Charles' research focuses on the development of shipbuilding taking place in European shipyards located along the Atlantic coastline at the beginning of modern globalization. Before the 15th century, most vessels followed a predominant shipbuilding tradition regionally based in either Northern Europe or the Mediterranean. By the beginning of the 16th century, new ship typologies with a blending of regional construction features made it possible for these vessels to achieve oceanic travel down the western coast of Africa, across the Atlantic Ocean, and circumnavigation around the globe. These achievements and the conscious (or unconscious) decisions made by shipbuilders required considerable development in ship design that spans centuries. Towards understanding these slow changes, this dissertation describes the longue durée of shipbuilding and the operational sequence of construction from surviving archaeological examples.

16th-century ships were some of the most complex machines built by contemporary maritime communities. Compared to earlier vessels, these ships were designed to be able to sail further afield, carry more passengers, had larger cargo spaces, and were protected with the latest weapons technology. Earlier vessels were predominantly built for specific trade or travel within regional-coastal environments that did not necessarily incentivize major changes in hull design. Throughout much of history, Northern European ships relied on shell-oriented conception based on the longitudinal lapstrake hull construction (Englert 2015). Lapstrake construction provided long sleek vessels that could flex and bend when necessary in open ocean sailing but could not accommodate the gradual increase in cargo space that was expected by the expanding economies of the 14th and 15th centuries. These ships also became less cost effective, due to the skilled labor and wood cutting methodologies necessary for their construction. Bottom-based vessels, such as the well-known medieval cogs, were also affected by similar constraints (Hocker 2004).

In comparison, shipbuilding in the Mediterranean adopted a frame-oriented approach by relying on predesigned framing. This construction required fewer skilled individuals necessary to build ships and reduced the amount of wood necessary for overall construction (Pomey 1994). Throughout the medieval period, the Venetian naval yard, other Italian republics, and rival polities continued to experiment on the conceptual designs for galleys and rounds ships. The results of this trial and error led to these ideas being carried from the Mediterranean to Italian colonies situated in major cities along the Iberian Peninsula (Castro 2008). Iberian shipbuilders clearly adopted these ideas based on the surviving hull remains dating from the 15th and 16th centuries. How much did these shipbuilders (along with their compatriots further north) adopt this new construction methodology is the focus of the present research.

Throughout the 1970s and 80s, several shipwrecks were discovered with an artifact assemblage dating these sites to the 16th century (see Rosloff and Arnold 1984; Waddell 1986; Oertling 1989c, b for examples). These vessels were part of a significant technological shift as part of the beginning of modern globalization. Many of these finds were first published in isolation rather than with a comparative analysis in mind, due mainly to the limited amount of contemporary hull remains recorded from the same period.

In a paper presented at the 1989 annual Society for Historical Archaeology conference, Thomas Oertling (1989a) became one of the earliest archaeologists to suggest common hull construction features for known 16th-century shipwrecks. Oertling originally decided these features were characteristics of a regional Ibero-Atlantic style of construction that could broadly pinpoint where most of these ships were built. The typological statement, by excluding these vessels from the more well-known regional construction described as Northern European or Mediterranean shipbuilding traditions, led to academic debate about appropriate terminology. John Sarsfield countered that ships originating from the Iberian Peninsula still fit under the Mediterranean shipbuilding tradition, mainly due to the initial conceptualization of these vessels being first defined by centuries of ship design originating from this geographical region (Oertling 2001, 2004).
Oertling’s characteristics, although presented as an early attempt at a new regional typology, were eventually relegated as part of a sub-tradition from the Mediterranean.

Oertling’s typological analysis comparing ships from a similar regional origin was part of a trend in nautical archaeology at the beginning of the 1990s. Ole Crumlin-Pedersen conducted a similar analysis to identify construction differences between Scandinavian and Slavic vessels, primarily based on 40 archaeological sites known at the time (Crumlin-Pedersen 1991). On the other hand, an examination of the four known contemporary Mediterranean shipwrecks (Culip VI, Villefranche-sur-Mer, the Ottoman Yassi Ada, and Calvi I) by Eric Rieth was only able to note a handful of architectural signatures that did not overtly define the overall architectural design of these vessels (Rieth 1998).

Preliminary conclusions on this method of research suggest that identifying regional features in ship construction requires a larger sample size.

Even after 30 years of additional archaeological research, the available information on late 15th- or 16th-century ships with surviving hull remains is relatively small (see Castro 2005 appx B). This sample size, nonetheless, has allowed some scholars to argue that minute differences within regional architectural signatures can be identified between shipwrecks (Loureiro 2012). Instead of focusing on locating regional differences between these ships, the current research follows the development of the Mediterranean architectural design as adopted throughout the Iberian Peninsula and Northwestern Europe. Tracking the adoption by these maritime communities of abandoning a shell-oriented construction methodology for a frame-based approach will provide foundational information on the major changes taking place in shipyards at the beginning of the modern era. Once the timeline for overall architectural design adoption is established geographically, it will be easier for researchers to revisit architectural signatures to pinpoint idiosyncratic decisions by shipbuilders on the blending of construction features from the two earlier shipbuilding traditions.

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