy and a scourge of pirates wreaking havoc on England’s coastal maritime trade (Berckman 1979:119). After the death of Lord Admiral Buckingham, the King initiated a complete survey of the navy (Tunstall 1972:59). He found that the reforms of the 1618 commission had stalled, and the remaining fleet was in “a deplorable condition” (Tunstall 1972:59). Charles ordered that the fleet be overhauled so that it could protect trade against pirates operating from nearby offshore islands (Berckman 1979:199). Within ten years, Charles’ administration had been able to slow the rates of piratical attack, but the nation still lacked a suitable navy, leading the King to institute ship money writs (Berckman 1979:119). Writs for naval protection were not unique to Charles’ reign, as they were a common recourse among English monarchs (Tunstall 1972:59). During the Elizabethan reign, ports were required to supply ships to the naval fleet. The 1634 writs however, required that the ports pay money into a single, centrally administered fund because, according to Tunstall (1972:59), “the armed merchantmen such as the ports could supply were no longer suitable for use as battleships.” Charles was interested in building large man-of-war vessels, or “stately warships,” a vessel type that European nations considered best suited for providing security at sea (Harding 1995:51).
Charles’ ship money fleets were an attractive proposal, but the reality was something altogether different. The English ports did not oppose the 1634 ship money writs but the total amount collected proved to be insufficient for the necessary naval reforms. As Tunstall (1972:61) writes, the fleet should have “awed the pirates and impressed the French and the Dutch, but actually they were composed of crank and leaky ships, and badly paid, untrained and undisciplined personnel.” The following year the King issued writs to the ports as well as the inland counties and boroughs to collect sufficient funds for the construction of large warships (Tunstall 1972:60). The construction of immense vessels like *Sovereign of the Seas* (see Chapter 5) was contradictory to the need for smaller vessels to protect merchant fleets against the “depredations of pirates, privateers, fishing fleets and smugglers” (Harding 1995:51). Charles may have expected that the merchants would supply their own vessels for this purpose, but they were unwilling as they already subsidized the construction of warships.

During the English civil war and the Commonwealth period that followed, royal loyalists maintained strongholds in the Channel Islands, the Scilly Isles and Ireland, and from these staging points mounted privateering campaigns against English trade (Lavery 1983a:19). Parliament controlled the navy, and attempted to restore order by combining Elizabethan seamanship and individual initiative with Cromwellian discipline and warlike order to produce an efficient organization (Tunstall 1972:73). Sailors’ loyalty to the Parliamentary navy had been secured through wage increases in 1642, 1649 and 1653 (Harding 1995:71). Parliament’s ambitious naval legacy came at a high price. Upon restoration of the monarchy in 1660, the navy’s total debt was calculated at £1,284,452 (Tunstall 1972:76).

The monarchy under Charles II generally approved of naval initiatives enacted during the Commonwealth. The court amended the Navigation Act of 1651, establishing a “system of inter-imperial trade” (Tunstall 1972:76). Colonial ventures and increased trading merged the interests of merchants and the king, and the Navy was kept at maximal strength (Tunstall 1972:76). Although Charles II appointed a talented collection of men to serve on the Navy Board and Boards of Admiralty, debt crippled the Navy. In addition to arrears left by the Commonwealth, the Second (1664-1667) and Third (1672-
1674) Dutch Wars contributed to the deficit (Tunstall 1972:77). In 1666, unpaid salaries to officers and sailors amounted to £1,114,326 (Tunstall 1972:78). Several policies were enacted to slow the financial burden of paying naval salaries but actually resulted in riots, desertion and mutinies among unpaid sailors (Tunstall 1972:78). Tunstall (1972:79) writes that “discipline and pay are intimately connected” and are “the two fundamental obligations on which service is based.” Withholding the salaries of impressed men effectively reduced them to the same status as slaves (Tunstall 1972:79). Despite the social impact on sailors, the policies did eventually succeed in reducing the navy’s debts; by 1687 the total deficit amounted to £171,000 (Tunstall 1972:87).

According to Davies (1992:31) the Royal Navy was not kept in port simply because of the deficit. Instead, he argues that the lack of deployment was part of a conscious strategy by the Crown to keep the largest fleet possible in its own waters. The greatest threat to England was a possible foreign invasion, and without a standing army, the Royal Navy was the sole force to repel such an invasion (Davies 1992).

Establishing a Permanent Western Caribbean Presence

Upon the death of Queen Elizabeth in 1603, her successor James I signed a treaty concluding the long stalemate with Spain (Tunstall 1972:50). The treaty brought a temporary halt to hostilities, but did not address the issue of England’s right to trade in the Caribbean (Tunstall 1972:50). The treaty also did “not in any way forbid her (England) to trade there,” leaving the issue unresolved and the Spaniards dependent upon their own strength to protect their Caribbean colonies (Tunstall 1972:50). The terms of the 1603 treaty did prohibit both nations from issuing letters of marque to privateers (Tunstall 1972:51). Over the next 50 years the English continued to trade and occasionally engage in privateering against the Spanish Caribbean until Oliver Cromwell’s Western Design.

After taking power in 1653, Cromwell was faced with the uncertainty of a possible combined French and Spanish invasion of England (Harding 1995:77). He
arranged an alliance with France in 1655 and decided to attack Spanish possessions in the Caribbean (Harding 1995:77). The objective of the Western Design, as it was called, was to capture Santo Domingo, Spain’s strongest possession in the West Indies (Harding 1995:77; Tunstall 1972:74). Setting sail in 1654, English forces were unable to capture the heavily fortified city of Santo Domingo and abandoned the idea of conquering Hispaniola. Instead, they shifted their assault to the nearby island of Jamaica, easily overpowering the Spanish soldiers and establishing the first permanent English presence in the Caribbean (Harding 1995:77).

Jamaica was located in the midst of the Spanish Caribbean and represented a strategic location for staging attacks on Spanish trade routes and colonies (Pawson and Buisseret 1975:20). Governor Edward D’Oyley recognized that the newly claimed territory was isolated from England’s protection and a Spanish invasion force would easily outnumber his own troops (Pawson and Buisseret 1975:20). Beginning in 1657, D’Oyley began negotiating with privateers based on Tortuga, enticing them to operate out of Port Royal Harbor. In exchange for providing a degree of protection and revenue to the nascent English colony, the privateers had access to a harbor better suited for provisioning and approaching Spanish settlements (Pawson and Buisseret 1975:20-21). Although he at times was politically obligated to issue proclamations prohibiting the privateers from operating out of Port Royal, D’Oyley “was keenly apprehensive about the situation in which no naval vessels remained, and the island’s safety was dependent upon the dubious loyalty of the privateering fleet” (Pawson and Buisseret 1975:22).

In 1664 Thomas Modyford was appointed Governor of the newly claimed island of Jamaica and attempted to establish peace with Spain and her West Indian colonies (Pawson and Buisseret 1975:25). The treaty of 1603 had left the issue of English trading rights in the Caribbean vague, and the Governor proposed open trade between Jamaica and the Spanish colonies (Lane 1998:111). He was encouraged by the success of the fledgling colony’s slave market despite an official Spanish embargo. Although he spoke of peace, numerous privateers operated out of Port Royal and carried Jamaican commissions. In order to establish peace and protect the young colony Modyford had to take action against the Port Royal privateers harassing Spanish trade. Although this
improved relations with the neighboring Spanish islands of Cuba and Hispaniola, his actions proved disastrous for the merchants of Port Royal (Lane 1998:111). When the privateers left they took their business to the nearby islands of Hispaniola and Tortuga, which devastated the local Jamaican economy. Modyford was forced to rescind his earlier actions and even begin encouraging privateering and piracy (Lane 1998:111).

The implications of treaties of non-aggression between European powers did not always halt hostilities in the Caribbean. Pirates in the late seventeenth century were known to continue their attacks despite official treaties, and laws against piracy were rarely enforced in the Caribbean. England signed separate agreements with France and Spain, and the Netherlands in 1667 (Craton 2003:23). Despite these agreements, Spaniards seized five Jamaican vessels at Grand Cayman in 1667. In retaliation, Modyford authorized letters of marque to privateers venturing against the Spanish (Craton 2003:23). Authorized by the Jamaican government, Henry Morgan led expeditions against Cuba and Porto Bello in 1668, Maracaibo in 1669, and Panama in 1670-1671 (Craton 2003:23). In 1670 England and Spain ratified the Treaty of Madrid, which recognized England’s possession of Jamaica, Barbados and other Leeward Islands (Craton 2003:26).

It is agreed that the most Serene King of great Brittaine and his Heirs and Successors shall have hold keepe and enjoy for ever with plenary Right of Soveraignty Dominion Possession and Propriety, all those lands, Regions Islands Colonies and Places whatsoever being or situate in the West Indies or any other part of American which the said King of great Brittaine and his Subjects doo at present hold and possess (Craton 2003:26).

During negotiation of the treaty between Spain and England, Modyford continued to issue letters of marque to privateers. He justified his actions to the English government, citing Spanish raids on Jamaica, specifically an attack on northern Jamaica in which several inhabitants were killed and property destroyed (Pawson and Buisseret 1975:29). In response, Modyford authorized Henry Morgan to lead an attack on Spanish territories. Morgan’s activities included a highly successful and lucrative attack on Panama in 1671 (Pawson and Buisseret 1975:30). Upon his return to Port Royal in April of that year, he was unaware that while Jamaica was celebrating his venture, the English
crown concluded negotiations for peace with Spain (Pawson and Buisseret 1975:30). Morgan’s attack, successful for the English, created a scandal in Europe as Spanish dignitaries who had only recently signed a peace treaty learned of the English assault on Spanish holdings. Charles II and the English government could not ignore Modyford’s and Morgan’s actions, even though they had benefited from them (Pawson and Buisseret 1975:30). Modyford was recalled to England and a new Governor named to Jamaica (Pawson and Buisseret 1975:33). For his part, Morgan was arrested and taken to England where he was tried for piracy. He was never convicted and was in fact named Deputy Governor of Jamaica by Charles II in January of 1674 (Lane 1998:124).

Jamaican colonists relied upon the protection of privateers during the late seventeenth century. The naval ships present during the initial invasion were steadily sent back to England, so that from 1660 until 1668 no naval vessels were stationed at Jamaica (Pawson and Buisseret 1975:42). Over the remainder of the seventeenth century only 20 ships would be dispatched to Jamaica (Pawson and Buisseret 1975:42). Of these ships, ten were dispatched for the sole purpose of bringing political dignitaries to the colony (Pawson and Buisseret 1975:43). Although naval vessels visited the island, they were not a consistent protective force.

Towards the Interdiction of Piracy

According to Berckman (1979:15), the scale of seventeenth and eighteenth century piracy was precipitated by neglect of the navy that began with King James I. James’ recall of ships to port and cancellation of future patrols created an environment in which pirates could openly prey upon English ships without fear of reprisal (Berckman 1979:15). As both a monarchy and a commonwealth, England lacked the appropriate infrastructure to effectively curtail piracy. Previous attempts had been made to overhaul the navy, but it was not until the 1660s that the Royal Navy began to operate as a cohesive extension of imperial authority (Harding 1995:85).

The involvement of merchants, soldiers, seamen and gentry in the formulation and execution of maritime policy had clarified the structure and function of the navy. It was never doubted that the navy’s primary
role was the defense of the state, but now the defense of trade outside coastal waters was seen as essential and practicable (Harding 1995:85-86).

In the 1670s, the King’s Navy was “essentially the scourer of the seas” and the main protector of English commerce (Berckman 1979:120). Charles II attempted to improve conditions within the navy. One provision required that captains of all sixth-rate vessels, because they did not have a master stationed on board, be tested for proficiency in navigation and seamanship to ensure the safety of the crew (Berckman 1979:121). The King was committed to rewarding bravery and courage. In 1674 he awarded medals and monetary prizes to Captain Cranbrooke and his crew of 11 for defending their ship against a pirate crew of 56 (Berckman 1979:121). As much as courage was rewarded, cowardice was punished. In 1673, Charles II ordered that Captain Cotterill, because he had not “protected his convoy against pirates; he shall be forthwith turned out of his command” (Berckman 1979:121). In 1675, Charles and a quorum of advisors amended the Admiralty Court trial proceedings of pirate trials. Specifically, criminal warrants and sentences, which had previously been signed by the Admiralty officials, would now bear the signature of the King himself (Berckman 1979:123-125). Symbolically, this minor change in procedure indicated that piracy was to be considered a crime against both king and country.

In attempts to curtail piracy in the Caribbean, the English crown enacted a number of policies in the late seventeenth century. According to Lane (1998:125), one of these was an act of April 1677, “making it a felony to sail under foreign colors without permission from the home government.” As a result of this act, several pirates rescinded their unsanctioned French commissions. The policy was not a complete deterrent; pirates such as captain James Browne continued to operate against Spanish and Dutch vessels under false commission from Tortuga. Browne was captured, tried and hanged by Governor Vaughn of Jamaica, indicating a shift in colonial English attitudes towards pirates (Lane 1998:125). The enforcement of anti-pirate laws was more dependent upon the attitudes of the local Governor than those of the English monarchy. Vaughn’s replacement, Lord Carlisle was installed in 1678 and, with the aid of Deputy Governor Morgan, almost immediately began plotting a second venture to Panama. By 1680,
Jamaica’s leadership, under acting Governor Henry Morgan, was again anti-pirate. On his return voyage to England Carlisle chased a pirate vessel away from the Jamaican coast, and acting-Governor Morgan was under pressure by both the English crown and the growing plantation class of the English colonies to eradicate the pirate threat (Lane 1998:127). Morgan’s hostility towards pirates is surprising, given his history of privateering, but is more easily understood within the context of Jamaican development. Shipping and the extent of Jamaican trade had increased significantly by 1680. The number of ships owned by colonists in Port Royal had increased from 38 ships in 1670 to 80 ships by 1679 (Pawson and Buisseret 1975:71). In 1680, 42 vessels sailed for England from Port Royal, indicating Jamaican export trade (Pawson and Buisseret 1975:69).

Pirates who had once protected the island from Spanish invasion now threatened Jamaica’s increasing success and economic potential. The Jamaican council passed anti-pirate legislation in 1681 and the Jamaica Act of 1683 cemented the colony’s anti-pirate stance (Lane 1998:127). England, who had once privately supported Jamaica’s use of pirates, had more to gain from Caribbean economic development than from the plunder of Spanish colonies. The monarchy adopted a strongly anti-pirate agenda, as demonstrated by King James II. In 1687, James issued a formal proclamation for the reduction and suppression of pirates and privateers in America. Through this proclamation, he granted Sir Robert Holmes all necessary powers for suppressing the pirates and privateers either by force, or assurance of pardon (Scharf 1888).

Harding (1995:99) suggests that a period of “relative peace” between 1674 and 1688 allowed the Royal Navy adequate time to internalize the many changes imposed upon it since the 1660s. This time period also coincides with an increased level of legislative changes related to piracy, suggesting that peace between European nations freed the monarchy to concentrate its attention on the detrimental activities of pirates. The English Act of Piracy enacted in 1699 gave colonial courts the right to try and execute pirates. Previously, pirates captured in the Caribbean or other areas were sent to the Admiralty Court in England to face trial. The new act allowed captains and magistrates to hold trials in colonial areas (Lane 1998:179-180).
Policy depends upon the interests of its creators, and the anti-pirate initiatives passed by Charles II did not indicate a complete intolerance of piracy on the part of English authorities. France and England both encouraged privateers in times of war, and in fact made legislative changes to bolster privateering activity by removing “the state’s share from the prize adjudication, allowing the privateers to keep all of the prizes for themselves” (Ritchie 1997:19). To protect their own merchant vessels from foreign privateers, nations enacted a policy of convoying merchant vessels along their trade routes. In 1708 England passed the Convoy Act, giving “the navy more authority to discipline the unruly” because not all merchants were willing to comply with the convoy system of shipping (Ritchie 1997:19). The convoy system and the development of the insurance industry helped to mitigate some of the damage wrought on the merchant trade from privateering. The Peace of Utrecht in 1713 did not specifically address privateering, but “there were still too many interests favouring [sic] its retention and opponents were few and weak” (Ritchie 1997:20).

When Spain and Britain again went to war in 1739, it was primarily over Spain’s inability to control the privateers who attacked British shipping (Tracy 1991:56). The British responded by attacking Spanish shipping in the West Indies and destroying the harbors where the *guarda costas* operated (Tracy 1991:56). The balance of economic power in the region had shifted. England was now the dominant force in the Caribbean, economically and politically. Initially Jamaican colonists had relied on pirates operating from their harbors to protect them from the Spanish. From this tenuous beginning the colony prospered into an economically dominant extension of the British Empire, necessitating the full strength and protection of the Royal Navy.

**The Effects of Policy on Jamaican Colonists**

Jamaica, claimed by England in 1655, served as conciliation for the failure to capture Santo Domingo. It was the first permanent English base in the western Caribbean and was surrounded by hostile Spanish neighbors. The fledgling colony
represented a strategic foothold into the Caribbean but was otherwise ignored by England for the first 25 years of occupation. Jamaican governors, isolated from the reach of English naval protection outsourced the protection of the colony to pirates and privateers. As Jamaica’s economic prosperity increased, the trade operating between the colony and England became an attractive target for the thriving Caribbean pirate population. Jamaican colonists increasingly suffered the effects of a widespread pirate community that their own policies had nurtured. Although the Royal Navy dispatched 20 ships to the Caribbean, there simply were not enough to protect local vessels from piratical attack. Jamaicans could not depend upon an armed escort while sailing in the Caribbean. They had to develop their own method for avoiding and escaping pirates. The development of Jamaica sloops was an example of colonial adaptation for the purpose of mitigating vulnerability. The next chapter introduces a refined description of Jamaica sloops, beginning with the development of English-built sloops.
CHAPTER 5
DISTINGUISHING BETWEEN SLOOPS: REFINING THE ABSTRACT CONCEPT OF THE JAMAICA SLOOP

Jamaica sloops were an important development in the business of Caribbean commerce and piracy. Smaller than traditional English ships, their advantages and characteristics have been described in numerous manuscripts (Baker 1966; Chapelle 1967; Chapman 1971; Cordingly 1995; Smith 2000). Primarily, these are qualitative descriptions and refer to the Jamaica sloops in terms of their similarity to the subsequent Bermuda sloops (Baker 1966:111; Chapelle 1967:65). The problem with defining Jamaica sloops is not unique. Varying characteristics such as the number of masts on the earliest sloops historically have made a single definition difficult to ascertain (Baker 1966:38). Geographic, economic and political factors that contributed to the design and proliferation of Jamaica sloops were outlined in the previous three chapters. Geophysical and socio-cultural factors contextualize the development of the Jamaica sloop but an accurate description of the vessels’ characteristics must be constructed in order to properly assess potential sites in the archaeological record.

Sloops were first mentioned in a 1629 letter written by English merchants in India requesting a small vessel similar to the Dutch, who kept several “sloopes” for trading between ports (Baker 1966:58). The first vessel rated as a “sloop” appeared in the English naval list in 1656 (Gardiner 1992:46). The term “sloop” was used not only to designate a specific hull form but also to indicate a combination of fore-and-aft and square sails (Baker 1966:119). By the mid-eighteenth century the sloop had become a well-established class of vessel favored by the Royal Navy and was also the preferred vessel of pirates due to its speed and maneuverability (Cordingly 1995:160). In order to understand the historical context of Jamaica sloops, it is important to first recognize the development of early English naval sloops. It is very likely that English shipbuilders in Jamaica were familiar with the naval sloops of the late seventeenth century. The dimensions of naval ships provide a probable range of dimensions for the early
vernacular sloops of the West Indies, including the Jamaica sloops. Dimensions alone are insufficient for creating an identifiable class, so descriptive passages pertaining to the Jamaica and Bermuda sloops can be cross-referenced to create a matrix of characteristics noted in the construction of Jamaica sloops.

The English Navy in the Seventeenth Century

In the early seventeenth century the term “sloop” did not have a specific meaning and was applied to a variety of ships including bomb vessels, fireships, and Admiralty vessels that were captained by a Master and Commander (Gardiner 1992:51). The 1732 nautical dictionary, *A Naval Expositor*, defined sloops as having one, two or three masts and either square or round sterns (Baker 1966:38). It was not uncommon for vessel classifications during this period to have ambiguous meanings. Prior to 1716, records of ship’s lines and constructions plans were not kept with any regularity. Contractors built naval vessels from personal experience and did not follow plans or models when constructing ships of a specific class, resulting in vast size and dimensional variation among vessels of the same class (Lavery 1983a:58).

The Navy that Defeated an Armada

The English navy had defeated the Spanish Armada in 1588 and established itself as a maritime power among European nations, in part because of an emphasis on artillery over soldiers for boarding (Cipolla 1965:86). Predominantly, naval strategy at the time of the Armada had been to use the ship as a platform for soldiers who would board an enemy vessel and subdue the crew (Cipolla 1965:86). The defeat of the Armada signified a change in naval strategy, and ships became weapons. Larger ordnance capacity became necessary to win naval engagements. The English navy of the early seventeenth century attempted to maintain a fleet of large, heavily armed vessels that could incapacitate enemy ships, but political corruption and fraudulent transactions in the naval yards resulted in the decline of seaworthy vessels (Tunstall 1972:54). When King James I ascended the throne he inherited a mediocre sailing fleet. There was no immediate threat necessitating the repair of the fleet and financial support was reduced to the point that the
former naval power was nearly incapacitated (Tunstall 1972:54). Pirates operating off the English coasts preyed on trade, forcing the King to revitalize the naval fleet (Tunstall 1972:55). James assembled the Cranfield Commission in 1618 to consider the state of an English navy with only 15 Great Ships that could be refitted for service (Tunstall 1972:55). The commission declared that His Majesty’s navy must rebuild its former advantage by constructing 30 new vessels, outfitted with as much ordnance as could be carried (Cipolla 1965:86; Tunstall 1972:55). In the first half of the seventeenth century, the English navy relied exclusively on maneuverability and “the effectiveness of the broadside” to win naval engagements (Cipolla 1965:87).

The Increasing Emphasis on Armament

Naval reforms suggested by the Cranfield Commission of 1618 resulted in the creation of classes within the naval fleet. The largest class of vessels was the Royal Ships, those of 800 tons or more. Great Ships were those built to between 600 and 800 tons, and Middling Ships were 450 tons (Lavery 1983a:14). Larger numbers of Great Ships were built during the 1620s and 1630s than any other class, with an average keel length of 100 ft and a breadth of 35 ft (Lavery 1983a:16). In 1634, King Charles I (James’ successor) wanted to create a naval fleet of ships larger than those of enemy nations, and ordered shipbuilder Phineas Pett to design a new ship that would be the largest in the fleet. Pett’s design, Sovereign of the Seas, was 126 ft long at the keel, 46 ft 6 inches broad, with a draft of 19 ft 6 inches and an overall tonnage of 1884 (Lavery 1983a:16).

Sovereign of the Seas carried 102 guns over three decks, and was meant to fire a full battery from only one side of the ship (Lavery 1983a:16). The increase in size and ordnance came at the expense of speed and maneuverability. At the same time Sovereign was built, the French constructed a similarly-sized vessel, Couronne, that carried only 72 guns and illustrated the English emphasis on armament (Harding 1995:50-51; Lavery 1983a:16).

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4 Measurements given in tons refer to a measure of burthen (carrying capacity or volume of the hull) and do not refer to displacement or weight. The figures are determined by the Builders Old Measurement formula, as used by the navy, and according to Lyon (1993:2) “involved the length of keel, breadth and depth in hold, the result being divided by 94. This is the figure given in contemporary documents and does at least give some standard of comparison for different vessels.”
1983a:17). Both vessels sacrificed maneuverability and speed for the advantage of gun power.

Figure 7. Designed by Phinneas Pett, Sovereign of the Seas carried 102 guns (Gardiner 1992:12).

Large vessels like Sovereign and Couronne were expensive to construct, provision and maintain. In order to collect enough money to build and maintain the naval fleet, Charles passed the first Ship Money writs in 1634 requiring all inland counties and boroughs to pay for construction of naval vessels (Tunstall 1972:59-60; Harding 1995:52). Previously only port and coastal counties had paid for building ships used in the defense of trade. Charles issued the writs without the consent or advice of Parliament, creating resentment among English citizens. Kings were required to seek Parliamentary consent unless emergency measures were necessary, such as during times of war (Tunstall 1972:60; Lavery 1983a:17). As Tunstall (1972:60) argues:

Now to all this the King might have answered that an emergency did exist, namely the pirates, and that the trade of the whole nation being the concern of the whole nation the ports could not fairly be asked to bear the burden of trade defense alone.
Ship Money was one contributing factor to the civil war that erupted in England between the King and Parliament from 1642-1649 (Lavery 1983a:18). Naval captains were unsympathetic towards the King and sided with Parliament (Tunstall 1972:64). Due to the loss of his navy, Charles and the royal loyalists (called Royalists) hired fast privateers from the port of Dunkirk to engage in commerce raiding. The Parliamentary fleet of large, deep-drafted, slower vessels was unable to effectively deter the privateers (Lavery 1983a:18). Although the privateers disrupted trade it was not enough to end the revolution, and the monarchy was successfully overthrown. Despite its poor performance against the King’s hired ships during the civil war, the navy of the newly established Commonwealth of England continued to favor large ships, but the Dunkirk privateers were not forgotten.

The Commonwealth Navy

In the 1650s, Royalist privateers and European powers, angered by the execution of Charles in 1649, posed a threat to the security of the newly established commonwealth (Lavery 1983a:19). Parliament felt a sense of urgency to strengthen the English navy, and the Commonwealth began a haphazard campaign of building ships to defend the nation (Lavery 1983a:19). Initially based on the frigate, the vessels constructed during this campaign were built to increasing size (Lavery 1983a:19). The policy of the Commonwealth emphasized broadside armament, like that used on Sovereign (Lavery 1983a:22). Larger vessels were the norm but there was some experimentation with designs for smaller vessels. Using the Dunkirk privateers as a model, the English navy launched four sloops between 1666-1667, ranging from 35-60 ft on the keel with displacements varying from 30-68 tons (Gardiner 1992:48). Their profiles were markedly different from other similarly sized ships, producing a length to breadth ratio between 4.0-5.0 (Gardiner 1992:48). Another 18 sloops were added over the next ten years (Gardiner 1992:48).

<table>
<thead>
<tr>
<th>Date</th>
<th>Vessel</th>
<th>Class</th>
<th>Length</th>
<th>Beam</th>
<th>L:B*</th>
<th>Draft</th>
</tr>
</thead>
<tbody>
<tr>
<td>1656</td>
<td>Dunkirk</td>
<td>Sloop</td>
<td>40’ on keel*</td>
<td>12’ 6”</td>
<td>3.2:1</td>
<td>4’ 6”</td>
</tr>
<tr>
<td>1673</td>
<td>Bonetta</td>
<td>Sloop</td>
<td>58’ 2” on deck</td>
<td>13’</td>
<td>4.5:1</td>
<td>5’</td>
</tr>
<tr>
<td>1699</td>
<td>Shark</td>
<td>Sloop</td>
<td>48’ on keel</td>
<td>16’ 1”</td>
<td>2.9:1</td>
<td>6’ 1”</td>
</tr>
<tr>
<td>1699</td>
<td>Swift</td>
<td>Sloop</td>
<td>48’ on keel</td>
<td>16’ 6”</td>
<td>2.9:1</td>
<td>6’</td>
</tr>
<tr>
<td>1699</td>
<td>Otter</td>
<td>Sloop</td>
<td>61’1” on deck</td>
<td>17’ 8”</td>
<td>2.9:1</td>
<td>7’ 8”</td>
</tr>
<tr>
<td>1704</td>
<td>Ferret</td>
<td>Sloop</td>
<td>72’ on deck</td>
<td>20’ ½”</td>
<td>3.6:1</td>
<td>7’ 3”</td>
</tr>
<tr>
<td>1710</td>
<td>Sea Horse</td>
<td>6th rate</td>
<td>62’ 1” on keel</td>
<td>22’ 1 ½”</td>
<td>2.8:1</td>
<td>9’ 3”</td>
</tr>
<tr>
<td>1710</td>
<td>Jamaica</td>
<td>Sloop</td>
<td>50’ on keel</td>
<td>20’ 8”</td>
<td>2.4:1</td>
<td>9’ 1”</td>
</tr>
<tr>
<td>1710</td>
<td>Tryall</td>
<td>Sloop</td>
<td>50’ on keel</td>
<td>20’ 8”</td>
<td>2.4:1</td>
<td>9’ 1”</td>
</tr>
<tr>
<td>1711</td>
<td>Ferret</td>
<td>Sloop</td>
<td>50’ on keel</td>
<td>20’ 8”</td>
<td>2.4:1</td>
<td>9’ 1”</td>
</tr>
<tr>
<td>1711</td>
<td>Sharke</td>
<td>Sloop</td>
<td>50’ on keel</td>
<td>20’ 8”</td>
<td>2.4:1</td>
<td>9’ 1”</td>
</tr>
<tr>
<td>1721</td>
<td>Bonetta</td>
<td>Sloop</td>
<td>42’ 11 ¼” on keel</td>
<td>17’</td>
<td>2.5:1</td>
<td>7’ 6”</td>
</tr>
<tr>
<td>1731</td>
<td>Wolf</td>
<td>Sloop</td>
<td>73’ 6” on keel</td>
<td>25’</td>
<td>2.9:1</td>
<td>6’</td>
</tr>
<tr>
<td>1732</td>
<td>Bonetta</td>
<td>Sloop</td>
<td>65’ 6” on keel</td>
<td>24’</td>
<td>2.7:1</td>
<td>10’</td>
</tr>
<tr>
<td>1739</td>
<td>Lyme</td>
<td>6th rate</td>
<td>87’ on keel</td>
<td>30’</td>
<td>2.9:1</td>
<td>9’ 5”</td>
</tr>
<tr>
<td>1741</td>
<td>Mediator</td>
<td>Sloop</td>
<td>66’ between perpendiculars</td>
<td>20’ 11”</td>
<td>3.2:1</td>
<td>10’ 6” at stern</td>
</tr>
<tr>
<td>1743</td>
<td>Jamaica</td>
<td>Jamaica</td>
<td>75’ on keel</td>
<td>26’ 1 ¾”</td>
<td>2.9:1</td>
<td>12’</td>
</tr>
<tr>
<td>1743</td>
<td>Trial/Tryall</td>
<td>Jamaica</td>
<td>75’ on keel</td>
<td>26’ 1 ¾”</td>
<td>2.9:1</td>
<td>12’</td>
</tr>
<tr>
<td>1743</td>
<td>Swallow</td>
<td>Swallow</td>
<td>74’ 9” on keel</td>
<td>26’</td>
<td>2.9:1</td>
<td>12’</td>
</tr>
<tr>
<td>1746</td>
<td>Salash</td>
<td>Grampus</td>
<td>74’ 6” on keel</td>
<td>26’</td>
<td>2.9:1</td>
<td>12’</td>
</tr>
<tr>
<td>1749</td>
<td>Peggy</td>
<td>Peggy</td>
<td>61’ 6 ½”</td>
<td>20’ 9”</td>
<td>3.0:1</td>
<td>9’ 6”</td>
</tr>
<tr>
<td>1749</td>
<td>Wasp</td>
<td>Wasp</td>
<td>61’ 9” on keel</td>
<td>20’ 8”</td>
<td>3.0:1</td>
<td>9’ 2”</td>
</tr>
<tr>
<td>1755</td>
<td>Stork</td>
<td>Alderney</td>
<td>72’ 3” on keel</td>
<td>24’ 6”</td>
<td>3.0:1</td>
<td>10’ 10”</td>
</tr>
<tr>
<td>1776</td>
<td>Cameleon</td>
<td>Swan</td>
<td>78’ 10” on keel</td>
<td>26’ 9”</td>
<td>3.0:1</td>
<td>12’ 10”</td>
</tr>
<tr>
<td>1760s</td>
<td>Bermuda sloop</td>
<td>Swan</td>
<td>60’ 9”</td>
<td>21’ 3” molded</td>
<td>2.9:1</td>
<td>9’ 5” amidships</td>
</tr>
<tr>
<td>1768</td>
<td>Bermuda sloop</td>
<td></td>
<td>65’ 6”</td>
<td>21’ 9”</td>
<td>3.0:1</td>
<td>12’ 8”</td>
</tr>
<tr>
<td>1768</td>
<td>French privateer</td>
<td></td>
<td>64’</td>
<td>21’</td>
<td>3.0:1</td>
<td>8’</td>
</tr>
<tr>
<td>1768</td>
<td>English West</td>
<td></td>
<td>102’</td>
<td>27’ 6”</td>
<td>3.2:1</td>
<td>16’ 3”</td>
</tr>
</tbody>
</table>

*Length on keel refers to the length of the keel timber. Length on deck refers to the length of the vessel along the upper deck. Length between the perpendiculars is the length of the vessel measured from the upper ends of the stem and sternpost rabbets.

The Royal Navy

Following the end of the interregnum and the restoration of King Charles II to the throne in 1660, the Royal Navy was established as a formal entity. Before 1660, the term Royal navy referred to a collection of Royal Ships and armed merchantmen used in the
protection of England (Tunstall 1972:76). After the Restoration, Royal Navy referred to the fleet of 156 ships assembled and constructed by the Commonwealth government, “all properly classed and rated and all government owned” (Tunstall 1972:76). The Board of Admiralty and the Navy Board, comprised of experienced shipbuilders and administrators, were responsible for all aspects of the naval fleet (Tunstall 1972:77). Parliament oversaw both the Admiralty and Navy boards, reinforcing the importance of the navy as an instrument vital to the nation’s defense (Lavery 1983a:43).

<table>
<thead>
<tr>
<th>Rates</th>
<th>Length of the Gun Deck</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Measurements Given in Feet</td>
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<tr>
<td>First</td>
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<tr>
<td>Second</td>
<td>165</td>
</tr>
<tr>
<td>Third</td>
<td>150</td>
</tr>
<tr>
<td>Fourth</td>
<td>130</td>
</tr>
<tr>
<td>Fifth</td>
<td>98</td>
</tr>
<tr>
<td>Sixth</td>
<td>85</td>
</tr>
</tbody>
</table>

Under the supervision of the Navy Board, a small class of eight 66-ton sloops was constructed to standardized dimensions in 1699 (Gardiner 1992:51). Construction of naval sloops was suspended between 1706-1709 and instead, sloops were purchased by the Admiralty from private sources (Gardiner 1992:51). Construction resumed when ships needed to “guard the coasts from enemy privateers” could not be purchased in sufficient quantity (Gardiner 1992:51).

Sloops were an oddity in English shipbuilding in the seventeenth century. Although small privateering vessels were successful against the Parliamentary navy during the civil war, naval sloops were not utilized with any regularity until the eighteenth century. Although approximately 30 sloops were built for the navy, the
Tendency was to build large ships of the line, emphasizing size and ordnance capacity in naval fleets.

The Ship of the Line

The English naval fleet was vitally important to the nation’s defense and not taken into battle lightly (Lavery 1983a:53-54). Individual vessels known as ships of the line had at least two full gun decks, arranged to fire on the broadside and carrying at least 50 guns (Gardiner 1992:202). Lavery (1983a:54) described the English line of battle as powerful but awkward:

The ship of the line was the supreme weapon on the high seas, but it was a clumsy as well as a powerful one, and by 1690 professional opinion had come to recognise [sic] this. Over the next few years fleet tactics became solidly defensive, and all the aggressive maneuvers which had been used in the Dutch Wars were abandoned. The line of battle became rigid and inflexible, and any officer who dared to break it was liable for punishment.

During the first 15 years of the Restoration, Charles II ordered the construction of at least 8 ships of between 96 and 100 guns, a greater increase in naval investment than either his father (Charles I) or grandfather (James I) had allocated (Lavery 1983a:35). The trajectory of English shipbuilding towards larger ships with greater armament capabilities was influenced in part by the naval strength of other European powers and the need to defend against enemy fleets of large ships. In 1673, Secretary of the Admiralty Samuel Pepys stated that the “French had 96 ships of 20 guns and upwards, the Dutch 136, and the English a mere 92” (Lavery 1983a:39) (see Table 2). By 1678, English naval forces were dispatched to all corners of England’s empire.

England’s primary concern was the defense of the English Channel, but the King’s overseas territories also required protection. French and Dutch activity in the West Indies hampered trade and the English responded by sending a naval squadron to the area in 1666-1667. The fleet included one third rate, seven fourth rates and two sixth rates under the command of Sir John Harmon (Davies 1992:25).
Across Europe, nations had been competing to create navies of increasing size but large gunships did not guarantee victory. The French battle fleet was destroyed during an engagement along the English Channel in 1692 by combined Dutch and English forces, marking the last time that the French battle fleet was used with any consequence (Lavery 1983a:59).

After this defeat, France began utilizing privateers outfitted with the assistance of the government, inadvertently ushering in a new era of naval strategy (Lavery 1983a:59). Experiments with mid-size vessels occurred at the turn of the eighteenth century, the 50-gun ship being the most favored. Ultimately it would be found ineffective, and during the early 1700s smaller vessels of between 20 and 40 guns were deemed best suited to the defense of maritime trade (Lavery 1983a:60).
Eighteenth-Century Naval Sloops

British administrators and sailors criticized ships built on contract in the late 1600s for their poor quality. In an effort to reduce the proliferation of poorly constructed vessels, carefully selected naval overseers were hired to observe the shipbuilding at contractor’s yards and ensure that naval draughts were followed precisely. Measurements for various ship’s components were standardized and in a short amount of time, variation among ships built at different yards from the same draughts was reduced to inches rather than feet (Lavery 1983a:59). The Navy Board issued orders that any time a ship was built or rebuilt, the master shipwright of the dockyard must submit plans to the Admiralty (see Appendix). Previously, plans were completed only if someone experienced in drafting them happened to be available. The policy of drafting lines for all vessels was instituted early in the 1700s, but construction plans and lines were not kept with any regularity until after 1716 (Lavery 1983b:7). Even after the issuance of the
order, it was several more years before the practice became widely adopted and executed (Lavery 1983b:7).

Established Sloop Classes

The eight sloops constructed in 1699 marked the beginning of a period of increased sloop development within the Royal Navy fleet. Two slightly larger 83-ton sloops were constructed the following year (Gardiner 1992:51). Admiralty concerns over the cost of peacetime naval construction resulted in the relatively small 66- and 83-ton sloops, but with the renewal of French hostilities, sloops constructed in 1704 were built to 125 tons and armed with at least 10 guns (Gardiner 1992:51). After the construction hiatus from 1706-1709 ended, an experimental class of small sixth rates was built at the Royal dockyards. The smaller sixth rates were unwieldy and a reconfigured design was used to build the 1710-1711 sloop class that included the ships Ferrett, Jamaica, Tryall and Sharke (Gardiner 1992:51; Lyon 1993:37). As the length to beam (L:B) ratios given in Table 3 show, the 1710-1711 sloops were anomalous. Variation in length to beam is expected in experimental designs such as the 1656 Dunkirk (3.2:1) and 1673 Bonetta (4.5:1), but the 1710-1711 class exhibits a 2.4:1 ratio. The design of the 1710-1711 sloops attempted to correct instabilities within experimental 6th rates built in 1710 (Gardiner 1992:51). While a 3:1 ratio was considered optimal (such as the 2.9:1 ratio in the 1699 sloops), the decreased ratio of the 1710-1711 class may represent a compromise in order to incorporate other design modifications. The length to beam for the 1721 Bonetta, 2.5:1, is similar to the 1710-1711 sloops, but less than later naval sloops that exhibit a length to beam of almost 3:1 and suggests that while this ratio is not optimal, it was functional.

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5 Sixth rate ships were the smallest vessels in the Royal Navy commanded by an officer of full Captain’s rank, and included vessels of 20-28 guns (Gardiner 1992:202).
Figure 9. HMS Ferrett, built in 1711, was a vessel in one of the first naval sloop classes (Chapelle 1967:52).

For the next 30 years, naval sloops ranged between 50 ft and 75 ft on the keel and included several different established classes, among them the 1743 Swallow and Jamaica classes (Lyon 1993:52-61). Two sloops of the Jamaica class were built to a length of 91 ft 3 in on deck, 75 ft on the keel, and a beam of 26 ft 1 ¾ in (Lyon 1993:58).

The concept of the Jamaica sloop cannot be limited to the characteristics and dimensions present in the two Jamaica-class vessels built in 1743. The problem with limiting Jamaica sloops to this description is the presence of historical documentation that refers to this type of sloop prior to 1743, as well as the drastic difference between the keel length of these ships and earlier documented sloops. Instead of anticipating a specific class, the pre-1743 Jamaica sloops represent a vernacular term for a range of vessels adhering to a specific set of criteria. It is probable that the British Jamaica class sloops capitalized on the physical characteristics that made vernacular Jamaica sloops so successful.

**Vernacular Sloops in the Caribbean**

English naval ships were utilized worldwide, but with the exception of the 1666-1667 squadron, the West Indies were not patrolled intensively. According to the naval
list of 1688 recorded by Pepys, only two of 92 ships in the fleet were stationed in the Caribbean, both in Jamaica, the sixth rate *Drake* and the fifth rate *Rose* (Pepys 1963:162-174). The majority of English vessels in service in the Caribbean were vernacular craft, built purchased or sold in the region. As Cordingly (1995:163) writes,

The frequent attacks on merchantmen in the Caribbean by buccaneers and French privateers in the years around 1700 led to a demand for vessels fast enough to escape capture. The result was that shipbuilders in Jamaica developed a sloop which acquired an enviable reputation for seaworthiness and speed. The Jamaica sloop was built of red cedar and had a low freeboard and a steeply raked mast.

Fast ships built to evade pirates were the same vessels that ultimately became pirate ships. Pirates did not build their own vessels or have them built to specification. Instead, pirates used ships they seized by force or commandeered through mutiny (Cordingly 1995:160). The same characteristics that made Jamaica sloops fast, maneuverable and light also made them ideal vessels for pirates attempting to overtake ships, outrun their enemies, and access remote careenages. Gosse (1932:170) refers to the pirate Michel Landresson, or Breha, who “played havoc among the Jamaica sloops.” Historians like Gosse have used the term Jamaica sloop in reference to a specific type of ship used in the Caribbean before the naval establishment Jamaica class of 1743, but many references rely on an implied understanding of the characteristics of this type.

**Jamaica Sloops**

It has been suggested that William Dampier was the first to describe Jamaica sloops in his published memoirs *A New Voyage Round the World* (Smith 2000:115). Chronicling his voyages from 1679-1691, Dampier’s (1906: Plate I; 60) memoirs include a brief description of “Jamaica-men” who built cedar sloops. Dampier’s description and other eyewitness accounts of Jamaica sloops provide evidence of their appearance. Captain Nathaniel Uring (1834:242-276) provided some structural ship details in his 1711 shipwreck narrative *Loss of a Jamaica Sloop*. Recounting the storm that wrecked his ship near the Moskito coast (along the Central American coast), Uring (1834:243) describes the crew hauling down the mainsail and jib, and “laying by under” the foresail. He later mentions the loss of the bowsprit and recounts efforts to cut the mainmast loose.
after it was unstepped near the bow (Uring 1834:245). Although the emphasis of this narrative is the survival of the crew, it provides some information as to the structural composition of the ailing Jamaica sloop. In both instances, Dampier and Uring refer to Jamaica sloops as ships built by Jamaicans or built in Jamaica.

Uring’s account indicated a single mast, but modern scholars have interpreted the early sloops as having either one or two masts from pictorial evidence. The engraving *Sloop off Boston Light* by William Burgis (1729) depicts a single-masted English naval sloop used in colonial service, while depictions by Van de Velde showed both single and double-masted sloops (Baker 1966:108-109; Cordingly 1995:163-164). No plans of a seventeenth- or early eighteenth- century Jamaica sloop have survived into the documentary record but this vessel type is noted as being similar in design to the later Bermuda sloop, whose lines were published by Chapman in 1768 (Baker 1966:111; Chapelle 1967:65; Cordingly 1995:164). Modern historical analyses have corroborated the lack of a specific meaning to the term Jamaica sloop, and have looked to archival sources for information about Bermuda sloops to inform their discussions of Caribbean sloops used by both the pirates and their pursuers (Cordingly 1995:163-164; Chappelle 1967:65-68; Baker 1966:111-115).

**Bermuda Sloops**

Bermudan shipbuilders were motivated to create a fast vessel in order to protect their merchant trade from pirates in the late seventeenth century.

Bermuda’s shipping fleet was expanding into the West Indies at a time when pirates and privateers were running rampant throughout the Caribbean. Between 1690 and 1705, a number of Bermudan vessels were taken by these predators. … This threat to both purse and person prompted Bermudans to seek the fastest sloop they could produce. … The next generation of ships produced by the shipbuilder-masters of Bermuda were much improved, so much so that the Bermudians began to hunt the pirates who had previously preyed upon them, as well as French and Spanish vessels (Jarvis 1990:42).
Figure 10. The painting *Sloop off Boston Light* by William Burgis (1729) depicts an early sloop in use in the Americas (Cordingly 1995: Plate 12).

Figure 11. Paintings by Van de Velde depicted two-masted sloops of the Royal Navy (Baker 1966:43).
The earliest recorded lines for a Bermuda sloop were published in 1768, in Henrik Chapman’s *Architectura Navalis Mercatoria*. It is likely that Chapman drafted the lines for the Bermuda sloop while working in English dockyards around 1740 (Chapelle 1967:65). Chapman’s Bermuda sloop is a small vessel of only 65 ft 6 inches in length (Figure 12). A single mast is located slightly forward of midships and has a raked, or inclined angle. The vessel has a sharply rising floor at the stern, indicating that the hull curves upward in the rear of the vessel. Chapelle notes a slight resemblance between the Bermuda sloop and a French privateer depicted in Chapman’s published lines (Figure 13) (Chapelle 1967:66-68; Chapman 1971: plate XL No. 13 and Plate LVII No. 15). The length and breadth of the two vessels differs by less than 18 inches (Table 3), but the draft of the privateer is 8 ft, while the Bermuda sloop’s draft is given as 12 ft 8 inches. Both ships appear to have raked stern posts, rounded stems, rising floors, and a single mast with bowsprit, although these features are exaggerated in the Bermuda sloop. The increased draft in the Bermuda sloop may represent a compromise between speed and cargo capacity, but the other features indicate a fast sailing ship.

This sloop hull had good flow lines for her proportion, being without sudden change in form or excessive fullness anywhere under water. She would sail well on the wind, as far as the cut and material of her sails would permit (Chapelle 1967:67).

Chapman does not provide analysis of the drafts published in *Architectura Navalis*, but a comparison of hulls indicates several differences between the Bermuda sloop and privateer, and other English sloops identified as West Indian traders. Chapman’s English West India Trader (Figure 14) (1971: Plate LII No. 2) is a merchant ship of 102 ft in length between the perpendiculars, 27 ft 6 inches breadth and 16 ft 3 inches draft. The increase in beam and draft from the Bermuda sloop is not drastic, but at 102 ft in length the West India Trader is a significantly longer vessel than the 65-foot-long Bermuda sloop.
Figure 12. Chapman recorded the hull of an eighteenth-century Bermuda sloop 65’ 6” in length (1971: plate LVII No. 15).

Figure 13. Chapman recorded the hull of an eighteenth-century French privateer 64’ in length (1971: plate XL No. 13).

Figure 14. Chapman recorded the hull of an English West India trader 102’ in length (1971: Plate LII No. 2).
Bermuda sloops were documented as early as 1690 and Chapelle indicates a similarity between their lines and those of the 1711 English naval sloop Ferrett (Figure 9) (1967:65).

Like Ferrett and Sharke, the Bermuda sloop was wide and deep; the entrance short, convex and full; the run long and fine. She had moderate drag to the keel, much rake to the sternpost, and a well-rounded stem rabbet (1967:65).

Dimensions for HMS Ferrett are smaller than the Bermuda sloop, but the overall design is similar. It is possible Ferrett’s smaller size is due to the fact that it was recorded (and likely built) 30 years prior to the Bermuda sloop. As stated previously (page 64), sloop dimensions uniformly increased between 1710 and 1743.

Michael Jarvis (1990) writes about the origins and development of Bermuda sloops, and focuses on the use of local Caribbean cedar in their construction. Bermudian cedar, or Juniperus bermudiana, is closely related to Juniperus virginiana and Juniperus barbadensis, and were colloquially referred to as “cedar” in the West Indies (Jarvis 1990:34). Cedar grew quickly, with some trees reaching 100 ft in height, but average height was 30 to 50 ft (Jarvis 1990:35). Caribbean cedar was incredibly resistant to rot and marine organisms, and bitter due to its high resin content. Botanist Phillip Miller remarked on this bitterness in 1735:

… the worms do not eat the bottoms of the vessels built with this wood, as they do those built with oak … vessels built with cedar are much preferable to those built with any other sort of timber, for the use on the West India Seas (Jarvis 1990:35).

Caribbean cedar had several other desirable attributes. Cedar could be used green but timber from England or the American colonies had to be seasoned for at least six months (Jarvis 1990:35). Caribbean cedar weighed approximately 30-35 pounds per cubic foot, much less than English oak (Quercus pedunculata), which weighed between 40-50 pounds per cubic foot (Jarvis 1990:36). The difference meant that a ship built of Caribbean cedar would be lighter and faster than an identical vessel built of English oak, giving it a distinct advantage based solely on construction materials. Oaken ships rotted
within 10-12 years, but the combination of higher tensile strength, lower weight, and resistance to marine organisms increased the longevity of ships built of Caribbean cedar to 20-30 years (Jarvis 1990:36). Cedar was available on Jamaica and could have been utilized by shipbuilders on the island (Chapelle 1967:65). It should be noted that while Chapelle, Baker and others have attributed the decline of Jamaican shipbuilding to deforestation of the cedar used in constructing Jamaica sloops, Jarvis (1990:39) argues that this has been overestimated, and the shift from Jamaican shipbuilding to Bermuda can not be directly linked to a single factor.

Baker (1966:111) and Chapelle (1967:65) have stated that the Bermuda sloop was a successor to the Jamaica sloop and brought to Bermuda by immigrant shipbuilders. Jarvis disputes this claim and indicates that he has found no direct evidence corroborating this theory. He argues instead that the Bermuda sloop was a local phenomenon, independent of the Jamaica sloop (Jarvis 1998:365). The degree of similarity between Jamaica and Bermuda sloops is not contested, and further research may indicate that Bermuda sloops were an independent innovation resulting from relational processes similar to those stimulating the development of Jamaica sloops. The success of Jamaica and Bermuda sloop designs is illustrated through their longevity. Bermuda sloops influenced Chesapeake shipbuilders in America in the late eighteenth and nineteenth centuries (Chapelle 1967:68).

Extracting Jamaica Sloops

The development of English naval sloops for the navy is well documented, and this information provides the historical context of sloop design. Archival sources specific to Jamaica sloops are rare, and the majority of quantitative data has been derived from the design of Bermuda sloops, a subsequent ship type developed in the Caribbean (Chapelle 1967:65; Baker 1966:111). Using quantitative data from early English sloops and later Bermuda types, established ranges of dimensions can be established for Jamaica sloops by averaging the known dimensions of other vessels (Table 6). Modern historical analyses and nautical research have synthesized qualitative descriptions of Jamaica
sloops. Thomas Oertling (2001:234; 2004:130) has demonstrated the utility of cross-referencing descriptive data to create a matrix of characteristics for a given ship type. Oertling used archaeological evidence of hull construction to create a matrix of qualitative attributes present in sixteenth-century trans-Atlantic Iberian ships. The characteristics in Oertling’s matrix (2004:130) represent a fluctuating pattern of varying combinations of design elements rather than a list of criteria for identifying a vessel type.

<table>
<thead>
<tr>
<th>Table 6. Expected characteristics of Jamaica Sloops (compiled by author).</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hull built of Caribbean cedar.</td>
</tr>
<tr>
<td>2. Vessel dating to period 1658-1735.</td>
</tr>
<tr>
<td>3. Length on keel 40 ft – 50 ft.</td>
</tr>
<tr>
<td>5. Draft 5 ft – 9 ft.</td>
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<tr>
<td>6. Vessel has a raked mast, slightly forward of the midships line, with minimal reinforcement. Vessel may have a second mast, but not more than two.</td>
</tr>
<tr>
<td>7. Bowsprit present.</td>
</tr>
<tr>
<td>8. Raked sternpost.</td>
</tr>
<tr>
<td>9. Rounded bilge.</td>
</tr>
<tr>
<td>10. Moderate drag to the keel.</td>
</tr>
<tr>
<td>11. Sharply rising floor.</td>
</tr>
<tr>
<td>12. Straight to flared topsides.</td>
</tr>
</tbody>
</table>

Jamaica sloops are noted for their similarity to the documented Bermuda sloops, noted in turn for their similarity to the 1710-1711 naval sloop class that included *Ferrett* (Figure 15). Overall hull design was intended to maximize speed yet retain sufficient cargo capacity. According to Chapelle, Bermuda and Jamaica sloops were wide and long, with a raked sternpost and a well-rounded stem rabbet (1967:67). Baker and Chapelle both indicate that Bermuda, and likely Jamaica, sloops had moderate drag to the keel, moderate to sharply rising floors, a raked mast, well-rounded bilge, and flared topsides (Baker 1966:111-115; Chapelle 1967:65-68). According to Uring’s account
Figure 15. A basic design pattern can be extracted from features present in the 1711 sloop class including HMS Ferret (top) Chapman’s French privateer lines (middle) and Bermuda sloop lines (bottom). As indicated in red on the drawings above, each vessel has a raked mast forward of midships [a], a bowsprit [b], rounded stem post [c], and raked stern post [d]. The mast was not recorded for the French privateer but its placement is indicated by the rigging supports [e].
(1834:245), the mast was stepped slightly forward of the midships, and was not well reinforced. All accounts indicate that Jamaica sloops were built of Caribbean cedar.

Contemporary references to Jamaica sloops occur within a relatively short period of time, and a chronology of events may place their development in proper historical perspective. It is possible that Jamaica sloops were produced prior to 1690, the earliest given date for Bermuda sloop sales (Chapelle 1967:65). The Jamaica sloop appears to be an English phenomenon, since it does not appear in any records prior to 1655, the year that England invaded Jamaica and established its first permanent western Caribbean colony there. Archival records indicate that there were at least three shipwrights on the island between 1675 and 1686 (Pawson and Buisseret 1975:198). Probate records indicate another shipwright was present at Port Royal 1686-1694 (Franklin 1992:159). A Naval Officer, or Clerk of the Navy Office, was stationed at Port Royal by at least 1675 (Pawson and Buisseret 1975:46). This was four years prior to Dampier’s voyages and description of Jamaica sloops. From 1675 onward, English ships used Jamaica as a careenage location. In the early eighteenth century, dockyards were established at Port Royal and Port Antonio, and shipbuilders were assigned to Jamaica from the Royal dockyards of England (Pawson and Buisseret 1975:128-129). Between 1735 and 1744 a hulk, two careening wharves, capstan houses, storehouses and accommodations for officers and workmen were established in Jamaica (Pawson and Buisseret 1975:129-131). This chronology suggests that references to Jamaica sloops after 1743 refer to ships of the naval establishment. With increased naval infrastructure present in Jamaica during the 1740s, it is likely that local ships, especially those with a common and successful design such as Jamaica sloops, would have been documented in some manner. The lack of written descriptions of or references to Jamaica sloops may imply that construction of this vessel ceased prior to the arrival of English naval shipbuilders and shipwrights.

The dimensions of early English sloops (1656-1721) provide a historical context of sloop development in the late seventeenth century and also provide a likely range of dimensions for Jamaica sloops. I estimated ranges for sloop dimensions that are smaller than the actual dimensions listed for Chapman’s Bermuda sloop of the 1740s. For example, the derived range of length of keel is 40-50 ft and derived beam 13-20 ft, and
Chapman’s Bermuda sloop is 65 ft 6 inches long with a beam of 21 ft 9 inches. The overall trajectory of sloop dimensions illustrates that from 1656 to 1743, sloops became larger. Jamaica sloops likely date to the earliest years of English sloop construction, after colonial settlement of Jamaica in 1655 and before naval infrastructure was developed beginning in 1735. Therefore, it is likely that Jamaica sloops were smaller than the Bermuda sloop Chapman recorded in the 1740s, yet retained similar characteristics such as a raked sternpost, rounded bilge, moderate drag to the keel, flared topsides, and forward mast.

The Influence of Jamaica Sloops on the Royal Navy

English naval design in the seventeenth century was concerned primarily with producing large ships to guard the English Channel. Even though ships-of-the-line were not ideal for conditions in the Caribbean, the effects of piracy on trade occasionally necessitated the dispatch of a naval patrol. Small, fast sloops were developed in Jamaica by local shipbuilders, and their Jamaica sloops proved to be particularly suited to the unique geophysical environment. Bermudans built similar ships, and Chapelle (1967) and Baker (1966) have argued that Bermuda sloops were based on the earlier Jamaica sloops. Jamaica sloops represent a technological adaptation to the local environment. Shipbuilders took advantage of local wood species and built a highly successful vernacular ship type. The development of this sloop type coincided with piratical activity and while Jamaica sloops were originally meant to allow traders to evade capture, they were quickly appropriated by pirates who desired their speed and maneuverability.

English naval forces patrolled the Caribbean infrequently until the eighteenth century, when piracy reached near epidemic proportions. Local ships were better suited than the larger vessels of England’s Atlantic navy to the unique environmental conditions of the Caribbean. Jamaican cedar used in ship construction was lighter and more resistant to rot and marine organisms than traditional European hardwoods, resulting in lighter ships that required less frequent careening. By the late seventeenth century, Jamaica sloops were already noted for their speed and seaworthiness and sloops of the
Royal Navy began to emulate the features that made Jamaica sloops successful. England made a sizeable economic investment in technology meant to protect the empire against aggressive, piratical activity in the Caribbean. The characteristics that allowed vernacular sloops to evade capture were present in the design of English naval vessels assigned to pursue and capture pirates and privateers.
Pirates were a marginalized population within seventeenth- and eighteenth-century Caribbean society and operated at the periphery of the capitalist world-economy. Pirates influenced the development of Caribbean colonies, but there has been a tendency to relegate their legacy to literary analyses of fictional characters. Within the last 20 years, historians and geographers have produced academic studies of social conditions in the colonial Caribbean as related to piracy (Burg 1995; Cordingly 1995; Galvin 1991, 1999; Lane 1998; Pennell 2001; Rediker 1987, 2004; Turley 1999). Archaeology, adjusting to the growing impact of nautical and underwater subdisciplines, has been slow to recognize the potential for studies of past human behavior related to piracy. Publications on archaeological investigations of Atlantic or Caribbean pirate activities are rare. Historical and contemporary sources suggest that English colonists in the Caribbean developed fast, maneuverable, and highly sought after vessels known as Jamaica sloops specifically to mitigate colonial vulnerability to piratical attack (Cordingly 1995:163). If Jamaica sloops were a technological innovation by English colonists to counteract adverse effects of piratical activity, then piracy may be identified as a social catalyst for material adaptation. Viewed in this manner, piracy is desensationalized and can be examined as one factor in a model addressing past human behavior.

Karl Butzer (1982) developed a model for examining interactive variables within an adaptive system. By adapting this model and superimposing agent-based causation, I constructed a framework for examining technological adaptations to multiple stresses, in this case environmental conditions, economic systems, governmental policy and piracy. Using this combination facilitated an analysis of relational processes, since geography,

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6 Notable exceptions include publications concerning the proposed site of Blackbeard’s flagship Queen Anne’s Revenge and the forthcoming volume X Marks the Spot: The Archaeology of Piracy (Skowronek and Ewen 2005).
politics and economics each impacted the colonial Caribbean but are singularly insufficient for explaining the development of Jamaica sloops.

Figure 16. Jamaica sloops may be analyzed within a cultural ecology framework, such as that developed by Karl Butzer (1982:289).

Although no plans of a seventeenth- or eighteenth-century Jamaica sloop have survived, historical descriptions (Dampier 1906; Uring 1834) and modern syntheses (Baker 1966; Chapelle 1967) suggest that these ships reflect a conscious, technological adaptation to correct existing technological deficiencies. The preliminary matrix of Jamaica sloop characteristics (developed in Chapter 5) represents a specific reaction to multiple outside stresses exerting pressure on Jamaica’s colonial population. Deficiencies within contemporary Caribbean sloop designs were identified and a potential pattern of variability was extrapolated from this data.
Jamaica’s Dependence Upon Pirates

Early colonists on Jamaica faced a difficult challenge in establishing a permanent community in a hostile environment surrounded by foreign territories. When it seized Jamaica in 1655, England was attempting to reassert itself as a dominant naval force, but was focused on protecting national coastlines. England lacked the military infrastructure to provide adequate protection to overseas territories, forcing colonists to become active agents in developing protective strategies. Jamaican governors could not depend on military protection for the island, and instead chose to ally with pirates and privateers operating against Spanish colonies and trade (Pawson and Buisseret 1975:22).

Pirates and privateers had operated in the Caribbean since the sixteenth century (Lane 1998:33), but over time nationalistic privateering agendas dissipated (Cordingly 1995:50; Lane 1998:117). Pirates operating in the seventeenth century were wage-laborers concerned with their own personal financial gain (Rediker 1987:116). The Caribbean was part of a capitalist world-economy in which merchants sought to accumulate unrestricted wealth (Wallerstein 2004:92). Pirates and merchants had similar goals, but pirates functioned outside legitimate trade systems. Piracy has been categorized as parasitic, episodic or intrinsic (Anderson 2001:86), but overall benefits to early English colonists outweighed the adverse effects. Piratical activity served three consumer bases; pirates met their own needs, supplied contraband trade networks, and unofficially supplemented state resources (Starkey 2001:113-114). In Jamaica, pirates performed unofficial military functions by operating from Port Royal. Their presence gave the nascent colony a degree of protection, while the money they spent in town supported the local economy (Lane 1998:111).

Piracy as Social Catalyst

By the late seventeenth century, English settlements at Jamaica were beginning to export goods. Increasing numbers of ships cleared customs at Port Royal, and indicated a
rise in both imports and exports beyond necessary supplies (Pawson and Buisseret 1975:71). Jamaica was developing into a proactive force within the English economy, coinciding with a gradual decline in Spanish Caribbean hegemony (Chase-Dunn and Grimes 1995:390). Piracy flourished during this time period. The numbers of sailors involved with piracy escalated due to several factors, including social conditions within the naval and merchant service (Rediker 1987:31) and a lack of other, equally profitable, employment opportunities (Rediker 2004:44). As the scale of piracy increased, so too did attacks on Jamaican ships (Rediker 2004:33). What had formerly been a symbiotic relationship between English colonists and Caribbean pirates developed into a parasitic relationship as Jamaica’s economy prospered.

Steele and Rockman (2003:132) state that humans use technology to modify their environment and make it more hospitable. As discussed in chapter 3, technological changes are developed and adopted more quickly in capitalist systems when they result in financial gain (Chase-Dunn and Grimes 1995:400). In colonial Jamaica, humans modified their technological systems to more efficiently function within their environment. The majority of ships used in the Caribbean during the seventeenth century, specifically naval vessels, were designed for European conditions. Pirates favored small, fast sloops (Cordingly 1995:163). Sloops such as these did not require the large ordnance capacities of English naval vessels, relying instead on a design that provided maximum speed and more efficient maneuverability. In the absence of naval protection Jamaican colonists developed their own sloop design intended to combine sufficient cargo capacity with speed and stability, thereby minimizing their vulnerability to piratical attack at sea.

The Archaeology of Piracy

An essential element of successful colonization is the ability to learn and master local resources (Meltzer 2003:238). English colonists in Jamaica had access to local hardwoods such as cedar, lignum vitae and mahogany that were suitable for use in ship construction (Leslie 1740; Platt et al. 1941:11). Indigenous hardwoods, especially
Caribbean species of cedar, were better suited to use in warm water than traditional English oak (Jarvis 1990:36). Ships used in the Caribbean had to contend with a diversity of physical conditions. Depths in the open sea could reach thousands of meters (Macpherson 1963:2), but sudden changes in water depth and shallow hazards such as reefs, cays and atolls presented serious threats to deep-drafted vessels (Macpherson 1963:5). Jamaican shipbuilders combined superior indigenous resources with knowledge of local sailing conditions to construct a sloop designed specifically for moving goods safely between ports and avoiding piratical attack, and increasing their profits by delivering cargoes faster and more efficiently.

Throughout this thesis I have argued that Jamaica sloops are a physical manifestation of human behavior. The matrix of preliminary design elements, presented in Chapter 5, is an attempt to demonstrate the manner in which English colonists adapted technology to suit the environment and thus protect them from piratical attack. Future research into the specific design of Jamaica sloops might consider elements of rigging and sail plans for inclusion in the matrix, and development and testing of a Jamaica sloop model. Known wrecks of Jamaican-built vessels can be tested against the model to determine if they are Jamaica sloops. Information obtained by excavating reported Jamaica sloop wreck sites may further refine an understanding of past human behavior by demonstrating exact manifestations of technological change. It just so happens that this change is precipitated by piracy.

Development of the Jamaica sloop in the colonial Caribbean was the result of a unique combination of factors. In generic terms, actors modify systems based on existing conditions and external pressures. Social systems do not survive in the archaeological record but material products constructed, and more importantly adapted, as a result of these systems can provide information used to make inferences about past human behavior. In the specific case of Jamaica sloops, English colonists intentionally adapted existing sloop designs to better suit the Caribbean geophysical environment and alleviate their vulnerability to piratical attack in the absence of military protection.
APPENDIX
GLOSSARY OF SELECTED SHIP TERMS

Bilge: An open space between the keel assembly and lowest deck in which water and other materials could accumulate; the portion of hull on which the ship would rest if it were on dry ground.

Bow: The front portion of the ship, generally from the point where the sides curve inward to the stem post.

Bowsprit: A spar or timber projecting from the bow.

Breadth: The width of the hull, also referred to as the beam.

Broadside: A battle strategy in which all of the guns on one side of the vessel are fired in unison.

Decks: Separate platforms on a ship, their names differentiated by location and or purpose (for example, gun deck).

Depth in Hold: The distance (or height) from the bottom of the main deck to the surface of the lowest deck.

Draft: The depth of water that is displaced by the ship when afloat, or a measure of the depth from the waterline to the keel.

Drag to the Keel: Term describing an excess of draft of water.

Flaring: Term that describes upward and outward bow curvature.

Floor Timber: A structural timber that crosses the keel and spans the width of the bottom of the vessel.

Foresail: Smaller sail than the mainsail, located in the forward section of the ship.

Freeboard: Distance (or height) between the waterline and the upper deck.

Hull: The structure of the ship from the keel to the upper deck, but not including rigging, sails, or cargo.

Jib: The forward most sail of a ship, attached to an assembly on the bowsprit.

For detailed discussion of ship terms and construction see Steffy 1994 or Desmond 1998, which were used to create the glossary contained here.
Keel: The main timber of the ship, extending longitudinally from the stem to the stern post. It is sometimes composed of several timbers that are joined together. Also referred to as the backbone of the ship.

Keel Length: Measurement of the keel from the stem to the stern rabbet.

Length to Breadth Ratio: Ratio of the hull’s length between the perpendiculars to the maximum breadth. Usually stated as L:B. Also referred to as Length to Beam.

Mainmast: Mast having the greatest cross-sectional area.

Mainsail: Sail having the greatest cross-sectional area.

Mast: Perpendicular to the keel, these timbers support the sails and rigging.

Midships: The middle of the ship, at both length and breadth. In construction it refers to the widest part of the hull, wherever that occurs.

Ordnance: Military supplies including cannons and ammunition.

Perpendiculars: The uppermost point of the stem and stern rabbets; generally used for taking measurements of hull length.

Rabbet: Groove or channel cut into a timber to receive and secure the edge of another timber. For example, the forward edge of the keel fits into a groove cut into the stem post to secure the two timbers together.

Rake: Slope or incline.

Rise in Floor: Rise in floor represents the outer ends of the floor timbers, indicating the hull’s longitudinal curvature.

[Diagram of a ship's cross-section with a label for "rise in floor".] Adapted from Steffy 1994:144
Stem: Main timber at the bow of the vessel where the two sides of the hull are connected. Like the keel it may be composed of several timbers joined together.

Stem Rabbet: see Rabbet.

Step: A large timber or series of timbers secured across the keel or keelson that has a mortise into which the bottom end of the mast is placed and reinforced.

Stern: Main timber at the rear of the vessel. Like the keel it may be composed of several timbers joined together.

Topsides: Uppermost timbers of the hull.

Unstepped: Term that refers to the mast when it has become dislocated from its mortise (see Step).

Figure 17. Ship structures are identified in a longitudinal drawing (adapted from Steffy 1994:253).
Figure 18. Ship structures are identified in a cross-sectional drawing (drawing by author).

Figure 19. A sail plan shows the location of masts and ship components (adapted from Baker 1966:121).
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