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Why Boats Matter

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Why Boats Matter

Breaking Down Terrestrial Bias in Archaeology

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When archaeologists tell stories about the past, the stories usually take place on dry land. Archaeological narratives for important events ranging from early human dispersals from Africa to the formation of archaic states have all traditionally focused on terrestrial processes. This terrestrial bias permeates much of what we do, from how we conduct our fieldwork to the theory we use to explain social change. Many of the most important events and transformations of our past, however, did not happen on dry land but were instead contingent on our ancestors' capacity to take to water. The colonization of new continents, coastal and riverine resource intensification, sedentism, and the establishment of long-distance interaction networks, for example, were all facilitated by using boats to access new resources and traverse open waters. This volume seeks to upend the terrestrial bias that runs through much of archaeology by exploring the diverse strategies that ancient people used to negotiate the watery worlds with which they were entangled. In this opening chapter, we make the case for the importance of boats as transformative technological and social innovations that made much of human history possible and structured how it unfolded. Following in the canoe-wake of Kenneth M. Ames (2002: 47), we argue that boats fundamentally matter for anthropological theory as they profoundly structured the relationship between humankind and our surroundings.

Recently there have been numerous calls to rethink the traditional ways in which archaeologists have described the past, yet few of these voices have significantly challenged the overarching terrestrial focus of most archaeological narratives. Graeber and Wengrow (2021), for example, have questioned traditional archaeological approaches to understanding the origins of social inequality.

ity, arguing that we should see inspiration in the great variety and complexity of social formations that existed in the past. Virtually all of the examples used in their book, however, from the Wendat Confederacy to Neolithic Ukraine, were primarily land-based cultures. Even when focusing on classic seafaring peoples such as those of the Northwest coast and California, boats are rarely centered in the conversation. Likewise, Scott (2017) has argued for a rethinking of the Neolithic Transition to acknowledge that many hunting and gathering societies took thousands of years to fully adopt new agricultural practices. While Scott does discuss the importance of wetland environments and the aquatic resources they contain, he does not delve into the numerous coastal and island societies that had knowledge of domesticates but chose not to use them, sometimes persisting in fisher-forager lifeways for millennia after their neighbors had become obligate agriculturalists. A recent review of the “Grand Challenges” archaeology can address in the twenty-first century overlooks boats and maritime societies in advancing the 25 archaeological focus areas the authors chose to highlight (Kintigh et al. 2014). Clearly, terrestrial bias is alive and strong in contemporary archaeology.

Unfortunately for the current grand narratives, it is increasingly apparent that much of human history happened on or near the water. Perhaps the most obvious example of the importance of watercraft in the deep past is their use to carry our ancestors to virtually every corner of the globe. We now know that some form of watercraft transported early seafarers to Australia by 65,000 years ago (Clarkson et al. 2017) and that boats of some description were central to the coastal migrations that brought the first humans to the Americas (Davis and Madsen 2020; Erlandson et al. 2007). Early Paleolithic tool assemblages on the island of Crete indicate that even Neanderthals may have taken to the sea in watercraft (Ferentinos et al. 2012; Strasser et al. 2011). In later periods, boats and marine resources are known to have played a central role in the formation of ancient chiefdoms and states in regions ranging from Scandinavia to Hawaii (Kirch 2010; Ling et al. 2018). Conversely, they can also act as mechanisms to break bottlenecks through which increased centralization can typically be established in the political economies of small-scale societies (Furholt et al. 2020). Many of prehistory’s most important transformations and migrations, such as the spread of Bell Beaker people and their Chalcolithic technological traditions across the Atlantic facade (Vander Linden 2016) or the migrations of Polynesian peoples across the Pacific (Spriggs 2011; Wilmshurst et al. 2011), were clearly facilitated by seaworthy vessels. Boats mattered for some of the most important events and processes that shaped our shared past.

The importance of boats has been articulated by several previous works, many of which have focused on the logistical capacities of watercraft. In a

seminal paper cited many times throughout this book, Ames (2002) examined the logistical capacities of different boat types used by Indigenous peoples of the Pacific Northwest coast of North America. He argued that the use of boats fundamentally changed the relationship between people and their environment. The study of these relationships requires different theoretical approaches that more adequately capture the mobility strategies in aquatic hunter-gatherer societies. While the concern with human–environmental relationships is an area overdue for a broad rethink of the type called for by Ames, its scope should extend beyond the spatial and logistical and into the social and political. For example, the connection between the use of boats and the development of political complexity has been discussed by Arnold (1995), who argued that the transportation capacities of boats allowed elites to expand and control trade in important resources in ancient southern California. The rethink can also tackle the phenomenological and the cognitive dimensions of life in boats. In Scandinavia, Westerdahl (1992) emphasized the importance of boats in the cognitive landscape of peoples inhabiting maritime landscapes, suggesting that we cannot understand maritime societies without accounting for the phenomenological dimension of life and the experience of passing through seascapes in watercraft. The work of these scholars and many others (Clark 2013; Des Lauriers 2005; Erlandson and Braje 2022; Fauvelle 2011; Fitzhugh and Luukkanen 2019; Fitzpatrick 2013; Wright 2014) has led to a gradual recognition of the great importance of studying the role of watercraft in the political, economic, and social life of small-scale societies.

Yet there remains much to be done, and the terrestrial focus and bias we have recounted hinders a more transformative development of new theory. Recognition of the importance of boats in ancient societies has been hampered by the fact that until the late twentieth century, maritime lifeways were underexamined in archaeological literature. This was especially the case for scholars studying hunter-gatherer societies, where it was assumed that most ancient lifeways would parallel those of contemporary and ethnographically studied mobile groups such as the !Kung or Hadza. Maritime environments were seen as marginal, unable to support the same population levels as seen in terrestrial regions where ancient people could hunt game and collect nuts, seeds, and tubers (Cohen 1977; Osborn 1977). Pathways to complexity were likewise seen as terrestrially focused, with agriculture seen as the primary route to sedentism, population growth, and institutionalized political hierarchy (e.g., Johnson and Earle 1987). Marine adaptations, if discussed, were viewed as a late development that occurred in tandem with the “broad spectrum revolution” and the beginnings of neolithization (Flannery 1973). Most maritime archaeology during the twentieth century was therefore focused on the archaeology

of the large sailing ships used by states and empires, with small-scale boats and marine adaptations largely left to the sidelines of archaeological inquiry. Exceptions to this focus on island regions far from any landmass. The peopling of remote Pacific islands has long held the interest of archaeologists due to the proficiency and skill of seafaring that would have been required of and fueled by the Indigenous seafaring prowess observed by early European sailors and ethnographers across the Pacific Ocean. Not surprisingly, the earliest attempts to model seafaring using computers were in Polynesia, extending back to the 1970s (Finney 1977; Irwin et al. 1990).

In the case of maritime contexts within larger mainland areas, the importance of maritime resources and coastal regions in the development of social complexity became increasingly recognized toward the end of the twentieth century. Working in Peru during the 1970s, Moseley (1975) found evidence that the earliest complex societies of Andean civilization were focused more on shellfish collection and maritime resources than early domesticates. Other case studies from around the world including Japan, the Pacific Northwest coast of North America, southern California, and Florida showed how fisher-forager societies could develop highly complex sedentary societies through mobilizing the rich resources available in maritime environments (Ames 1994; Arnold 1996; Gill et al. 2019; Habu 2002; Sampson 2023; Sassaman 2004; Widmer 1988). As was recently emphasized by Jeanne Arnold and colleagues (2016), however, these works have still not succeeded in changing the dominant terrestrial narrative of our past, which still focuses on agricultural domestication and neolithization as the primary historical trajectories taken by our ancestors. The field of maritime archaeology also continues to focus on sailing ships and modern shipwrecks, with few comprehensive or comparative studies focused on the archaeology of boat types used by hunter-gatherer groups and other small-scale societies (Ames 2002; cf. Arnold 1995; Ohtsuka 1999).

One reason watercraft may not have received as much attention in the literature on small-scale societies as terrestrial technologies of similar importance is that they can be very hard to identify in the archaeological record. Compared to features such as plowed fields, roads, or walls, watercraft leave very little in the way of material remains for archaeologists to study. This is because they are mobile and perishable by nature and are often lost in high-energy coastal and marine environments. Sea-level changes following the end of glacial times also obscure the archaeological visibility of seafaring, as in many parts of the world the coastlines that were likely used to explore and live on are now underwater—and so, potentially, are the ancient crafts.

Some finds of early boats, however, do exist, usually in the unique and limited contexts of waterlogged sites. Dugout boats, such as the almost 10,000-year-old

Table 1.1. Transformative Properties of Watercraft

Process of Change	Relevant Chapters
Provide access to new resources	4, Schulz Paulsson
Allow for exploration and colonization of new regions	5, Des Lauriers and García-Des Lauriers
Facilitate the transportation of goods and people	2, García-Piquer 6, Aguilera et al. 11, Rivera Prince
Underwrite settlement networks and mobility strategies	2, García-Piquer 3, Rorabaugh 5, Des Lauriers and García-Des Lauriers 6, Aguilera et al.
Shape social relationships and political strategies	7, Thompson 8, Fauvelle and Jordan
Generate ontologies of seafaring	4, Schulz Paulsson 9, Smith 10, Whitridge 11, Rivera Prince 12, Jarrett

Pesse logboat (Lanting 2000), are particularly prone to preservation, while spectacular finds of sewn-plank boats such as the Dover Bronze Age boat (Clark 2013) or the Early Iron Age Hjortspring boat (Crumlin-Pedersen and Trakadas 2003) were deposited in low-oxygen environments that preserved them until modern times. Lakes also create particularly good conditions for the preservation of watercrafts, as evidenced by the discovery of 101 prehistoric dugout canoes, the oldest dating back to 5,000 years ago, on the shore of Newnans Lake, Florida (Ruhl and Purdy 2005). Many early boat fragments have also been found in excavations worldwide and can yield great amounts of information with careful scientific analysis (Gamble 2002; Irwin et al. 2017; Lira et al. 2015; Westerdahl 1985). Indirect methods, such as studies of boatmaking tools (Gamble 2002; Kahn et al. 2022), boatbuilding sites (Ling et al. 2024), raw material sourcing (e.g., overseas movement of obsidian artifacts [Ikeya 2015]), or the navigational capacities of different boat types (Fauvelle and Montenegro 2024), can also help us study boat innovation in the absence of direct boat finds.

Difficulties identifying boats in the archaeological record should in no way distract us from their importance for human history. On the contrary, it makes the need to find robust ways to identify and discuss the impacts of ancient boats even more crucial. The chapters in this book adopt multifaceted and interdisciplinary approaches to study how ancient boats were used and conceived of

in a variety of different contexts. Through filling in the gaps in our holistic understanding of the impacts of ancient boats, we can better understand how they shaped the maritime societies that used them. Such approaches are critical as boats were one of the most impactful technological innovations in the history of our species. Together with other major innovations such as fire, writing, money, and the internet, boats expanded the capacities of human societies in ways that could not have been fully imagined or intended by their original users. By allowing for new capacities and opening doors to new ways of living and being in the world, the invention and evolution of boats and watercraft produced rapid and transformative changes in human societies (see Table 1.1).

The Transformative Capacities of Watercraft

One key transformative quality of watercraft is the access they allow to watery worlds that would otherwise be impossible for humans to reach. Near-shore aquatic resources have long been important to humans and our ancestors, with archaeological evidence of aquatic resource exploitation going back at least 165,000 years (Marean et al. 2007). Our closest nonhuman relatives, the Neanderthals, are also known to have made extensive use of marine resources, with faunal material from Middle Paleolithic sites such as Figueira Brava indicating diets rich in shellfish, crustaceans, and fish (Zilhão et al. 2020). While modern humans and our ancestors have always had the capacity to collect near-shore resources, the use of watercrafts would have changed the game for ancient marine subsistence. Near-shore resources accessible by simply getting your feet wet can be exploited in new ways, and going out to sea allows for access to resources that are impossible to access from the shore. Deep-sea pelagic fish, for example, are most readily hunted by boat and were prized by cultures worldwide (Bernard 2004). The hunting of pinnipeds and cetaceans would also have been possible most easily by using maneuverable boats, which is attested to by rock art dating from Late Mesolithic and Neolithic times (Lee and Robineau 2004; see also Schulz Paulsson, this volume: Chapter 4). In addition to providing access to many food resources, hunting these species by boat is also often seen as a prestigious activity and would have brought social rewards above and beyond the caloric returns from meat and oils.

In addition to opening new worlds for human subsistence exploitation, watercraft allowed new possibilities for our ancestors to explore and access the worlds around them. Watercraft would have been necessary for early pioneers to reach the continent of Australia (Clarkson et al. 2017) as well as to colonize vast island regions of the Pacific (Montenegro et al. 2006, 2014). Early colonizers of the Americas would also have relied on boats to hop between islands and

ice-free sections of coastal North America, following perhaps the so-proposed kelp highway (see Erlandson et al. 2007; Lesnek et al. 2018). The new worlds accessed through boats would also have included untold numbers of islands throughout the world that are adjacent to mainland areas yet difficult to reach without the assistance of watercraft. These islands were often rich in resources, and their habitation and use allowed for the flourishing of unique maritime-focused societies throughout the world (Erlandson and Fitzpatrick 2006). Boats therefore allowed for the formation of entire communities and lifeways that would not have been possible without their use (Des Lauriers and García-Des Lauriers, this volume: Chapter 5).

Watercraft also allow us to move goods across the landscape at scales that are impossible to achieve overland. By loading goods onto boats and rafts and moving them over the water, we can transport masses that would be inconceivable to transport over land. Even today, the longest freight trains are incapable of transporting as much cargo as is possible with a commercial container ship. Using boats, both ancient and modern societies are able to overcome what the historian Fernand Braudel (1985) described as the “tyranny of distance” to support large territorial states and support major population centers. As described by Algaze (2021), water transportation is on average around eight times more efficient than land-based alternatives, a pattern he argues has held from ancient Mesopotamia to nineteenth-century Europe. The location of many major capital cities near rivers and coasts is a clear testament to the power of water-based transport in moving both goods and people to central places.

The logistical powers of watercraft would have been just as critical for small-scale societies as they are for cities, states, and empires. Mobility is a key element of the hunter-gatherer lifeway as hunters and foragers need to move across the landscape to be able to access variable resources (Kelly 2013). The use of boats completely changes the dynamics of hunter-gatherer mobility by allowing for longer voyages, the ability to move vastly greater quantities of food, and the ability to connect settlements across maritime seascapes (Ames 2002; see also García-Piquer, this volume: Chapter 2). Traveling by boat would mean that larger animals, including sea mammals such as pinnipeds and whales, could be transported back to a central camp instead of being butchered near hunting locations, eliminating the need for certain types of logistic camps (Ames 2002). The long range of fisher-forager hunting trips can be seen in the isotopic signatures of the animals consumed, which can come from up to 30 km distant from village sites (Boethius et al. 2022). The ability to move large amounts of resources to a central place also reduces the need for residential mobility, leading to a tendency for maritime hunter-gatherers to live in sedentary communities (Ames 2002; Boethius 2017; Hayden 1994; Kelly 2013). Increased sedentism,

combined with greater logistical capacities, would have changed the playing field for boat-using hunter-gatherer societies.

Watercraft also have the capacity to transform social relationships and alter the course of social trajectories. Extensive social networks and novel types of networks can be established and maintained using the mobility offered by watercraft (see chapters by Thompson [7] and Fauvelle and Jordan [8], this volume). Maritime hunter-gatherers often live in societies with higher degrees of hierarchy and economic stratification. The transportation capacities of boats allow for entrepreneurial individuals to monopolize trade networks, leading to increasing concentrations of wealth in the hands of an economic and political elite (Arnold 1995; Fauvelle et al. 2024). The large amounts of labor, specialized knowledge, and high-value materials needed to build boats can also lead to positive feedback mechanisms that empower boat owners and lead to political centralization (Fauvelle and Jordan, this volume: Chapter 8). Control over boat financing, coupled with increased capacities for trading and raiding, can lead to specialized political-economic formations that have recently been described as a maritime mode of production (Ling et al. 2018), and can lead to parallels in political histories for small-scale maritime societies in many different world regions (Fauvelle and Ling 2024; Hudson 2022). Conversely, boats can also offer opportunities for those fleeing authoritarian structures to vote with their paddles and more readily move to new locations outside of chiefly control (Furholt et al. 2020). The use of boats, therefore, can have transformative outcomes for maritime societies that parallel the historical consequences of domestication and adaptation of agriculture for more terrestrially focused cultures.

Boats also shape the worldviews of people who use them. Seeing the world from the water provides fundamentally different insights than terrestrial perspectives and can lead to unique cosmological and phenomenological perspectives. This includes mental geographies of landscapes and seascapes in which boat-using people have different understandings of places, routes, and space than their terrestrially focused neighbors (see chapters by Rorabaugh [3] and Jarrett [12], this volume; Westerdahl 1992). It can also involve ontological perspectives in which boats are seen as important beings on par with animal and human actors (see chapters by Smith [9] and Whitridge [10], this volume). Ethnographic and historical studies of boat use can complement archaeological information to better understand how the use of boats affected not only economic and political structures but also the broader ways boats shaped human worlds (see Aguilera et al., this volume: Chapter 6). Such knowledge can also contribute to engagement with contemporary Indigenous communities for whom boats continue to be a central component of daily life.

Notes on Terminology

Watercraft come in many different forms, and the examples of watercraft described in this book range from relatively simple dugout canoes to large clinker-built sailing ships. Watercraft provides a generic term for the vessels people used to take to water and encompasses types of craft ranging from makeshift rafts to modern ships. Canoes and kayaks were some of the first watercraft used to take to the sea and are defined as narrow craft that are pointed on both ends and generally propelled by paddling. Boats and ships are often larger than canoes, with ships being relationally classified as larger than boats. As terminology surrounding watercraft use can vary considerably around the world, we have let each chapter author work with the terminology that best suits their discussion of the different watercraft that are featured in each of the case studies in this book.

There are also many different ways to describe how people move across the water. The term “seagoing” is used in many chapters in this book to describe the regular and widespread transport, fishing, and hunting undertaken by many maritime peoples around the world. Seafaring is a similar term that can also imply more frequent trips on the open ocean and a deeper and broader engagement with life on the water. Voyaging generally refers to longer and more directed trips—for example, the colonization voyages undertaken by ancient Polynesians or the long-distance voyages to acquire continental copper undertaken by Bronze Age Scandinavians. While these different types of activities would have been different, they would all have required the use of watercraft and a deep knowledge of how to negotiate the sea.

Watercraft are transformative as they shape the way in which people living in island and coastal environments negotiate (that is, navigate and engage with) the watery worlds that surround them. We see these watery worlds as encompassing both the physical seascapes that surround oceangoing societies and the spiritual and cosmological interpretations of those worlds envisioned by such people. Invariably, the physical and cosmological elements of seafaring are heavily intertwined, as we discuss more fully in the concluding chapter. In this book we focus on island and coastal communities as these are areas in which water and seagoing pose a set of unique challenges and possibilities. Societies in riverine regions also often used watercraft in comparable ways to those in coastal areas but differ in that their worlds were circumscribed by dry land. For people living on the sea, it was often water that defined both the boundaries and possibilities of their world, making it critical for us to understand how these watery worlds were negotiated, navigated, and understood.

Organization of Book

The transformative power of boats makes it critical that we understand their impact on early and small-scale societies. The logistical, political, economic, and ontological impacts of watercraft on the societies that used them were enormous, making boats one of the most pivotal technological innovations in human history. As these transformative properties developed in both parallel and disparate ways in different societies around the world, it is important that we develop an appreciation for the diversity of practices and adopt comparative approaches to understand their impact, a key dynamic we return to in the concluding chapter. Pursuing both themes, this volume is an explicit effort to bring together scholars working in North and South America, Western and Northern Europe, and East Asia and drawing on a range of perspectives based on archaeological evidence, historical records, and ethnographic studies to describe the ways small-scale communities used boats to negotiate the watery worlds that surround them, and the ways those practices have been shaped by the commonalities of life at sea around the globe.

For this volume we have by design limited our scope to mostly saltwater contexts and to what can be coarsely referred to as small-scale societies (contra Bird et al. 2019, we use “small scale” as a measure of sociopolitical integration rather than the spatial extent of interactions). This leaves by the wayside the well-studied arena of oceangoing shipping that has been engaged in by pre-industrial and later states as a means to fuel their economic vitality and often their expansion. It also leaves under-addressed the many major river systems that were critical highways through terrestrial continents. As is clear from global histories, the “rivers as highways” is a critical theme in the trajectories of social change on planet Earth. River mouths, as the nexus between inland areas, river transportation corridors, and ocean expanses, played a critical role in how both large- and small-scale societies emerged, changed, and persisted (Ames 2002; Wengrow 2018).

The chapters in this book are organized thematically and reflect the main components of what we argue represents an integrated and expansive approach to theorizing boats and watercraft—(1) movement and logistics, (2) sociopolitical organization and change, and (3) ontology and phenomenology. The first section of the book includes chapters that examine the contribution of watercraft to facilitating logistics and movement in maritime and aquatic societies. Here chapters focus on how we can model the movements of boats across the seascape, map the settlement of ancient people on islands and along coastlines, and understand how boats shape the capacities of people who used them.

The opening chapter of this section is authored by Alberto García-Piquer, who uses an agent-based modeling perspective to test models of settlement organization in Western Patagonia. García-Piquer uses the results of his model to argue that the creation of cultural seascapes is best seen as a negotiation between geography, technology, and the organizational strategies used by Indigenous people. Agent-based modeling is also used in a chapter by Adam Rorabaugh to explore trip lengths and settlement dynamics in the Coast Salish region of the Pacific Northwest coast, arguing that digital storytelling can complement archaeological narratives to build a richer understanding of maritime transport in the past. In the following chapter, Bettina Schulz Paulsson examines the rock art record of Atlantic Europe and South America to build an argument for the antiquity of whale hunting by Megalithic societies in Brittany. A chapter by Matthew Des Lauriers and Claudia García-Des Lauriers examines the long-term history of maritime mobility in Baja California and discusses how access to the sea has shaped the cultural geography of the region. Finally, a chapter contributed by Nelson Aguilera and colleagues uses historical documents to trace the development and use of different boat types in southern Patagonia, showing how the connection between landscape, ecology, and the needs of Indigenous communities shaped the social history of maritime navigation in that region.

The middle section of the volume contains two chapters that focus on the ways boats shape and transform sociopolitical processes in island, coastal, and riverine societies. The first chapter of this section, contributed by Victor D. Thompson, examines how communities in ancient Florida built canals to modify the landscape in ways that facilitated aquatic transportation. Thompson argues that canal construction required collective and cooperative institutions, and he explores how these construction projects shaped the cultural history of the region. Finally, a chapter by Mikael Fauvelle and Peter Jordan compares the use of a specific type of watercraft, the sewn-plank canoe, between the Ainu region of Japan, Bronze Age Scandinavia, and pre-colonial California. In all three cases, they argue that the innovation of the plank canoe led to increases in regional economic integration and the development of political hierarchies, showing the deep connection between watercraft use and sociopolitical organization.

The final section includes chapters taking an ontological perspective on boats and the human–boat relationship. Chapters by Erin Smith (9) and Peter Whitridge (10) examine the relationship between human beings and the boats they used to navigate the watery worlds that surrounded them. Smith focuses on the Pacific Northwest coast, where she explores boat–human relations within

Indigenous ontologies. Likewise, Whitridge describes the ontological relationships between humans, boats, and caribou for Inuit hunters in the Eastern Arctic. The entangled connection between humans, boats, and the sea is also explored from a bioarchaeological perspective in a chapter by Jordi A. Rivera Prince, who examines how the use of boats can shape and leave biological markers on the bodies of fishing peoples. Rounding out this section, Greer Jarrett explores mental geographies of seafarers on the west coast of Norway, using modern experimental seafaring as a window with which to examine the ways in which Viking navigators would have navigated through their watery world.

These chapters are bookended by introductory and concluding chapters by the volume editors in which, starting from the recognition that watercraft represent one of the most pivotal technological innovations in our past, we outline a holistic and integrated approach to the study of seafaring. The goal of this volume is to offer chapters that are exemplary of the various aspects of the study of seafaring we wish to highlight and, in the concluding chapter, provide an integrative approach to taking the project of seafaring forward. In our conclusion chapter we also highlight key areas for future theory-building regarding the role of watercraft in shaping the human experience in an explicit effort to provide a path forward that goes beyond the terrestrial bias to theory we have highlighted here. Throughout the volume, we emphasize the importance of boats for understanding small-scale societies and argue that we cannot adequately chart the history of our species without accounting for the central importance of watercraft.

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