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https://dx.doi.org/doi:10.21220/s2-4ftw-5508

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The Technique of the Poquoson-Style Log Canoe

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A Thesis presented to the Graduate Faculty
of the College of William and Mary in Candidacy for the Degree of
Master of Arts

Department of Anthropology

The College of William and Mary
May, 2014

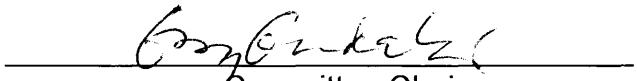
APPROVAL PAGE

This Thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

David Andrews Moran

Approved by the Committee, March, 2014



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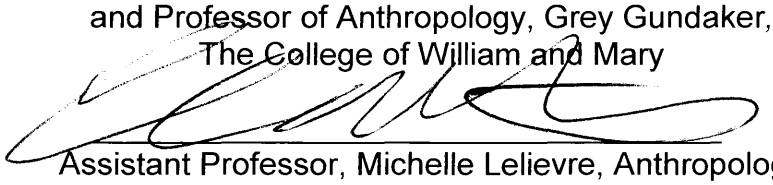

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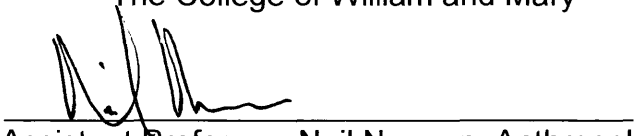

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ABSTRACT

This thesis is a case study in the anthropology of technology. It explores the ways in which a standard view of technology, which pays more attention to things than people, and a "meta-paradigm" of colonial Chesapeake history, which privileges British Colonial development, have combined to produce an oversimplified history of the log-hulled deckboats of the Chesapeake Bay. These boats have been mainstays in the economic productivity of the lower Chesapeake Bay centered around Poquoson, and are integral parts of narratives of the region's distinctiveness. They, and the craft that preceded them, have generated considerable literature and are now displayed in numerous museum collections. Yet, thus far, the dominant narrative of the boats' development minimizes Native-American traditions as "crude," and channels African-American contributions into a corollary supportive role that lacks any connection to innovation. A detailed investigation of the contributions of both groups is a long-term project. Here I suggest some of the directions future research can take, by showing the limitations of standard narratives and pointing out some of the ways in which African and African American boatbuilding expertise may have informed Chesapeake practices. Broadly, my aims in the thesis are to suggest grounds for a more comprehensive history of Chesapeake deckboats and to contribute to the anthropology of technology by showing how a focus on human relations feeds back into both a more inclusive historical narration and greater appreciation of the technological skills involved in boat building.

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ACKNOWLEDGEMENTS

This writer wishes to express his appreciation to Professor Grey Gundaker, under whose guidance this investigation was conducted, for her patience, guidance and criticism throughout the investigation. The author is also indebted to Professors Michelle Lelievre and Neil Norman for their careful reading and criticism of the manuscript. I would like to thank my family for encouraging me in my archaeological endeavors through the years. This thesis was inspired by the volunteers at the Deltaville Maritime Museum who helped to restore the *F.D. Crockett*, with special thanks to John and Vera England and Larry Chowning.

This Masters is dedicated to my wife, Joy

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Introduction

> In contemporary discourse, private and public, technologies are habitually represented by 'things'—by their most conspicuous artifactual embodiments: transportation technology by automobiles, airplanes and railroads; nuclear technology by reactors, power plants, and bombs; information technology by computers, mobile telephones, and television; and so on. By consigning technologies to the realm of things, this well-established iconography distracts attention from the human—socio-economic and political—relations which largely determine who uses them and for what purposes (Marx 2010:576).

To the above quote one might add "boatbuilding technology" represented by boats large and small, aircraft carriers and log canoes. Here too, the same problem occurs—a focus on things and not the people who live and work in a social world. This thesis will add an anthropology of techniques to the study of the nineteenth and early twentieth century tradition of multilog canoe construction and use centered around Poquoson in the lower Chesapeake Bay. It will also show that "the standard view of Chesapeake maritime history" is wrapped up with a "standard view of technology." Together they minimize and obscure the strong African-American presence in a region which was formerly both part of the plantation South, on land, and a hub of maritime activity on the water.

I argue that African-Americans of the lower Chesapeake Bay made subsantive contributions to the development of log-hulled canoes during a boatbuilding era that peaked in the first two decades of the 20thcentury. People of African descent in Virginia came from regions in Africa with long histories of boatbuilding for inland waterways and coastal travel. Thus, it seems reasonable to expect that they brought with them knowledge of boatbuilding, boat handling and fishing experience from West Africa and the

Caribbean, a stopping point for some enslaved Africans before they, or their descendants, were brought to North America. According to Lorena Walsh, the greatest number of enslaved in the southern Chesapeake in the early eighteenth century were brought from the Bight of Biafra, and were probably Efik, Ibibio, Moko and Igbo from what are now eastern Nigeria and western Cameroon (Walsh 1997: 67; 2003). However, although the Royal Africa Company was supplying only about 10 per cent of the total, of these about half were brought from Senagambia (Walsh 1997: 51).

Robin Law points out that Europeans trading along the Gold Coast were dependent on African navigational expertise:

> Indigenous canoe men operating along the coastal lagoons played a crucial role in delivering cargoes to the points of shipment, while immigrant seagoing canoemen from the Gold Coast carried goods and personnel between the shore and the European ships standing off it. Without these African inputs, the European trade on the Slave Coast could not have operated in the way in which it did. (Law 1989:211).

A great deal of information was provided by John Barbot, who was intrigued by the Mina fishermen he observed:

> Some days you can see 300-400 at each place. Their fleets slowly move out one and a half or two leagues with the light land-breeze and on a calm sea, in order to reach the depth they need to fish, and then they disperse, each canoe going its own way to fish without impeding any other. Normally each canoe has two men, one standing up to fish, the other sitting at the extreme rear, in order to steer it and direct it towards what they think are the best places. . . . You cannot but admire the skill of these men at certain times, as when the fish are biting heavily and they pull out five or six of them at once very rapidly. Others hold lines in their hands as the canoe drifts along, and others again make the hooks jump along the surface of the water, in the way we fish for bonito (Barbot in Hair, Jones and Law, eds 1992[1732]:519-520).

Fig. 1. Barbot sketched fishermen at the top and the delivery of slaves at the bottom. In Awnsham and John Churchill (compilers), Collection of Voyages (London, 1732), vol. 5, plate 9, p. 156.

W. Jeffrey Bolster's Black Jacks: African American Seamen in the Age of Sail, offers a useful chapter-long review of African nautical knowledge, practices, and spiritual beliefs associated with water, boat building, and seafaring. Covering key areas which served as embarkation points for Africans bound for slavery in North America from Senegambia through Angola (Bolster 2009: 44-64). His aim is to establish a wider context for expertise that black sailors brought with them. The evidence that he collected, together with sources I discuss later, specifically in relation to boatbuilding, make a

strong case that African Americans had considerable prior knowledge to draw upon when they contributed to Chesapeake boat building.

One prevailing historical tack in the history of the multi-log canoe in Virginia has been the theory of a direct link from Native American dugout canoes to the adoption and expansion of this technique by European colonists, bypassing the likely influence of both free and enslaved Africans in producing this technology. The masking of African-American influence on a major chunk of nautical history in the Chesapeake has been continued by regional narratives that highlight the European colonial development and use of canoes as modes of transportation, commerce and fishing. A goal of this paper is to promote a depiction of the African-American influence on this art, craft and technology in the Chesapeake Bay region, an impact that culminated in large, log-hulled deck boats like the F.D. Crockett, built for power in 1924.

The concept of technology

A genealogy of the concept of technology is one way to reveal the influence of this term on perceptions of craft techniques. I argue that the perception of boatbuilding in the Chesapeake region has been skewed by dependence on a "standard view" of this concept, a view that elevates the contributions of English colonists and romanticizes a link to reified notions of a "primitive native." The presence of Africans and African Americans has also been subsumed by a hypothetical march of boatbuilding "evolution" that is immense in scale, since the lower Chesapeake Bay lies in the shadow of one of the largest shipyards in the world at Norfolk, Virginia.

Science historian Eric Shatzberg has determined that before 1930 the term "technology" was not perceived in the same way that the concept came to be understood from the 1930's onward. During the nineteenth and early twentieth centuries, "technique" was about the methods and procedures associated with engineering and industry; "technology" was about the study of those activities (Schatzberg 2006:489). The history of this concept shows that beyond limited categories of technical education and the naming of the Massachusetts Institute of Technology in 1861, the term "technology" was little used in nineteenth century America, and more widely used in Europe, where both terms retained a linguistic identity. Technology was then defined as "the science of the practical arts" or "science of organized knowledge," and not as "methods and material equipment," which was the definition prevalent from the mid-twentieth century onward (Schatzberg 2006:490)

The German concept of "technik" was similar in usage to "technique" in the early nineteenth century, as in techniques of painting or craft, but later became associated with the industrial arts and the engineering profession (Schatzberg 2006:494). Lewis Mumford described the Greek concept of "technics" in his address at the Smithson Bicentennial celebration in 1965, neatly linking arguments sociologists and anthropologists would be making thirty years later:

> Even the finely finished Solutré laurel leaf points were plainly a gift of aesthetically sensitive artisans to functional efficiency. The Greek form for "technics" makes no distinction between industrial production and symbolic art: and for the greater part of human history these aspects were inseparable, one side respecting objective conditions and functions, the other responding to subjective needs (Mumford 1965:207).

Mumford's paper, entitled "Authoritarian and Democratic Technics," was not delivered as a critique of anthropology; it is more of a dark description of what modern civilization has become because the momentum of the long history of "authoritarian technology" has not been stopped (Lybeck 2010:98). The democratic technics of Lewis Mumford was an attempt to counter a "megatechnical system" based on domination (Lybeck 2010:97), all of which is now quietly wrapped in what we call "technology."

A contemporary definition of technology is the "science or study of the practical or industrial arts, applied science, etc." (Guralink 1986:860). In an earlier Webster's dictionary, the term is defined as "the application of science to industrial use," at the bottom of a group of definitions under "technical," an adjective that is defined as "pertaining to the mechanical arts; specially appertaining to an art, science, profession, handicraft, business or the like" (Thatcher 1971:1460). Philosopher Martin Heidegger sets up a conception of technology that he terms instrumental and anthropological, a human activity that is a means to an end. This instrumental definition of technology encompasses both modern and craft technology, one example being the comparison of a radar station and a weather vane, the former a more complex version of the latter with one caveat: "To be sure, the construction of a high-frequency apparatus requires the interlocking of various processes of technical-industrial production" (Heidegger 1977:5). Expanding on this, he looks for the "essence" of technology, and finds causality: the material, the form, the purpose, and the effect (Heidegger 1977:6). Technology is a way of "revealing," and Heidegger leads us to the Greek definition—"Technikon means that which belongs to 'techné.' We must observe two things with respect to the meaning of

this word. One is that 'techné is the name not only for the activities and skills of the craftsman, but also for the arts of the mind and the fine arts" (Heidegger 1977:12-13). Going further, he insists that modern technology is "a challenging," a demand that energy always be available. The earth becomes a coal mining district, just as what was formerly a peasant minding his fields becomes mechanized agriculture. Within this philosophy, the concept of technology has become aggressive and coercive.

Chain of operations, an archaeological perspective

A closer look at the relationship of human beings to theories of technology provides an escape from the dominance of a "standard view" that can minimize the contributions of minority groups. French anthropologist Pierre Lemonnier provides a succinct definition of this keyword: "Technology embraces all aspects of the process of action upon matter, whether it is scratching ones's nose, planting sweet potatoes, or making jumbo jets (Lemonnier 1992:1). Marcel Mauss initiated focus on the involvement of the human body with technology. Mauss pointed out that the body is man's natural instrument: "or, more accurately, not to speak of instruments, man's first and most natural technical object, and at the same time, technical means, is his body" (Mauss 1973[1934]:75). For example, Mauss described the manner in which we use our bodies in a biological and functional way. Walking is "the habitus of the body being upright while walking, breathing, rhythm of the walk, swinging the fists, the elbows, progression with the trunk in front of the body or by advancing either side of the body alternately" (Mauss 1973[1934]:82). Many anthropological studies of technology have taken a narrow view

of the artifact only, with little emphasis on the manual skills and brain power needed to produce an object. Lemonnier laments that much of material culture study has ignored the early work of Mauss on the "physical actions of technology on the material world" (Lemonnier 1992:3).

Technology is about specifics, and Lemonnier suggested five components of technique: matter (material on which a technique acts), energy (forces that move and transform objects), objects (artifacts or tools), gestures (move objects involved in technical action), and specific knowledge (know-how or manual skills) (Lemonnier 1992:5-6). The specific technical knowledge in Lemonnier's five components results from all the possible choices, including choices between technological issues and the social milieu that are often arbitrary (Lemonnier 1992:51). Lemonnier's examples of arbitrary selection for groups in Papua New Guinea include techniques used to turn stones in Anga hearths, presence or absence of barbs on arrows and in pig traps, and house designs. A fundamental aspect of his thesis is the importance of "the manner whereby a social group does or does not take advantage of technical knowledge" (Lemonnier 1986:155). Technical choices go beyond the "material," thus the relationships of individuals within the context of production should be considered (Lemonnier 1986: 156).

In an article on lithic tool making in late glacial Europe, Anthony Sinclair addresses the need to go beyond typology and archaeological context. He acknowledges the work of French anthropologists Mauss and Leroi-Gourhan that established the notion of a "chain of operations" in the study of technologies: "The *chaine operatoire*

recognizes that the making and the using of tools and indeed bodily movement, itself, is both practical and cultural. Societies may make and do many of the same things, but they will do so in particular ways" (Sinclair 1995:56). It is "technical action within a social context" that expands interpretation, in this case the different techniques used to retouch Solutrean stone tools (Sinclair 1995:57). Retouching can be considered an example of the specific knowledge in Lemonnier's fifth component of technique, but Lemonnier goes further by separating variations in technique that cannot be explained by style or physical actions on the artifact, actions that he describes as "strategic operations." These are operations that cannot be delayed, cancelled or replaced once put into play, an example being a Boeing 727 that must take off after 17 seconds of full throttle or face possibly disastrous consequences (Lemonier 1992:21).

In an important article entitled "Social Anthropology of Technology," Bryan Pfaffenberger advocates a two-fold meaning for technology, the technique and the sociotechnical system. Technique "refers to the system of material resources, tools, operational sequences and skills, verbal and nonverbal knowledge, and specific modes of work coordination that come into play in the fabrication of material artifacts" (Pfaffenberger 1992:497). The sociotechnical system is "the distinctive technological activity that stems from the linkage of techniques and material culture to the social coordination of labor" (Pfaffenberger 1992:497). His social anthropology of technology then consists of three realms of study: techniques, sociotechnical systems, and material culture (Pfaffenberger 1992:497).

Pfaffenberger critiques the paradigm that is the "Standard View of Technology," and proceeds to deconstruct the view that "necessity is the mother of invention." In this standard view inventions become elements on a survival continuum, an assumption that is also Modernist in the sense that "there are universal human needs, and for each of these there is an ideal artifact (Pfaffenberger 1992:496). This view credits the individual genius with invention, assumes that "form follows function," and treats material culture as a form of adaptation to the environment which continually advances. In contrast, Pfaffenberger argues that one must not draw such conclusions a priori but rather study the sociotechnological system, an activity system that is "complex, hidden and resists dissociation." This is the main thesis of science and technology studies (STS), which holds that an innovation within this system requires the blending of social and technological aspects, as in large scale examples like the electric lighting industry (Pfaffenberger 1992:498).

Marcie-Anne Dobres studies technology in terms of social agency, "the gendered practices through which raw materials were transformed into cultural objects for use and exchange" (Dobres 1995:25). Dobres explicitly states that her goal is to "extrapolate from the patterning of technical attributes of artifacts something of the material and social rules of conduct through which they materialized" (Dobres 1995:29). Working with archaeological material from the late Magdalenian (14,000-11,000 BP), she divided five different artifact types into physical or morphological zones, and then examined how these zones varied across five archaeological sites in northwest France. Finding that bone points and harpoons had similar widths across this region, she also noted that "specimens

deviate considerably from this norm, and they deviate in different ways at each site in the study" (Dobres 1995:32). She used empirical information to theorize "a general flexibility in social conduct situated to the specific settings in which people found themselves" (Dobres 1995:41). One conclusion is that what appears as arbitrariness in technological choices may be socially instigated.

In an archaeological study of Xaltocan, Mexico, Enrique Rodriquez-Alegria also refutes a standard view that technology "is simply a rational way of adapting to nature, and it is largely extraneous to social life" (Rodriquez-Alegria 2008:34. He defines technology as "the physical and material ways of making and using things (or performing an effective action on nature or others) in their culturally meaningful social, political, and economic contexts" (Rodriguez-Alegria 2008:34), and disagrees with the paradigm of "quick replacement:" the notion that more efficient and effective European tools always replaced Neolithic technology in short order during the contact period. He shows that the people of Xaltocan continued to use chipped stone tools after the Spanish conquest because the raw materials were easier to obtain than steel knives, which were restricted in both use and means of production (Rodriquez-Garcia 2008:41).

Discussion: elements of maritime technological systems

A case study of boat construction techniques that contests the prevailing "standard view" can illuminate the impact of a technological system on a given social group. A layered explanation for the social construction of technological systems emerged from papers delivered at a workshop in at the University of Twente, Netherlands in July, 1984.

The editors of the resulting book, *The Social Construction of Technological Systems*, argue for three layers of meaning associated with "technology:" First, there is the level of physical objects or artifacts, for example, bicycles, lamps, and Bakelite. Second, 'technology' may refer to activities or processes, such as steel making or molding. Third, 'technology' can refer to what people know as well as what they do; as in the 'know-how' that goes into designing a bicycle or operating an ultrasound device in the obstetrics clinic. Rather than a precise definition, the authors opted for case studies that seemed "intuitively paradigmatic," and drew on historical and technical information from a variety of disciplines. (Bijker, Hughes and Pinch 1987:4).

An example of this approach is the essay "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion" by John Law, which is a study of the Portuguese maritime innovation in the fifteenth century. The first level of meaning would refer to the mixed-rigged vessel that was more seaworthy than previous boats; the second level was the magnetic compass that enabled a steady heading in overcast weather conditions; the third level involved using the northeasterly trade winds off the Moroccan coast to head east into the Atlantic until a boat could use the westerly winds and the North Atlantic drift current to sail due east to Lisbon. This circular route allowed navigators to free themselves from the coast; they were consistently able to find a route home (Law 1987:118-119). This type of analysis shows a systems approach in which "those who build artifacts do not concern themselves with artifacts alone but must also consider the way in which the artifacts relate to social, economic, political and scientific factors" (Law 1987: 112). A summation is provided by Pfaffenberger:

> To achieve the necessary integration of all these factors, the system builders had to get mariners, ship builders, king's merchants, winds, sails, wood instruments, and measurements to work together harmoniously. The system they created resisted dissociation; they were able to sail out beyond the Pillars of Hercules, down the coast of Africa, and soon around the globe (Pfaffenberger 1992:498).

Navigational technology was greatly improved by the mid-eighteenth century, spurred by the invention of the chronometer, a clock that allowed sailors to more exactly pinpoint their location in terms of longitude (Sobel 1995).

A contrary view of the social construction of technology is offered by Langdon Winner, who asserts that social constructivism represents "an almost total disregard for the social consequences of technical choice" (Winner 1993:368). In this vein, it could be argued that the chronometer saved lives but also made warships more efficient, expanding the colonial enterprise of England and other maritime powers. Thus the systems approach of an article such as "Missile Accuracy: A Case study in the Social Processes of Technological Change" (Mackenzie 1997) is an example of a sociology of science that tries "to show why it is that particular devices, designs, and social constituencies are the ones that prevail within the range of alternatives at a given time" (Winner 1993:368), but mask the true ramifications of a more accurate weapon of war represented by the more efficient ballistic missile guidance system.

A nineteenth century example of the social consequences of maritime technology is found in this description of American clipper ships built in Baltimore shipyards: "Long after the American slave trade had been ended, one contact continued with the Bay: her fast clipper vessels were much in demand by Spanish and Portuguese slavers because they were the only vessels which had a chance of evading the British and American

patrols on the African and South American coasts" (Brewington 1953:139). In his chapter "Privateers and Slavers," Brewington reviews British efforts to stop the trade of enslaved Africans in the early nineteenth century: ". . . as it was soon found that there were some very fast slavers that could not be caught by the ordinary naval vessels, the Royal Navy attempted to obtain cruisers capable of high speed" (Brewington:1953:155). Two ships finally captured were the brig *Henruiquetta* and the schooner *Dos Amigos*, both built in Baltimore as early versions of what became the clipper ship, a boatbuilding technology supported by the slave trade. This was a class of ship that was renowned for speed, and these boats are further described by Brewington in terms of size, rig, course condition and cost, with profit being the primary factor driving design, as "her designer had to consider every element pertaining to the trade" (Brewington 1953:158):

> The only question that determined the size of the ship, as far as the slaves were concerned, was how many could be crowded into her. Allowing for mortality from disease, filth and over-crowding, enough slaves had to be carried to show a big profit. Therefore, there was a minimum size for slavers, fixed by experience of the slaving captains, below which a slave-ship would be unprofitable. It was found that vessels between 60 and 100 feet in length paid the best, the exact figure depending on the pocket-book of the owner, the number of slaves his customers could handle, the particular requirements of the rig wanted by her captain, and the harbors she would be expected to enter (Brewington 1953:158-159).

This type of ship was built cheaply. The builder maximized profit by transporting enslaved human beings in the quickest way possible. It was a style of boat construction that continued to be represented by American yachts, schooners, and fishing vessels until the late 1800s (Brewington 1953:175).

In West Africa an analogous development occurred as dugout canoes were altered to be safer for Gold Coast crews to ferry slaves and goods to the larger trading ships. The

West African coast between Anlo and Lagos was a difficult area for boats arriving by sea to navigate. Described as "The Slave Coast" by the Dutch, French and English, it was an area that contained long stretches of strong easterly currents, sand bars and heavy surf (Law 1989:210-212). Fisherman and traders of Dahomey and Wydah were not known to venture beyond the navigable lagoons that lay inland from the sea, a tendency that led to taboos seen by Law "as being essentially secondary rationalizations of the very real practical difficulties involved in maritime navigation" (Law 1989:213). Inland canoes were "normally 'poled' or punted rather than paddled," and were not strong or deep enough to survive the punishment of ocean conditions (Law 1989:214). Africans did eventually begin trading slaves with Europeans along this dangerous coast, and rituals were introduced by the Houla and Dahomey to sanction the safe passage of canoes across the bar (Law 1989:219).

European slave traders sought the open and most lucrative trade routes by sea or land, and slaves and trade goods were moved in and through the lagoons to facilitate the commerce with colonial ships anchored offshore (Law 1989:223-224). The marginal conditions of this passage were being offset as early as the 1670s by "drawing upon African expertise, in the form of canoes and canoemen from the Gold Coast to the west, where there was a long (and certainly pre-European) tradition of maritime navigation" (Law 1989:225). Bolster notes that western Africans used low draft canoes on rivers that were not navigable by larger vessels:

> In canoes of various lengths and designs, carrying from one person to more than one hundred paddlers and warriors, coastal Africans conducted commerce and war before they met Europeans. Thereafter, canoe-borne trade began to complement that of European deep sea-ships, securing much of Western Africa

in the web of Atlantic commercial capitalism (Bolster 1997:48).

The English Royal African company hired canoes and crews at Cape Coast. These canoes were large dugouts made from a single tree. Planks were added to the sides of the canoes to act as weatherboards or strakes (Law 1989:227-228). The canoes were "modified and strengthened for use in the rougher waters of the Slave Coast," and these changes were made by ship's carpenters (Law 1989:229-230). Change within this technological system was driven by the commerce of the slave trade.

African canoe builders

Accounts of seafaring Africans are prevalent in European narratives from the late seventeenth to the nineteenth century. These included Gold Coast traders, fisherman from Senegal, and local traders along the coast of what is now Liberia and Ivory Coast, in particular Fanti canoe men who specialized in trading with the European ships (Smith 1970:516-517). Inland groups like the Yoruba made canoes for the lagoons and connecting waterways, taking advantage of the geographical distinctions between the beaches and open countryside of the Gold Coast (Smith 1970:517). The Niger-Senegal-Gambia group of rivers was a geographic system that linked the kingdoms of Hausa, Nupe, Igala and Benin to the Yoruba states. The Zaire River supported a similar system of commerce enabled by traders in boats (Thornton 1992:19 in Bolster 1997:47). Bolster states that "Africans who became sailors in the New World arrived from a three-thousand mile swath of western African bounded by Senegambia and Angola," and further stresses

that "supernatural associations distinguished their perceptions of water and watercraft from those of white mariners:"

> Africans did not differentiate between categories such as canoe travel and the influence of ancestral spirits. All were intertwined in a sacred worldview. Canoes and ships had their own layered meanings for Africans, as did the cowrie shells used by many West African peoples for money and decorations and regarded as hallowed because they came from deep water (Bolster 1997:45).

Figure 2. Log canoe on the Calabar River, late nineteenth century.

Canoes varying in size from 24' to 80' were seen on the Bonny and New Calabar Rivers of the Niger delta, with details such as carving, painting, cooking hearths, benches, storage and forecastles. Nineteenth century versions included canoes made from smaller logs, joined end-to-end with cords (Howard 1951:518). Paddling or punting was the motive force provided by the crew, but sail technology was also described.

Yoruba boats utilized both grass fiber and cloth, including "square sails of strong cotton cloth, woven in the interior, blue, white and striped. (Whitford 1963[1877]:519).

Bolster summarizes mixed European impressions of African boats by colonial mariners: "Europeans regarded African watercraft with a curious mixture of intrigue (dugout canoes were exotic); respect (African canoes handled better than European boats); and disdain (African maritime technology unquestionably was less sophisticated than that of Europeans" (Bolster 1997:47). However, the construction techniques used make West African canoes were well advanced long before the British spied a log dugout. Gold Coast canoe makers were using iron to carve out the inside of the trunk: "They round off the trunk at each end, then dig it out with an iron tool. They leave the thickness of two fingers at the bottom and one finger on the sides, and then burn straw in the hollow, in order to prevent the sun from splitting the boat or worms from entering." (Barbot 1732:519). Smith states that contemporary Nigerian boatbuilders prefer softer wood, and use an "adze-like tool" as well as other techniques to shape the canoe, including squeezing the canoe between props to prevent expansion and cracking in sea-going canoes. Conversely, they encouraged expansion in fresh water boats by placing struts across the open hull (Smith 1970:520). The Ijo and Apoi of the Niger delta were known as boatbuilders, and the nineteenth century Ijebu are reputed to have had a boatbuilding center of great reputation at 'Boughiye,' reputed to have been on a creek near Ikosi (Curtin 1967:521).

The oldest boat found in Africa is the Dufuna Canoe, discovered during well-digging in 1987 by a Fulani herdsman. The canoe was found near the Yobe River in

Nigeria, and close to Dufuna, in Fune, a Local Government Area of Yobe State. Radiocarbon dating revealed this African mahogany canoe to be over 8,000 years old, the third oldest known wooden canoe in the world. The dugout measures 8.4 meters in length (27.5'), 0.5 meters wide and 5 centimeters thick. Researchers Bruenig, Nuemann and Van Neer document that the bow and stern were pointed and carved, indicating it was the work of skilled boatmakers, and that the boat "does not represent the beginning of a tradition, but that it was preceded by a long development and that the origins of water transport in Africa reach even further back in time" (Bruenig et al 1996:116). While showing a high level of skill in boat production, the existence of the Dufuna canoe does not mean that canoe techniques were ubiquitous in African history, or that canoes continued to "evolve" from this early boat.

Canoe construction techniques were influenced by political and military developments. Writing about an eighteenth century oral tradition of the Anlo-Ewe of southeastern Ghana, Sandra E. Greene chronicles the introduction of an improved canoe in the Keta lagoon. When the Anlo first settled east and south of the Volta River, they were not acquainted with boats. Their early boats were unstable dugouts made from the fan palm. The more stable *lewu* was introduced when a man named Amega Le came to Anloga in a canoe while taking part in a military retreat from Akwamu forces (Greene 1988:70-71). Greene describes an analogous process for the origins of the Anlo salt-making industry, noting that different techniques of producing salt were introduced by one Aduadi, the founder of the Dzevi clan. These innovations in boatbuilding and saltmaking "have been traced to a flood of refugees that moved into the Anlo area in

1679 after Akwamu attempted its first expansionary effort against Ladoku (Greene 1988:71).

North American Log Canoes

In Florida, remnants of over 100 log canoes were found in the dried-up Newnans Lake in 2000; 41 of these were dated to the period 2300-5000 B.P. (Wheeler 2003:533), and all were determined to have been fire-hollowed. (Wheeler 2003:536). A number of these canoes had upward-sloping ends and low partitions or thwarts, (Wheeler 2003:540) and 31 of these canoes were determined to be yellow or southern hard pine (Wheeler 2003:542). Gamble has theorized that the Chumash plank canoe of southern California, the *tomol*, was developed 1300 years ago for use in the northern Santa Barbara Channel Islands. The Chumash *tomol* makers used stone tools to drill holes in the planks, which were sewn together with milkweed string and caulked with asphalt mixed with pine pitch (Gamble 2002:305). She has linked canoe ownership with the rise of hereditary leadership and increased social complexity (Gamble 2002:301). Fagan has countered with an argument that the plank canoes of the California coast were a response to rising sea level conditions after 10,000 B.P., and that these boats could have been based on a five-bundle balsa prototype, a five-bundle reed canoe that may have had a tree trunk or driftwood bottom (Fagan 2004:13). Watercraft found at Isla Cedros in Baja California indicate that this unique type of canoe was made with a carved driftwood bottom and

bundle sides: ". . . bundles of wooden poles as long as the hull itself were formed, laid alongside the central element, and then bent to match the outer margin of the craft" (DeLauriers 2002:351). The wood in the canoes was dated to 250 B.P. and older, and the bundles would have been tied to each other and the hull, providing more freeboard (DeLauriers 2002:352).

The multiple log canoe, or "pirogue," was a common form of boat used by Carib fishermen in the West Indies (Price 1966:1364). Price details how native Indians and then Africans in the Caribbean "were from the very beginning a privileged slave subgroup within the plantation system, and that their special socioeconomic role permitted a particularly smooth transformation to a life as a free fisherman, whether this came about before or after general emancipation" (Price 1966:1364). Fishing techniques, and by corollary boating and boatbuilding techniques, were interchanged by Island Caribs, Africans and the French, and these skills provided food and eventually freedom for island fishermen. Fishing became a way to get free from the plantation system, and these fishermen "exercised potentially important economic skills that stressed independence" (Price 1966:1379). In The Caribs of Dominica, Douglas Taylor describes a large boat called a bacassa, 42 feet long with seven feet of beam, a pointed bow and flat stern. This large canoe was built from red cedar, and the sides "had been raised about 15 inches by the addition of boards of the same wood, split with an axe and not sawn (Taylor 1938:141). Irving Rouse provides graphic data on Carib vessels:

> The Carib were expert in the management of boats, of which they had four types: pirogues, large canoes, small canoes, and rafts. Both the pirogues and the canoes were dugouts, but the sides of the former were built up with planks, sewn together and pitched with bitumen. The average length of the pirogue was 40 feet (12 m);

> some were large enough to carry 50 persons. Each one had a keel, a raised and pointed bow, a series of plank seats, and a flat-pooped stern carved with an animal's head (maboya) to frighten the enemy and often decorated with a barbecued human arm (Rouse 1948:553).

A dugout canoe from St. Georges, Granada, built in the 1930s, is probably very similar to the Carib boats used in this part of the Caribbean in the eighteenth century. The Gouave sea dugout canoe has a bottom made from a single log, with planks attached to both sides, is constructed with frames and thwarts, and was propelled by both oars and a sail. The interior and the bottom of this boat were painted red, and the top features were painted blue. The boat is located at the Mariners Museum in Newport News, and is described as a transition in boatbuilding from single-log dugouts to boats made only of a keel assembly and plank.[1] The connection of Chesapeake canoe design to the Caribbean region mentioned by Brewington, a description of a canoe "having remarkable stout timbers of West India wood, the bottom pine" (Federal Intelligencer, Nov. 20, 1795, quoted in Brewington 1963[1937]:18), is also noted by Vlach (1978:102). A further description of canoe painting states: "By the middle of the 1700's canoes were sometimes rather garishly painted, one being described as having a 'white bottom, black gunnel, painted red in the inside;' another, 'paid over within and without, with a mixture of Tar and Red Paint;' others were treated with tar alone, or occasionally left 'raw'" (Maryland Gazette, May 24, 1764; Oct. 18, 1764. Maryland Journal, Sept. 6, 1775, quoted in Brewington 1963[1937]:19). Brewington missed the possible significance of both an eighteenth century Chesapeake canoe and a twentieth century Carib style gouave having red-painted interiors. The sweep of African influence is taken further by Bolster's

[1] Mariners Museum, Newport News, Virginia, Accession No. 1935 0003 000001A

description of a 27' long eighteenth century canoe on Skidaway Island, Georgia that was painted white on the outside and red on the inside:

> "Dugouts like these often were vital to slaves' transportation needs in the Chesapeake and especially in the Carolina low country. These hybridized craft, with modified dugout hulls and European style sailing rigs, were similar to the sailing trade canoes built by *grumetes* in Senegambia, and to African *periagos*" (Bolster 1997:60).

In the introduction to a paper entitled "Guiana Maroon Canoes: Origins and Cultural Models", Chuck Meide states: "Like the plantation systems from which their ancestors escaped, Maroons living in the heavily forested interiors of Suriname and French Guiana rely on rivers for almost every aspect of their daily lives" (Meide 2002:1). In modern Maroon society all adult Maroons own a canoe and males are expected to know learn the skills to make one, but "some men are renowned for their craftsmanship in making and decorating canoes" (Meide 2002:2). Citing historical West African examples of canoe use by groups subsequently enslaved, he points out that "once re-located in the similarly riverain colony of Suriname slaves would have been exposed to (and expected to propel and navigate) a variety of watercraft including Amerindian built (and possibly European or even slave-built canoes" (Meide 2002:2).

Meide agrees with Bolster (1997:60-61) that "possible African influences are often dismissed in traditional descriptions of African-American watercraft," and points out that Hurault denies any African influence in his descriptions of Maroon canoes (Meide 2002:2). He agrees with Price that Maroon canoe building "has repeatedly drawn on a diversity of cultural models, combining in an original synthesis elements of African, Afro-American, Amerindian, and Euro-American maritime traditions" (Meide 2002:2-3,

In Price 1993:129). Bolster reinforces this statement by concluding that the skills needed to build and maintain these small boats were "truly creole." The canoes were a mix of West African, European and Native American techniques, and "without knowledge of African canoe-builders, contemporary chroniclers simply assumed that canoes and piraugas were of Indian origin" (Bolster 1997:60-61).

Log-hulled canoes of the Chesapeake

> Almost every family owned one, two or three of these boats, and the men were out in them a greater part of the time, taking the daily meal of fish for the family, traveling to and fro, or sailing off to market somewhere with a canoe loaded down with oysters and fish. A great deal of general trading took place in these boats. The inhabitants of the islands went to church in them on Sundays, and in fact whole populations, white and black, were used to owning and handling canoes, and knew how to make them (Hall 1884:34).

Adopting a "standard view" of multilog canoe building may obscure the unique innovations made by people working with tools and techniques, innovations that are not evolutionary but are persistent in both a diachronic and synchronic sense. This type of boat can also represent the binary of upper Chesapeake Bay to lower Chesapeake Bay, in relationships that were reflected in a number of ways over time: symmetry/asymmetry; ship/canoe; Maryland canoe/Virginia canoe; white ship owner/black canoe owner. In his 1884 study of shipbuilding, Hall noted that oyster canoes were built in most of the Chesapeake Bay shoreline counties in Maryland and Virginia, that the log canoe builders of Poquoson had the best reputation, and that "canoemen are numerous in the vicinity of York, Gloucester and Pocosin, Virginia" (Hall 1884:38). At Crisfield, Maryland, Hall observed ". . . more than 1,400 fishing vessels owned, 700 of them being canoes not

large enough to register as vessels at the custom-house. The Crisfield boats nearly all come from the rivers of the lower Chesapeake" (Hall 1884:38).

Figure 3. Hampton wharf and oyster boats. Courtesy of the Hampton History Museum, Hampton, Va., 1952.15.1, Detail.

Three regions were centers of canoe building: one in Virginia and two in Maryland, producing somewhat different styles of vessel. The two Maryland centers were located in the areas of Pocomoke Sound and Tilghman Island. Canoe builders in these parts of the Eastern Shore of Maryland worked from half models, cutting and shaping timbers to match the model using broad axe, adze and saw, but with the aid of chalked station marks corresponding to the model. Virginia canoe builders did not use a half model, and the result was always some variation in the two sides of the hull. The logs were placed on blocks and positioned to maintain the needed lines, then hollowed with an adze by "rack of eye" at the builder's discretion (Brewington 1937:15).

The geographical center of Virginia log boat construction was at Poquoson, Seaford and Dare, Virginia. The method of using multiple logs to construct the hulls of

canoes, bugeyes and deckboats was the standard for vessels built in this area of the lower Chesapeake Bay. Logs were squared off to fit together, pinned with trunnels or drift pins and then shaped into a boat with axe, adze and saw. The first log was the longest and largest diameter, and was hewed square with tapered ends. This "keel log" became the symmetric center of the boat. The second logs, placed on each side of the keel log, were cut in equal length and fitted to the keel log. These two "garboard" logs were then bounded by hand hewn curved logs to fit with the garboard logs. Additional major logs and narrower logs were added to increase the width of the boat to the desired dimensions. These were called "chine logs." The round fantail stern is a significant trait of design carried over from the building of log canoes, which were often described as end-to-end, being pointed at both ends (Chowning 2003:51).

Figure 4. Keel log, garboard and additional logs form a five log canoe at Darlings Railway, Circa 1937. Courtesy of the Hampton History Museum, Hampton, Va., 2008.63.14, Detail.

The early oyster industry of the Chesapeake Bay had significant influence on boat development. Higher demand for oysters by an increasing population reduced the availability of shoreline oysters. Bigger boats allowed fishing in deeper waters, and the advent of hand tongs in the early eighteenth century resulted in a steady oyster harvest and supply for customers in homes and taverns. By the beginning of the nineteenth century, New England schooners were in the Chesapeake buying oysters, and soon after began using the oyster dredge. Local fishermen adopted the dredge, and built bigger log-hulled sailing vessels to use the dredge and increase their range. Open log canoes of 20 to 25 feet were replaced by coasting canoes (35-40 ft.), then the brogan (40-50 ft. with decking, bulkheads and hatches), then the log bugeye, which was over 50 feet, made from seven to 13 logs, and with full decking and a small cabin (Chowning 2003:50-51).

These vessels, powered by sail, were used almost exclusively for oystering, either by tonging, scraping or dredging. Characteristics such as low freeboard for hoisting in the catch and open deck space for handling dredges were common on such boats, and log-hulled buyboats inherited these features (Chowning 2003:51). Many power boats used on the Chesapeake Bay well into the twentieth century were bugeyes built in Maryland and converted to deck boats in boatyards along the bay's western shore. Deck boats such as the *F. D. Crockett* added large hold openings to the broad beam and shallow draft, making them very effective freight haulers on the Chesapeake Bay[2]

[2] F.D. Crocket National Register Nomination Form NPS 10-900, NRHP 8/22/2012, VDHR 059-5013:9.

The final stage in the development of the log canoe was the log deck boat built specifically for an internal combustion engine, a change that became common by 1910. Hulls for these boats were built in the same way as the five-log canoe, with a center keel log flanked by however many logs were necessary to reach a given width, and coped at the outside by a chine or bilge log. Side chunks of wood were pinned and shaped to serve as side planking, commonly called "rasonwood" (raising wood).[3] The chunk-built round stern, a distinctive feature of log canoe construction, became a feature of many early frame-built deck boats and frame and box-built deadrise buyboats (Chowning 2003:51). Sawed lumber was available in Poquoson from the late 1800s, but builders continued to build log boats because that is what they knew how to do.[4] Logs could be pit-sawed into planking, but it was faster to cut down trees and construct the boats from logs using the traditional methods.

While this may have been due to custom and efficiency of effort, the log-hulled boats had distinct advantages that made them uniquely qualified to fish and conduct commercial activities on the Chesapeake Bay. The thick logs could withstand contact from metal shovels when oysters, fish and crabs were stored in the boat's hold. Log boats rested lower in the water, making them more amenable to oyster and crab dredging than high sided boats. Deck boats often served as buyboats, buying directly from the watermen. This transaction allowed the smaller oyster boats to continue fishing uninterrupted without hauling their catch to market. The deck boats hauled seafood,

[3] John England, personal communication, March 26, 2014.
[4] John England, personal communication, March 26, 2014.

livestock, farm products and lumber. Prior to the advent of highways and bridges, they were essential for commerce (Chowning 2003:53).

Figure 5. Log canoe construction at Darlings Railway, Hampton. Courtesy of the Hampton History Museum, Hampton, Va., 2008.63.11, Detail.

Examples of Multi-log Canoes at Chesapeake Bay Museums

The two log canoe *Bardog* is believed to have been built in the Poquoson area ca. 1870, and is one of the oldest canoes found in Maryland. Witty and Hayward, authors of the Maryland Historical Trust assessment of the canoe in 1984, state that "the canoe's

two log construction illustrates the first step in the development of the multiple-log canoe building process that was devised by local boatbuilders after the Civil War" (Witty and Hayward 1984:98). Logs were held together with metal butterfly plates called dovetails. The canoe was found abandoned in 1948, at St. Georges Creek near the Potomac River in southern Maryland. It contained a one-cylinder engine and had once been painted white. *Bardog* had been originally built for sail and used as an oyster-tonging workboat, and would have had a single raked mast and a triangular sail. The boat is 26' long, and is similar in dimension and construction to a Poquoson two-log canoe built by Henry Freeman of Back River, Messick, Virginia in 1876, and included in The Historic American Merchant Marine Survey. The *Bardog* is housed in an exterior display building at the Calvert Marine Museum in Solomons Island, Maryland (Hayward and Witty 1984:98).

The *W.A. Johns* was a five-log Poquoson-style canoe probably built in Deltaville, Virginia, also ca. 1870. This double-ended boat was built from five pine logs, had a single mast, and was painted white. She was 35 feet long and was eventually converted to power, like many boats of her time that needed a gas engine to become more effective oyster-tonging vessels (Hayward and Witty 1984:3). Originally built to have a mast and sail, the *W.A. Johns* represents the most popular type of waterman's boat: "In 1880 U.S. Census Bureau investigators revealed in a Fish Commission Report that 6,300 canoes were in use on the Bay, and that about 175 new vessels were turned out annually" (Hall 1884:). The sharp bow and stern of the log canoe allowed it to push the chop away when running and made it possible to maintain a stable platform while anchored stern to sea"

(Chowning 1989). The boat was purchased by Dr. William Gwathmey of Deltaville, who used it to visit patients during the 1920s and early 1930s. The *W.A. Johns* was destroyed by a fire at the Deltaville Maritime Museum in July, 2012. The boat had been donated by the Chesapeake Bay Maritime Museum and was one of the oldest surviving log canoes.

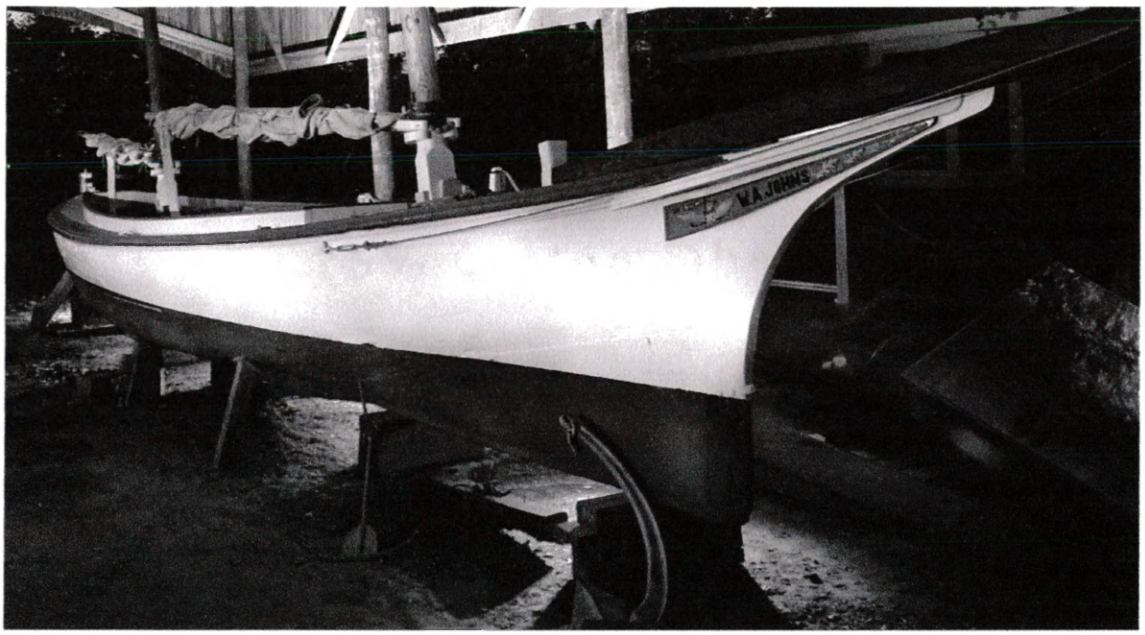

Figure 6. The five log canoe *W.A. Johns* at the Deltaville Maritime Museum

The *Merry Widow* is a 28'-6" long Poquoson-style sailing canoe built either in St. Mary's River, Maryland or Norfolk, Virginia. Dated to the period 1880-1910, she was constructed of loblolly pine logs, and was a working oyster tonging boat converted to power after the turn of the century. The original configuration would have included a single "sprit-rigged mast." The logs were connected with iron drift pins, and the outer hull was painted white, which may have been her original color. The boat is described as "being a rare survival of the Poquoson type of log canoe indigenous to the Western Shore of the lower Chesapeake Bay" (Witty and Hayward 1984:1)

Shamrock, a brogan housed at the Calvert Marine Museum, is 40'-8" long, has a beam of 9'-4" and a depth of 3'-10,"and is considered to be a step between smaller log canoes and the much larger bugeye. She has an even number of logs, and was designed to have two masts and is believed to have been built at Poquoson in 1908-1909. *Shamrock* was built with a full keel and was later fitted for a gasoline engine. The boat was based in Middlesex County, Virginia for much of her working life, as documented by Chowning in an interview with African American oyster tonger Roosevelt Wingfield: "The *Shamrock*, she was a log canoe that had once had sails in her but when I worked on her she had a six-cylinder Chrysler to move her" (Wingfield in Chowning 1990: 93-94). The larger size of these canoes was a response to the success of the oyster dredge. Brogans were a type of boat also called a coasting canoe, and had decks, bulkheads and hatches (Witty and Hayward 1984:4). The *Shamrock* was painted white except for gray coloring on the inside of the hull.

Edna E. Lockwood is the oldest surviving log bugeye in its original configuration. Bugeyes were built to have two masts and three sails, and were double-ended (both bow and stern were pointed). The original nine-log bottom is intact and dates from 1889. Constructed on Tilghman Island by boat builder John B. Harrison, she is 53'-6" long, 15'-3" wide, and has a draft of 2'-7." The round bottom, shoal draft and wide beam of the bugeye were well suited for oyster dredging. A "patent stern," a squared-off stern that allowed more space for oyster harvesting, was added to the boat by 1910. The *Lockwood* worked in the oyster industry from 1889-1967 (Eshelman 1994:3), and is based at the Chesapeake Bay Maritime Museum in St. Michaels, Maryland.

The *Wm. B. Tennison* is a nine-log bugeye originally built for sail, and converted to power in 1908-1909. Built in 1899 of heart pitch pine at Crabb Island, Maryland, she is 60'-6" long with a beam of `17'-6" and a draft of 4'-6". The boat would have had three sails rigged to two masts, and a centerboard for bay sailing while in use as an oyster dredger. The masts, centerboard trunk and original cabin were removed when the first engine was installed, and from 1909-1979 she operated as on oyster buy-boat and freight boat, buying and selling in the bay region between Baltimore, Washington the lower Chesapeake Bay. *Tennison* was designated a National Historic Landmark in 1994 and is based at the Calvert Marine Museum in Solomons Island (Eshelman 1993:13).

Figure 7. The *F.D. Crockett* at the Deltaville Maritime Museum dock, 2012.

There are three log-hulled deck boats left on the Chesapeake Bay. One of these is the *Wm. B. Tennison*. The other two were built for power. The *Old Point* is a seven-log

canoe that was owned by J.G. Wornom and used as a crab dredger and buyboat for oysters and fish. She is currently berthed at the Chesapeake Bay Maritime Museum in St. Michaels, Maryland. The *F.D. Crockett* was built by Alexander Gaines, who constructed log hulled boats in his yard in Dare, Virginia, and used techniques typical of log canoe construction to build the F.D. Crockett in 1924, using nine logs to make the hull. Gaines built many log boats according to this style, and was one of the last of the traditional log boat builders in the area.

The *F.D. Crockett* is an early twentieth century Poquoson-style Chesapeake Bay log-built deck boat, with an overall length of 62.8 feet, 55.8 foot keel length, a beam of 15.7 feet and draft of 4.6 feet. It was built during the transition on the Chesapeake Bay from sail-power to the internal combustion engine and was one of the last large log boats built. The hull is a primary example of the Poquoson-style log canoe, combining the traditionally built log hull with the gasoline engine rather than a sail. The new availability of gasoline engines for boats in the early 20th century, combined with the expertise of the craftsmen in the Poquoson area, made it possible for the builders of log-hulled canoes to build engine powered deck boats using the large logs that were still locally available in the mid-1920's. The boat represents the last stage of log canoe construction on the Chesapeake Bay. The F.D. Crockett retains the integrity of the original logs used to build the boat in 1924.[5] The *F.D. Crockett* was listed on the Virginia Landmarks Register and the National Register of Historic Places in August, 2013. Her home port is Deltaville,

[5] F.D. Crocket National Register Nomination Form NPS 10-900, NRHP 8/22/2012, VDHR 059-5013:7-9.

where she is moored at the Deltaville Maritime Museum and Holly Point Nature Park on Mill Creek.

African-American Watermen—Carving Up The Standard View

The "standard view" of the history of multi-log canoe building in the area around the Chesapeake Bay describes the dugout canoes used by Native Americans and English colonists, a narrative framed by the descriptions of seventeenth century European explorers of the Chesapeake and the Carolinas. According to Brewington: "It was a crude affair, a device of stone age tools and intellects" (Brewington 1963[1937]:1); yet later he relates with no irony John Smith's description of Indian canoemen rowing faster that colonial barges (Smith in Brewington 1963[1937]:2). The vessels in these early accounts were of various lengths, hollowed out from single logs using a combination of burning and scraping with shells. In Brewington's "standard view," the English needed this canoe technology to survive:

> That the white man was not long in adopting the dugout is shown by the innumerable references to it which began to appear in the colonial records of Virginia and Maryland about the middle of the Seventeenth Century. Let it not be thought that the adoption was a matter of choice, for surely few of the dominant race ever admit that some poor savage's implement is better than their own. Its use was brought about by sheer necessity (Brewington 1963[1937]:2).

The dominant story is that the English colonists expanded this technique by creating a two-hulled catamaran for transporting tobacco, and then began using more than one log in the construction of the canoe to expand the size and stability of the vessel. This

innovation has been attributed to the use of metal tools that allowed them to create a water-tight joint between the logs (Brewington 1963:3).

A "standard view" of Native American dugout canoe making is also described in a thesis by Forbes, who summarizes Colonial narratives, prefacing his text by noting that "the dugout of the Indians was a very crude craft" (Forbes 1989:58):

> The Indians used oyster shells and scraped the bark from the trunk. Once the bark was removed, the process of burning and scraping was used to form the interior of the canoe. The Indians lit a fire along the length of the trunk, controlling the flame from spreading beyond the desired width. The fire was soon extinguished with water and dirt, and the coals and ash scraped off using either oyster shells or stone. Once the scraping was complete, the area was again set on fire. The process continued until the desired depth was attained (Forbes 1989:60-61).

The notion that dugout canoe technique was more involved than the basic scraping out the interior of a burned log is addressed by Meide, although the options are always using fire and tools, or tools with fire:

> The hollowed log can used as a watercraft as it is, or it can be widened by heat-treating, or have its sides raised by adding strakes. There exists a plethora of historical accounts and ethnographical descriptions of dugout manufacturing methods. Throughout the millennia, peoples of the Americas have shared similar construction techniques, differing only according to available technologies and cultural preferences (Meide 1995:15).

The view of the log canoe around the Chesapeake Bay is weighed down by a standard approach that is used to highlight the "evolutionary" crowning achievement of the racing log canoe:

> The dugout canoe on display at the Chesapeake Bay Maritime Museum looks more like a feed trough than the ancestor of a thoroughbred racer. The ends are bluff, the sides are slab and the interior fashioned with fire and stone. But hidden in the crude shell is the idea that would someday become the gracious speedster known on the Eastern Shore as the Chesapeake Bay Log Canoe. For more than 150 years, the sleek vessels with their twin, raked masts and sharp-angled sails

> have been battling for bragging rights on the Chester, Miles and Tred Avon Rivers to the delight of sailors, spectators and artists (Avalon Foundation 2011:1).

Such popular articles carry on the view that Europeans simply modified the dugout into a vessel destined for racing greatness and simple to make: "In a land without sawmills, anyone with an axe and shaping tools could build a boat from abundant stands of pine" (Avalon Foundation 2011:1).

As a point of comparison, the method of obtaining wood planks and heavier beams to construct early colonial American ships are still seemingly "crude." However, as described by Howard Chappelle in his *History of American Sailing Ships*, they make a stark contrast to the ways that Native Americans had produced a dugout canoe:

> The methods employed in American shipbuilding in early days were naturally crude. All planking was sawn by hand, of course, and all heavy stuff was shaped and fitted by use of adze, broadaxe and plane. Sawing plank was a laborious process. A pit was dug and a staging set up across it, the log was levered out on the staging and sawn by the use of a long two-man handsaw, similar to the modern timberman's cross-cut saw. One man stood on the staging, straddle the log and facing opposite the direction of the saw-cut. The man in the pit faced the direction of the saw-cut, to avoid sawdust, and by alternately pulling on the saw the men could rip a log into plank. The work was slow and required so much skill that the "sawyer" became a recognized trade (Chapelle 1935:9)

The above description sets the stage for Chesapeake log canoe history by creating a dichotomy between the sawing of planks (crude as it was, but also requiring skilled sawyers), and the hand craft of shaping the "heavy stuff" with adze and axe (techniques that resulted in a faster way of constructing log boats).

The possibilities of African-American influence on the technical art of this type of boatbuilding are not lost entirely within this paradigm. The Mariner's Museum in Newport News keeps the thread alive on their website: "In the maritime communities of

the Chesapeake Bay, African boatbuilding and boat-handling skills were in great demand. A notice from the Virginia Gazette in 1772 describes a runaway slave: 'He calls himself Bonna, and says he came from a Place of that name in the Ibo Country, in Africa, where he served in the Capacity of a Canoe Man.'"[6]

Both free and enslaved African-Americans served as Virginia soldiers and seamen during the Revolutionary War. Despite the limitations of bondage and restrictive legislation, hundreds served in the army and navy as runaways, as volunteers who expected freedom, as substitutes for their masters, and as employees of the government (Jackson: 1942:253). Virginia counties along the western Chesapeake were represented by African-Americans with years of experience working the creeks and rivers along the bay. These men were so numerous before the revolution that the state of Virginia attempted to restrict their access to jobs:

> The employment of slaves on boats had indeed reached such a stage by the time of the Revolution that the Virginia legislature passed an act to limit the number in the merchant service on the rivers of the State below the fall line. In an effort to furnish employment to a larger number of free white seamen this law provided that not more than one-third of the persons employed in the navigation of any bay or river craft shall consist of slaves (Jackson 1942:262).

A Master's Thesis presented to the Department of Anthropology at the College of William and Mary in 1994 effectively uses probate records and a structural look at the difference between African-influenced boat building and the Georgian world view to show that enslaved and free African-Americans dominated the Chesapeake Bay waters of York County, Virginia (Mamary 1994). This thesis compares probate inventories from York County, Virginia and Worcester County, Maryland between 1780 and 1889.

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[6] http://www.marinersmuseum.org/sites/micro/waters/slavery/slavery03.htm

Mamary determines that African-Americans in York County were the predominant boatbuilders and watermen of their era, and were partial to canoes. Boats in probate inventories for this period in York County were 78.5% canoes, out of 239 total boats listed (Mamary 1994:22). Before the Civil War, 25% of the white men represented owned at least one canoe, and 27% of these owners had two or more canoes. Broken down by ten year periods, there was a 30% rate of canoe ownership for white men before the war, and after the war the rate dropped to 2.9%. (Mamary 1994:23). Therefore: "It is probable that newly emancipated slaves acquired the canoes of their former owners or built new canoes for themselves. This would effectively remove the canoes from the inventories of white York County residents" (Mamary 1994:23). Skills needed to construct log canoes for fishing and oystering were prevalent in the African-American community. Over 59% of water-related occupations listed worker types in the 1850 York County census were "Black" or "Mulatto," and this increased to over 70% by 1880. African-Americans comprised 81% of the oystermen in this census (Mamary 1994:27).

Although most African Americans worked in agriculture, there were many opportunities for non-agricultural labor in counties of the lower Chesapeake Bay after the Civil War. In York County this was 25% of the black working population: "The majority of people working in such alternative areas labored in the water-related industry, a thriving business made possible by the Chesapeake Bay, the two main rivers (the York and James), and lesser rivers and navigable creeks, which contained an abundance of fish and oysters. As with the northern counties, slaves at the southern tip were accustomed to labor on the water" (Medford 1992:572). Black oystermen owned their own boats, set

their own hours, and could make as much as $7.50 a day tonging for oysters (Medford 1992:573). The independence and good pay provided by work on the water was so great that it impacted the farm economy, and black watermen were accused of not being ready for off-season work by white employers, who supported the passing of laws that taxed boat owners: "Such legislation affected both blacks who owned their vessels and those who worked for someone else. Yet taxation failed to drive most of them out of the industry and back to the farms. When the oystermen left the harvesting beds, it was usually to work his own piece of land, even then he did not completely shut himself off from the freedom he enjoyed on the water "(Medford 1992:574).

Figure 8. Oyster Tongers. Courtesy of the Hampton History Museum, Hampton, Va., 2013.9.1, Detail.

The skills of African craftsman involved in the maritime trades is well documented from a variety of sources, and was detailed by Vlach in his 1978 publication on African American decorative arts. From Norfolk to Alexandria, eighteenth century white shipbuilders were hiring African-Americans to build boats and ships, and using the

enslaved to perform the same tasks at every opportunity. This occurred in Hampton, where skilled blacks, both free and enslaved, found work with merchants, shipbuilders, and ship owners. One employer was George Hope, who owned the largest shipyard in Hampton during the period 1782-1810 (Hughes 1978:268-269). Just to the south, Norfolk dominated 18th century shipbuilding, as Bill Kelso describes in *Shipbuilding in Virginia, 1763-1774:* "But the yards at Norfolk vastly exceeded any other Virginia shipyard in quantity of production. For instance, of the 122 ships with the place of origin mentioned, eighty-three came from Norfolk while only eleven came from the second most productive yard, Alexandria" (Kelso 1971/72:6). Local craftsmen were sometimes sold: "For example, advertised for sale with the ship *Polly* were eleven Negroes, some of them shipcarpenters, blacksmiths and sailors" (Kelso 1971/72:8). In St. Mary's County, Maryland, enslaved African-American carpenters, blacksmiths and sailors dominated their trades during the period 1790-1864, and made significantly more than the average wage when they were hired out. Fishing and oystering were common pursuits, including on Sundays and holidays, and seafood was often sold to ships by the local watermen against the wishes of slave-owners (Marks 1987:549).

Pirogues and log canoes were built and used at plantations with access to water. In eighteenth century South Carolina, advertisements in local newspapers marketed skilled black oarsmen (Wood 1974:101). A two-log cypress "plantation barge" survives in South Carolina. This boat was constructed using dugout technology in 1855, is 29.5' long, and is similar to a naval ship's boat from that era (Chapelle 1935:101). Michael Alford (2004) concludes that the terms "canoe" and "periauger" described similar boats,

and a small dugout was "a *canoe* to the English, *piragua* to the Spaniards and *pirogue* to the French. Periaugers were larger but the term is related and probably derived from the same root as the French and Spanish terms. According to various reports, periaugers could be sailed or rowed" (Alford 2004:2). Enslaved African-Americans were adept at escaping in such boats, an example occurring in 1776 when eight men left Landon Carter's plantation on the Rappahannock River in a "Petty Auger canoe" to join Lord Dunmore on Gwynn's Island in Mathews County (Isaac 2004:3).

Techniques of building the log canoe

"They're gone now, but my canoe is a symbol of a way of life that was fair and honest. They were simple ways—a man did a hard day's work and the river and the Bay looked after him. A man's worth was determined by his goodness as a human being and not the amount of money he made" (William Rollins in Chowning 1990:161). The last builder of a log canoe in Poquoson was "Captain Billy" Rollins, who built a five log, 26-foot canoe in 1986. He located five yellow pine trees near Providence Forge, Virginia. The trees cut for the bilge logs were slightly curved, and all the logs were shaped with a broad axe, foot adze and handsaw (Chowning 1990:149-150). A detailed description of the chain of operations used to build this canoe is found in *Harvesting the Chesapeake: Tools and Traditions* (Chowning 1990:147-161).

William Rollins now has legendary status as the last known maker of a Poquoson Style log canoe. Three additional characters activate a portion of this thesis: Aaron, an

enslaved African who is said to have built the first multi-log canoes on Lamb's Creek, York County in the late eighteenth century; M.V. Brewington, whose book *Chesapeake Bay Log Canoes and Bugeyes* became the classic sourcebook on the subject, and who used "oral testimony of Dr. O.T. Amory of the Mariners Museum" to bring Aaron to the attention of scholars and the public at large; and John Michael Vlach, author of the book "The Afro-American Tradition in the Decorative Arts," a book about African American material culture and crafts that contains a chapter on boatbuilding. Vlach quotes Brewington, and Brewington refers to Amory, who passes along the boatbuilding innovations of Aaron, an enslaved African American owned by John Dennis of York County, Virginia. The two extant Masters Theses on the subject of Chesapeake Bay log canoes both reference this legendary boatbuilder, although one of these authors fails to mention that Aaron was a slave. While the saga of Aaron begs for confirmation, his existence as enslaved African American boat builder in York County during the 18th century is a necessary corollary--if he didn't exist we would need to conjecture his appearance in the history of the Chesapeake, to give him a name.

Two African American boatbuilders in Middlesex County, Virginia were William Lomax and Luther Hackett. Like most Tidewater boatbuilders of the nineteenth and early twentieth centuries, they used the broadaxe and adze to build log canoes. Lomax was born at Nesting Plantation in Middlesex County, and later became the boatbuilder for the areas of Parrott's creek known as Burnt House Landing and Percifull Landing where he built sail-powered canoes for the African American watermen of the area. (Chowning 2007:49-50). The Rappahannock River was a source of food, as well as money made

from the sale of oysters, crabs and fish. There was economic independence, but also segregation as the demand for more boats increased: "The segregated society that grew and flourished in the post-Civil War era forced many African Americans boatbuilders to build boats exclusively for their race" (Chowning 2007:51).

Figure 9. Finishing a log canoe with an adze. Courtesy of the Hampton History Museum, Hampton, Va., 2008.23.7, Detail.

Luther Hackett was an African-American log canoe builder from Amburg (now Deltaville), Virginia, who made the transition from log canoe building to working deadrise, planked boats. He learned to build boats from his father, Samuel Hackett, at Pace's Neck near the Piankatank River, where the father and son "had reputations for

building sailing canoes that 'sat on the water like a leaf" (Chowning 2007:51). Luther Hackett started working for local Deltaville boatyards during the 1920s, where he had a reputation as "a master with the foot adze and could dress down a stern with an adze so smooth it required very little sanding" (Chowning 2007:51). These techniques were important to chunk log stern construction on boats that were generally planked. His method of working an adze was described by Ed Deagle of Deagle's and Son Marine Railway: "It was an art to it and Luther was the best. He would take his right hand and place it on the handle up near the blade. He would place his left hand a little further up the handle. Then he would take the end of the handle and brace in the bend his right arm. He then braced his elbow against his body" (Chowning 2007:51).

Enslaved and free Africans and African Americans also inherited and adapted the methods of log boat construction, based on historical evidence of Caribbean and African influence in the use of multiple logs by boat builders in the Poquoson area of York County, Virginia. A fictional account of Aaron was employed by PBS in a presentation about log canoe construction in the Chesapeake, and it represents a good summary of techniques:

> At his home on Lamb's creek in York County, Virginia, he took two logs, hewed them square with an axe and placed them side by side. With a piece of charcoal, he traced the lines of the boat on the top and sides. Then, he separated the logs and shaped them with an adze. From time to time as the logs took shape, he reassembled the halves to gauge the evolving grace of the craft by eye. No model or plan guided his work. When Aaron had sculpted the timbers to three-inch thick half-shells, he then had to fit them together in a perfectly watertight seam. Although time and a sharp blade could work the fit, Aaron may have known the old shipwright's trick of "kerfing-in". Starting at one end of the seam between the temporarily rope-bound timbers, he would have run his handsaw down the joint again and again. Each pass of the saw would take an equal portion from each side of each tight place in the joint. When the saw teeth cut both sides for the whole

> length, the timbers were a perfect fit. To join the halves, Aaron resorted to another ancient technique, the free tenon. Into the faces of the seams he cut a series of inch wide, three-inch long, four-inch deep mortices. Each mortice was matched to another in the opposite half. Into each mortice in one of the halves, he set eight-inch long oak tenons. He then forced the two halves together with twisted ropes and locked the tenons into place by driving locust pegs into holes bored through tenon and hull. Once in the water, the swelling timbers, restrained by the long grain of the oak tenons, forced the seams as tight as a Scottish oyster. Later Aaron built a canoe from three logs, and then from five. Soon scores of the swift, graceful sailing craft were coursing the bay. Some were as long as 50 feet and built from as many as seven logs. Although the keel log could be made from a straight tree, the outer "wing logs" had to come from appropriately curved trees, often found only after days of searching. The absence of internal ribbing made these undecked craft well suited to handling fish and oysters.[7]

It is clear that the legend of Aaron, the enslaved African-American builder of log boats, the man who represents the connecting tissue linking an important type of Chesapeake boatbuilding to Africa, has not had a significant impact on the narrative of log canoe building tradition in the Lower Chesapeake. Although Brewington is the author who chose to bring Aaron back to life, he did it in a way that obscured and minimized African Americans' potential contribution. His reference is actually to a footnote that follows his conjecture about the colonists' use of metal tools to make it easier to work with multiple logs: "At any rate the practice had been in use for some years by 1686, and the canoe builders were using first two, then three small logs, and later still, 1870 to the present, four, five, six and seven logs in lieu of one large timber" (Brewington 1963[1937]:3). His footnote on the possible invention of the Poquoson-style two and three-log canoes by an African American closes with this statement: "Unfortunately these

[7] PBS, The Woodwright's Shop. UNC-TV Website 2013. "The Boatbuilders." http://www.pbs.org/woodwrightsshop/wwit/index.html

traditions can in no way be verified as to date or authenticity" (Brewington 1963[1937]:31). This is a safe statement, but one that attempts to close the door on this avenue of research. Brewington first published his book on Chesapeake log canoes in 1937, and academia did not pursue the possible African connection to this tradition until John Michael Vlach's *The Afro-American Tradition in Decorative Arts* in 1978. One Master's Thesis on Chesapeake Bay racing log canoes (Forbes 1995) emphasizes innovation in the evolution of the log canoe as a competitive racing boat, but there is no mention of African Americans plying the waters of the Chesapeake Bay.

North Carolina maritime traditions

The colonial use of dugout canoes in the early eighteenth century was documented by John Lawson during his travels in North and South Carolina. Lawson described a method of canoe construction used by French Huguenot immigrants in the vicinity of James-Town on the Santee River near Charleston, South Carolina: "After the Tree is moulded and dug, they saw them in two Pieces and so put a plank between, and even a small keel, to preserve them from the Oyster Banks" (Lawson [1709](1967):16-17 in Alford 1992:191). The significance of this is two-fold: It is a documented description of a colonial technique of log canoe construction, and it introduces the use of multiple logs to the concept of the dugout canoe. Lawson later resided in North Carolina, and Alford describes the trade that the French settlers near the sounds and inlets carried on with Virginia, carrying goods to the lower Chesapeake (Alford 1992:192). He makes a convincing argument that "the practice of splitting dugout boats down the centerline and

adding material to the two halves to produce a vessel of increased capacity has been recognized in several European countries" (Alford 1992:192), and that the French used the process and described it as *les iles* (Beaudouin 1987:13-29 in Alford 1992:192). Alford has studied a number of such dugouts in in the Carolinas, all of which he describes as of Euro-American origin. Most of these dugouts exhibited a "boat-like, square-sterned form" (Alford 1992:193), and some had strakes attached to increase the freeboard (McGrail 1978:41 in Alford 1992:193). Alford focuses on a technicality to distinguish what he regards as a true split-dugout canoe from a multi-log canoe, based on the example of the 14 foot boat *Doodle* found near Wilmington, North Carolina: "Annular ring structure indicates that *Doodle* is unquestionably fashioned from a single log split in two pieces" (Alford 1992:200). The resulting boat is essentially the same as a three-log Poquoson-style canoe, except that the Carolina split-log canoe is built with either a plank for a keel or a squared-off keel log.

The split-log technique could have influenced the Poquoson multi-log technique of building dugout canoes. Huguenots were colonists in North Carolina, South Carolina and Virginia, traded in the lower Chesapeake, and some of these Frenchmen settled in York County, Virginia. This does not eliminate African-American participation in this chain of operations, as Alford notes:

> There can be no doubt that Africans and their descendants did much of the boatbuilding on the plantations and elsewhere, but the author has found no correlation between the methods used in the construction of the Carolina split-dugouts and known African methods. It is very likely that slaves would have been taught the techniques necessary to build the boats required by their owners, and thus, the African influence would be a secondary element (Alford 1992:201).

The "standard view" of innovation that continues to mask possible African and Native American skills is evident in Alford's thesis, however, as he describes the use of the saw to split the log and the need for surface smoothing of the multiple logs: "It may, therefore, be inferred that additional skills and tools beyond those of the maker of a basic dugout, are required, and that the product is a 'high form' of dugout boat" (Alford 1992:201). Obviously, the implication is that only Europeans would have had the tools and conceptual ideas to construct such boats. David S. Cecelski concludes that that for the three centuries up to the Civil War "the fundamental character of fishing and boating on the coastal waters of North Carolina did not differ significantly from the practices found among the Tidewater Algonquians when the first English colonists arrived at Roanoke in 1584 (Cecelski 2001:10-11)." However, he also describes the importance of Africans to the creation of boats in eighteenth century North Carolina:

> The early colonists relied heavily on the proficiency of African slaves in building and handling dugout canoes, often called cooners (or kunners), 14-to 28-foot long boats usually hewn from one to three cypress logs. They also built larger dugouts, called periaugers or pettiaugers, that were fashioned out of two cypress logs fastened together with a third keel-log between them . . .Watermen usually fit both cooners and periaugers with one or two short masts that could be rigged quickly for sailing in open waters, thought they often poled or rowed them in shallows" (Cecelski 2001:4-5).

The log canoes described above were prevalent in the North Carolina tidewater, and are very similar to the multi-log canoe that developed in the Poquoson area of the lower Chesapeake Bay. Cecelski's book The Waterman's Song, Slavery and Freedom in Maritime North Carolina is a thorough documentation of African American participation in the maritime techniques of the region.

Seventeenth and eighteenth century ironwork

A study of metalwork techniques in the African diaspora during the seventeenth, eighteenth and nineteenth centuries is corollary to the boatbuilding that took place within this sphere of influence. Iron tools made in the Caribbean and the English colonies would have included axes, adzes, drills and saws, tools of the shipbuilding trades. It is not unlikely that skilled African log canoe builders fanned out across the waters from the Antilles to the Chesapeake, building boats with the iron tools like those forged by craftsmen from the shores of their ancestors.

In a chapter on African-Caribbean ironworking, Candice Goucher points to the dominance of African craftsmen, and a presence that has often been invisible to historians, "the voices of Africans silenced by the historical tradition that relied primarily on written documents, most of which were created by plantation owners and entrepreneurs in slave society (Goucher 1999:143). West Africa was the home of sophisticated copper and iron metalwork before contact with European traders in the early sixteenth century. Enslaved artisans became important to the colonial powers in the Caribbean and in the English colonies of the eastern seaboard. In a study of the Reeder's Foundry site in Jamaica, it was found that "slaves were skilled in nearly every branch of iron manufacture and also in aspects of copper-based technologies (Goucher 1999:147). This site in Morant Bay utilized the services of over 260 African metalworkers, some free and some enslaved, who created a variety of tools and metal products between 1774 and 1782, when the foundry was destroyed by the island government in fear of an invasion by the French and Spanish" (Goucher 1999:152).

Iron produced by smiths in Kongo was "superior to that of European imports produced under European processes" (Ringquist 2008:13). Kongo blacksmiths were influential in British Colonies like Virginia, Guyana and Jamaica, which contained the natural resources necessary make iron products:

> The Kongo slave smith was the final piece the colonial system needed to be successful on a large scale. It is impossible to judge the impact of Kongo smiths upon New World iron industry, but it can be hypothesized that their influence was formative and profound given their skill and numbers, especially after 1700. When smiths supported maroon groups, colonial powers feverishly sought to destroy their towns and peoples through whatever means available. Iron was a valuable tool for maroon resistance and when the skills of the Kongo slave were turned against colonial oppressors, they facilitated resistance while depriving colonial economies of valuable export products and vital services within colonies (Ringquist 2008:16).

Research by Goucher (1981) elaborates on the competitiveness of African iron products, and contests the rationale that European iron bar replaced localized West African iron production and techniques after the mid-seventeenth century due to poor quality:

> This view, which assumes the backwardness and inferiority of West African technology, does not take account of the state of European metallurgy at the time and is in marked contrast to the assessments provided by both contemporary historical accounts and archaeological evidence. It could be pointed out that the European imports, to which firearms could be added, actually required an expansion in the repertoire of West African blacksmiths. Such imports were never so cheaply obtained that they were not repaired by African smiths. Moreover, far from being 'pure', after the eighteenth century much of the European iron had a high sulphur content (due to the use of coal as fuel) which seriously affected the quality of the smelted product and made it a poor substitute for the carbon-steel or pure iron bloom from some African furnaces (Goucher 1981:179-180).

Goucher's research indicates that the loss of skilled iron makers through enslavement, and deforestation were factors in the decline of iron making in the face of colonial imports. She also notes "the issue of fuel prevented the wholesale transfer of European technology and thus exploitation of local resources" (Goucher 1993:202).

Enslaved African-Americans provided most of the labor at furnaces and forges in Virginia from the seventeenth century to the Civil War (Bradford 1959:204). Most furnaces in the Chesapeake Bay region were located near the Bay or on a river. Water transport was the primary method of moving raw iron, and ore deposits and timber were readily available in the Tidewater. During the eighteenth century at least sixty-five ironworks were built in Maryland and Virginia counties surrounding the Bay, where "the Chesapeake iron industry produced the vast bulk of colonial American iron" (Lewis 1974:242).

By the Revolutionary War, most of these ironworkers were hired hands instead of being owned by the "ironmaster." Brought from adjacent plantations or hired by agents, African and African American blacksmiths "were constantly sought by furnace and forge owners, and they always commanded premium prices" (Bradford 1959:196). The dominance of these skilled, enslaved workers in this industry is reflected across a range of trades:

> At the furnaces and forges slaves tended fires, worked the metal, and in fact did everything but manage the establishments, which was always the job of a white man. Elsewhere on an ironworks plantation Negroes planted and harvested crops, cut and charcoaled wood, mined iron ore, drove wagons and manned boats, made shoes, ground flour, and worked as carpenters and blacksmiths. The elite among them were the refiners, molders, and blacksmiths, and because a skilled slave was as valuable as two ordinary hands, many ironmasters owned a few skilled workers" (Bradford 1959:197-198).

Black ironworkers did overtime work for wages, spending the extra money on clothing, coffee and sugar in company stores (Bradford 1959:200). Conditions were harsh for the enslaved in the iron industry. Injuries were common, there was a high rate of sickness due to lack of clothing, and punishment to enforce discipline was severe. Escape attempts

were a regular practice, and in one example in Augusta County seven of twelve slaves were successful in escaping an ironworks road project (Bradford 1959:203-204). Research by Lewis shows that ironmasters preferred "acculturated slaves," but noted that they were also more "likely and able to rebel against the system" (Lewis 1974:248). He concludes that slave mistreatment was widespread in this industrial setting, but that these skilled workers had the capacity to shut down an ironworks: "Consequently, the ironmaster had to strike a balance between motivation and discipline. On the iron plantation, therefore, some black workers exerted a greater degree of influence over their existence than historians of industrial slavery have normally assumed" (Lewis 1974:249). One additional conclusion would be that men skilled at making and using iron tools were well-represented in the black communities of the Chesapeake.

Conclusion

> The first black slaves were landed at Virginia in 1620 and many of the canoes on which settlers depended were made and manned thereafter by Africans. Slaves provided the motive power for cargo-carrying canoes and for those plantation barges that were dugouts built along the lines of a ship's boat. Fishing from dugouts in coastal waters, they supplies their masters' tables and the local markets too (Roberts and Shackleton 1983:75).

The Poquoson area of York County, Virginia became a locus of log boatbuilding construction, resulting in canoes such as *Queen of the Fleet,* a 27' Poquoson style three-log canoe built in 1880 by William Hunt of Hampton. The boat was used for oyster tonging, is fastened together with trunnels and was shaped with an adze. The Newport News Mariners Museum describes the evolution of this style of boat as follows: "The use of European tools and the ingenuity of the early colonists changed the shape of the Native

American canoe by adding a sailing rig, centerboard, rudder, shaped bow and stern, and narrow decks known as washboards."[8] There is no mention of an African American contribution to any form of boat construction, and the implication is that the European colonists provided all of these innovations, most of which were evident on log canoes in West Africa before Europeans started trading along the Gold Coast. In similar maritime venues, the surviving fleet of racing log canoes is represented as the evolutionary pinnacle of canoe evolution in the northern Chesapeake Bay. These canoes are defined in "standard view" terms, as "having their origins in the Indian dugout" and described as "the ultimate in the evolutionary process of the log canoe on the bay" (Forbes 1989:11). They are further elevated in these terms: "Having sleek, graceful hulls, enormous sail area, and crew members balancing out on springboards, the canoes are pure racing thoroughbreds (Forbes 1989:10-11).

Lemonnier's five components of techniques are applied to the log canoe in this thesis: matter (multiple logs), energy (human), objects (axe and adze), and specific knowledge (three centuries of boatbuilding). Gestures that "move objects involved in technical action" are the fifth component (Lemonnier 1992:5-6). Observing these actions in a fieldwork setting was not possible. In this thesis I have used a fictional account (PBS), oral histories obtained in Middlesex County (Chowning 2007), and second hand observations obtained during the construction of the last known Poquoson style log canoe built (Chowning 1990).

[8] Mariners Museum Label Copy, Newport News, VA, Object Number 1934.0001.000001A

The knowledge passed down was often from father to son, as revealed in the life of Luther Hackett, who learned log canoe building from his father, Samuel (Chowning 2007:51). The gestures are reflected in the description of one man's skill: "Luther would then work the adz up and down, and in no time he would have the stern dressed right down. It was so smooth you would not need to touch it with a piece of sandpaper. He was the best" (Ed Deagle, in Chowning 2007:51). Skill at shaping a stern was significant. The pointed or "vee" stern that defined the deadrise, cross-planked boats that followed the heyday of log canoes was called the "Poquoson stern." The techniques of building the round and elliptical sterns of the "Deltaville deadrise" were the direct result of canoe builders carving the V-stern with log chunks (Chowning 2007:42). This style of wooden boat continues to be extremely popular in the lower Chesapeake Bay.

Lemonnier observed that "the manner whereby a social group does or does not take advantage of technical knowledge or a practice it possesses takes on a particular interest when we study the conditions for the emergence of relations of domination and of exploitation in classless societies (Lemonnier 1984:155). Mamary's comparison of probate records revealed a "predominance of the canoe in York County, Virginia and an absence of the canoe in Worcester County, Maryland throughout the nineteenth century" (Mamary 1994:25). A comparison of two communities of nineteenth century oyster tongers living and working on islands in southern Maryland is a stark example of the absence of African Americans in the "standard view" that describes working in the maritime trades in southern Maryland counties.

Maryland oystermen on Bloodworth Island and Holland Island took different paths when confronted by the new technology of oyster dredging. On Bloodworth Island "community patterns of isolation and independence came to represent an assertion of resistance to the industrialization of the oyster fishery" (Botwick and McLane 2005:109). In contrast, the oystermen of Holland Island lived in a human environment in which the "commitment to ideologies of industrial order and discipline were reinforced by the presence on the island of a church, school and post office, all places where the dominant social values could be introduced and disseminated" (Botwick and McLane 2005:108). These values were coercive. Dredge boats required laborers instead of skilled fishermen: "Early on, African Americans often filled crew positions aboard dredge boats, but they began refusing to sign on due to the onerousness of the work" (Botwick and McLane 2005:96).

One example of keeping a set of maritime skills in a coercive context is found in the history of a social group on Staten Island, New York. A community of African American oystermen and their families moved from Snow Hill, Maryland to Sandy Ground on Staten Island during the 1830s to escape laws in Maryland that "prevented free black fishermen from operating their own boat without a white man on board" (Sylvia M. D'Allesandro in Urbina 2003). These watermen came to a community that was established in the 1820s and is "the oldest continuously held settlement established by free blacks in North America, according to local historians" (Urbina 2003:B1). A descendent of oysterman Robert Landin recalled that he "didn't want to give up his profession," and came north in his 30'sloop *Independence* (Mosley in Urbina 2003:B8).

This migration of African Americans to the marine environment near New York City is an example of a technology resisting dissociation. The black oystermen of Staten Island practiced their profession until oystering was banned in the New York Harbor due to fears of typhoid (Urbina 2003:2B).

A history of rowing and sailing craft in the Chesapeake Bay includes over sixty boats, part of a group of four-hundred "archetypes and subtypes of sailing and rowing boats used for work and pleasure on the East Coast of North America" (Tilp 1982:5). While Poquoson-style log canoes were a type of workboat that died out due to the internal combustion engine, depletion of fishing and oystering grounds, and commerce over paved roads and bridges, this boat type continued to be built in the form of larger log-hulled buyboats into the 1930s: ". . . construction of these boats was confined to areas where log canoe building was a tradition, which played a role in the continuation of log boatbuilding" (Chowning 2003:53). Alex Gaines was building log boats at Smith's Railway in Dare, Virginia until the 1940's, and was the last builder in the Poquoson area until William Rollins finished his last log canoe in 1989 (Chowning 2003:57).

A "standard view" restriction on the Chesapeake log canoe limits the use of strakes to build up the sides of canoes as a European innovation, and blocks the notion that Africans and African Americans participated in the process of introducing new techniques of constructing log canoes. Log canoe construction was influential for boatbuilding in general; therefore the genealogy of this pivotal group of techniques is important. Alford suggests that these techniques persist in North Carolina boat making technology up to the present day: "The author's own studies of the building of boat in the

Carolinas have repeatedly found features in plank-on-frame and skiff-building techniques that may have their origins in the historical practice of dugout construction (Alford 1992:202). Carolina boat typologies suggest that split-log techniques may be a branch of boat building that occurred in parallel with the Poquoson style, but died out in the 1870s.

The existing typology of log boats in the lower Chesapeake Bay is part of a "standard view" of boat building technology that limits the participation of African Americans. The small craft chronology of boats found in archaeological contexts in North Carolina lists Native American single log dugout canoes and European built boats (1600-1699), and plantation built canoes and skiffs (1700-1799). Complex log canoes with "extended rising strakes," are noted in the typology as having "possible African influence" (Wilde-Ramsing and Alford 1990:22). Log canoe remains found in North Carolina are predominately pre-contact dugouts (33 canoes), followed by seven canoes dated to the period 1700-1799, and two for the period up to the Civil War" (Wilde-Ramsing and Alford 1990:25). Plank-on-frame boats predominate in North Carolina during the date range of 1870-1909, which was the beginning of the period of constructing larger, log-hulled deckboats built for power on the western shore of the Chesapeake Bay. The F.D. Crockett was built in Poquoson in 1924, and the history of the techniques that produced this style of boat can only be fully revealed by deconstructing the "standard view" of technology that masks the contributions of African Americans.

Glossary

Adze. A tool used for smoothing or carving rough-cut wood, often used for squaring up logs or hollowing out timber

Aft. Towards the stern or rear of a vessel

Boom. Pole or spar attached to the mast and used to hold the bottom of a sail or lift and handle cargo

Bow. Front or forward end of the boat

Brogan. A Chesapeake Bay log bottom workboat larger than a log canoe

Bugeye. An enlarged and decked log canoe, 30' to 80' long, with two masts and a cabin aft

Bulkhead. A wall within the hull of a ship

Buyboat. A Chesapeake Bay deck boat that bought fresh fish, oysters, and produce from watermen and farmers to take to a larger market

Coaming. Any vertical surface on a boat designed to deflect or prevent entry of water

Chine. The line of intersection between the sides and bottom of a V or flat-bottom boat; a "Chine log" serves the same purpose on a log boat

Chunk. A smaller piece or chunk of wood fastened to the logs to fill gaps or raise up the sides, and then shaped the same way as the logs

Coasting canoe. A large sailing log canoe used along the coast

Deadrise. The variable angle rise of the wood from keel to chine

Deck boat. A generic term for wooden Chesapeake Bay vessels with deck fore and aft, and a mast and boom forward of the pilot house

Fantail Stern. An elliptical stern

Forepeak. Forward compartment of a ship that contains the sailors' living quarters and storage

Garboard Log. The first log attached to the keel log

Hatch. An opening in the deck of a ship

Hold. Large space below the deck of a ship for the storage of cargo

Horn Timber. Structural member which connects the keel to the aft framing

Keel. The main structural member or backbone of a vessel, running longitudinally along the centerline of the bottom

Mast. A tall, vertical spar that usually supports sails, or in deck boats supports a boom for cargo handling

Pilot House. The cabin above the deck that contains the steering and engine controls of a ship

Port. Left side of the boat when facing forward towards the bow

Rake. Angle of the mast off vertical

Stay or Shroud. The wire or rope used to brace the mast to the sides and stern of the boat

Stem. The upright beam at the bow which is the forwardmost framing member to which the outer skin of the boat is fastened

Stern. Rear or aft end of a boat

Strakes. Strips of planking running the length of a vessel that keep the sea out.

Thwart. A seat or crossbeam in a small boat.

Trunnel. Wooden peg or dowel used to fasten two pieces of wood together.

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