Reconstructing a Maritime Past

Reconstructing a Maritime Past argues that rather than applying geo-ethnic labels to shipwrecks to describe "Greek" or "Roman" seafaring, a more intriguing alternative emphasizes a maritime culture's valorization of the Mediterranean Sea. Doing so creates new questions and research agendas to understand the past human relationship with the sea.

This study makes this argument in three sections. Chapters 1 and 2, contrasting intellectual histories of maritime archaeological interpretive approaches common in Northern Europe and the Mediterranean, propose that the former perspective – which embodies contemporary and fluid perceptions of *culture* – is a better theoretical framework for future research. Chapters 3–5 re-interpret the corpus of submerged sites in the Mediterranean Sea with this approach, arguing that this dataset does not represent "Phoenician," "Muslim," or "Byzantine" seafaring, but the practices of a maritime culture. Key to this section is the author's method that utilizes superimposed polygons to model patterns of maritime activity, generating centennial results at different scales. Having built the models of a maritime culture's valorization of the Mediterranean Sea, Chapter 6 contains the first comparisons of these models to other datasets, questioning the relevance of textual media to understand maritime activity, while finding closer analogues with other archaeological corpora.

By deconstructing interpretive methods in maritime archaeology, offering a new synthesizing interpretive approach that is scalable and decoupled from past perceptions, and critically examining the applicability of various media to illuminate the past maritime experience, this book will appeal to scholars at various stages of their careers.

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Contents

Figures

(All images by the author unless otherwise mentioned)

Tables

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Family, friends, and colleagues who are familiar with this study know it has been underway for a long time, perhaps longer than necessary. Nevertheless, vital to a project of this duration has been a rich and varied group of people and institutions that have helped me in ways great and small. As much as I tried, my efforts to establish any sort of hierarchy of their contributions were futile – this manuscript suggests I revel in quantification and systems, but I found no fulfilling way to measure support that was continually gracious, generous, helpful, and always timely. If this book is late, it is entirely my fault. Instead, as elements of this book emerged in different places and stages of my career, it is easier (though not always), to recognize those people in their appropriate place and time.

In Cyprus, where much of this work started, I was lucky to be surrounded by a cast who indulged my ideas and rants patiently and who saw the roughest representations of these ideas take shape. At Eastern Mediterranean University, Michael Walsh, Uwe Müller, Rıza Tuncel, Francesca Cauchi, and Mark Fehlmann each kindly gave advice and ideas regarding my new teaching career, and the intricacies of life in northern Cyprus. Down the road, Dan, Sanem, Olive, and Mr. Biscuit, and one of the nicest and calmest homes I've had the chance to care for; it kept me sane and healthy just when I needed it. Good friends were also made across the disputed border. At the Cyprus American Archaeological Research Institute (CAARI): Tom Davis and then Andrew McCarthy, and of course Vathoulla who actually ran the entire organization. Their help and their library were invaluable to the early stages of this project. Elizabeth Doering was a great friend, cooked good food, made me think about post-modern art in innumerably new ways, and asked a variety of questions about this project that always kept me on my toes. Farther afield, Colin Martin, and Thijs Maarleveld kindly answered my questions and gave useful and timely advice, and I hope this study accurately represents the value of their contributions. Last are the editors and editorial board at the *Journal of Archaeological Method and Theory* who kept me firmly on this path when they published the article central to Chapter 1 in 2013.

That article's acceptance suggested I was pursuing some interesting questions and research agendas, but it was not the first such indication. In 2011, I had the opportunity to present a very early iteration of the archaeological modelling at the Third International Mediterranean Worlds Conference in Salerno, Italy. That short

presentation had a much larger result than I expected. It prompted insights and ongoing discussions with Sharon Kinoshita, Peregrine Horden, Francesca dell'Acqua, and Sarah Guérin, and unexpected friendships with Rebecca Darley and Dan Reynolds who helped to set the next stage of this work in Birmingham, England.

For reasons I'm still deciphering, Dan and Rebecca convinced Leslie Brubaker – whom I had never met – that I needed to continue my project at the University of Birmingham. Through the force of her personality and the great skills of Branwen Hide, I applied for (and shockingly received) a Marie Curie Fellowship to refine and standardize the archaeological modelling. Much of this book's content emerged as a result of this opportunity, and I want to thank Leslie for trusting me and the European Research Council for their support of this project. I certainly didn't do it alone, however. In addition to the friendships and hospitality from Dan, Rebecca, Leslie, Jonathan Jarrett, and Chris Wickham, Henry Chapman was a central element of these two years, patiently teaching me the intricacies of ArcGIS, and following me down rabbit holes as we tested a variety of methods to manifest the ideas I had in my head. Many of the methodological elements presented in Chapter 3 emerged from this collaboration with Henry and his patient help. Peregrine Horden kindly introduced me to Andrew Wilson during this period, establishing an unexpected partnership on a John Fell Fund project comparing port assemblages to offshore datasets; my thanks go to Andrew for his partnership on that project, and he should recognize the core of our results in Chapter 6. I made other good friends along the way as well, including my office-mate Chris Farrell, Lauren and Will who hosted me at their home, and Anna Kelley who likely still thinks that a chicken the size of a horse is dangerous.

The opportunity in Birmingham was important. It provided scope, ideas, and limits on this book, and this study's present structure came together during these years. Luckily, I've been with Koç University since that time, which has been patiently awaiting this study. While based at the University's ANAMED research centre, Chris Roosevelt, Duygu Tarkan, and Buket Coşkuner created and maintained an ideal research environment in the middle of a loud and crowded city, and I was very lucky to have the opportunity to spend a year at their centre collecting data, testing ideas, and refining the first three chapters of this work. I also want to thank the Honor Frost Foundation. During this research year, they graciously supported my data collection trips to the American Research Institute in Turkey, CAARI (again), and to the W.F. Albright Institute of Archaeological Research in Jerusalem, where Matthew Adams was a generous host. Despite the noise, however, being in the centre of Istanbul was still advantageous – I had new opportunities to present iterations of these ideas to a variety of audiences. The Connecting Cultures conference in Cyprus, hosted by Vasıf Şahoğlu, Müge Şevketoğlu, and Yiğit Erbil, was a chance to test ideas comparing textual and archaeological topographies of the sea; updated versions of this effort are found in Chapter 6. Similarly, Felix Pirson, the Director of the Deutsches Archäologisches Institut, invited me to present these ideas in the final meeting of the "Port Cities" working group in May 2017, and Ulrich Mania had the tedious job of waiting for my revisions for the event's proceedings.

Introduction

As I've written previously, I tend to be an intellectual hedgehog; this is, of course, not only a metaphor but someone else's as well. Originally proposed by Archilochus in the 7th century BC, it was expanded upon by Stephen Jay Gould to contrast two styles of scholarship. Hedgehogs, like me, can be deliberative and monomaniacal – focusing on a single topic and digging and exploring repeatedly. Foxes, as a counterpart, are more diversified by nature and distribute a variety of novel ideas and new cross-disciplinary agendas. It's important to clarify this personal predilection at the beginning of this study because my ruminative nature has shaped much of this book's content, and its deconstruction of intellectual thought, archaeological methodologies, and, of course, maritime archaeology.

Maritime archaeology is at the heart of this study – specifically, how we interpret submerged material data in the Mediterranean region, and what may happen if we try a different approach. Shaping an answer has been an enjoyable task. Not only because I indulged my tendency to dig and root around to draw conclusions, but also because I could interrogate a collection of interesting topics. First, and most pressing, was to understand what our present interpretive perspective seems to be. By 2013, I had an answer: Generally, maritime archaeologists use intuitive efforts emblematic of culture-history archaeology to apply identities and labels to the submerged assemblages we investigate. Sites on the seafloor not only become shipwrecks (when, in some cases, they were not) but also "Phoenician," "Venetian," "Etruscan," "Muslim," or "Roman" (or many other geo-ethnic labels) for a panoply of reasons. Sites become "Greek" when the cargo is from Athens, and others are "Etruscan" if the personal items are from Etruria. Another may be "Russian" because of the cannon on board or "Syro-Palestinian" because of the anchors. Admittedly, this study contained some generalization – not *everyone* does this, nor am I proposing so – but statistically, this is the most common interpretive perspective within the discipline. Moreover, an alternative seemed useful because this culture-history tendency seemed just as problematic with a submerged dataset as its use with terrestrial data. How can we reliably collate and compare the characteristics of 15 "Roman" wrecks, for example, if 15 different methods were used to generate this label? Also, how can we consistently use data from "Greek" wrecks to populate a history of seafaring, when the sites may represent the practices of one or many other communities? At this point, some

readers may see a similarity to the intuitive practices of prehistoric archaeology that David Clarke rallied against in his *Analytical Archaeology*. I'm certainly not David Clarke, nor is this study equivalent to that tome, but I sympathize with the efforts of another hedgehog trying to solve a problem when I see it.

This book contains my proposal for that alternative interpretive approach, and it has a straightforward structure. Chapter 1 not only summarizes and updates the results of that 2013 study but also provides an intellectual context for the culture-history method that seems so popular in our community. Briefly, it proposes that the origins of this method in maritime archaeology are found in some of the early practices of classical archaeology on land: the recurrent application of geo-ethnic labels from documentary sources, the prioritization of textual data and narratives over the material record, and the perpetuation of these practices in established institutions. George Bass and his seminal excavation at Cape Gelidonya in 1960 play a central role in this history and this chapter, too. Not as the origin of practices, however, but as a conduit. These interpretive tendencies were already predominant amongst Bass' teachers and cohort in the Mediterranean. His project, with its publication in professional outlets like the *American Journal of Archaeology*, reaffirmed the application of these interpretive ideas to sites under water, likely becoming a standard to emulate.

There were certainly benefits to the application of this interpretive approach in the formative years of maritime archaeology in the Mediterranean. For example, while the discipline was building itself, it was not burdened with the creation of a new body of theories. Instead, its close methodological ties to classical archaeology lent an immediate acceptance of both its efforts and its results. Nevertheless, many of the critiques of the culture-history interpretive perspective are applicable to efforts under water as well. In addition to the ambiguities inherent to the application of these labels, they are also modern constructs packed with our subjective biases, yet seemingly valid as they mimic texts in the classical canon. They can also create practical, legal problems. UNESCO conventions' philosophy of a "state of origin" to establish jurisdictional boundaries over submerged heritage is a descendant of this perspective, codifying the notion that modern nation states are the direct inheritors of ancient cultures.

These critiques may seem overly negative, if not nihilistic. Indeed, an anonymous reviewer at a different press rejected this manuscript because I was unpacking these problems. What that reader missed, and what I hope I will clarify, is that there are alternatives. If Chapter 1 argues why we should decouple the corpus of submerged archaeological data from this culture-history approach, Chapter 2 suggests that a *maritime culture* is a viable alternative. This is a concept that has become increasingly popular in the past decade and, much like Bass' imprint on practices in the Mediterranean, the work of Christer Westerdahl looms equally large over this idea. Like Bass' integration of classical archaeological concepts, Westerdahl's proposals were a result of a surrounding intellectual *Zeitgeist* in prehistoric archaeology. In particular, Westerdahl's work evolved with the growth of *culture* as a flexible concept, which is a key component of this study. Whereas efforts in the Mediterranean encouraged the amalgamation of

different media under a pre-existing, normative label like "Roman," the emerging fluidity of culture applied by scholars outside the Mediterranean accommodated two developments. The first is that culture can be defined through shared actions, needs, experiences, and recognized expressions. The "American" construct can contain other cultures, for example, as much as a religious culture can transcend the boundaries of America. As a group of people sharing common interests and social processes, a maritime culture can be deciphered within everyday life almost anywhere in the world, including the ancient Mediterranean.

The second development is a corollary to the first. With the gradual dissolution of previously fixed constructs like "Roman" into multiple, coincident, and permeable cultures, there has been a disentanglement of the various media that shaped past cultural narratives too. The result is a convenient parallelism. By decoupling the submerged archaeological corpus from pictorial and textual data, and the geo-ethnic constructs they manufacture, the maritime culture represented by the archaeological corpus is disentangled as well. Whereas this community of people inhabiting the sea was relatively muted within a larger narrative in the ancient Mediterranean, they can now be more easily discerned and understood.

At least, it is easier theoretically, which is why Chapters 3–5 are the crux of this study trying to enact this new alternative. Like other perspectives in prehistoric archaeology or historical archaeology, this study is also relying solely on the archaeological corpus to shape a narrative of a group of people. In particular, how their movements created a maritime cultural landscape in the Mediterranean Sea. Many scholars have used submerged datasets to model movement at sea and to extrapolate their cultural significance, but this study's interpretive approach is distinguished by two characteristics. First, it uses an archaeological corpus populated with over 1,000 assemblages, and, second, it uses polygons to model the likely area of movement represented by each assemblage. How these characteristics work together is clarified in Chapter 3. The results of that collaboration, in Chapters 4 and 5, are a series of centennial models that appear to manifest areas of greater and lesser activity, and portray spatial changes in those patterns over time. Coupled with the post-modern ideas of Tim Ingold, Bruno Latour, Philip Stockhammer, Ömür Harmanşah, and others, regarding the human fashioning of place and landscape, these models may also be illustrating *places* – the fundamental texture of a kinetic social construction of the sea. The models in Chapters 4 and 5, then, may manifest this community's inhabitation of the ancient Mediterranean Sea. From the local to the pan-Mediterranean scale, the models propose areas with shifting gradients of activity, regions of transshipment, patterns of change, relations to risk, and representations of a communal memory.

This is, then, a new narrative of maritime activity and maritime life in the ancient Mediterranean, constructed solely from the archaeological assemblages on the seafloor. It is not, however, the only such narrative, a problem investigated in Chapter 6. Textual media and other archaeological corpora also form histories of the sea's construction and use: how the space is valorized, transected with different itineraries, defined by varying dispersals of items, or crossed by people and communities. As these datasets are compared, what are the results? What do their

similarities suggest about past uses of the sea and the complementarity of data, and what do the differences indicate about different perceptions of the human relationship with the Mediterranean? While Chapter 6 provides some answers, it is certainly not complete; indeed, that is not its goal. Instead, having demonstrated the viability of this study's alternative methodology, Chapter 6 is the beginning of the next step – the application, testing, and refinement of the results in further studies and projects to come.

1 Interpretive practices and interpretive problems

Published in 1985, John Staudenmaier's *Technology's Storytellers* was an analysis of the emerging intellectual themes, theories, and discourse within the Society for the History of Technology (SHOT), founded in 1958. Staudenmaier conducted his analysis by critically reading all 272 articles published in *Technology and Culture* (TC), the society's journal, between its first issue in 1959 and 1980. Concerned about the myth of technological progress as an autonomous force beyond culture as well as the myth's pervasive impact on scholarship, Staudenmaier wanted to understand the intellectual character of the emerging academic society and its relationship with this perception.[1] Is this international cohort embracing and perpetuating perceptions of technology as an ahistorical force distinct from the foibles of life, or were they deconstructing this myth piece by piece?

To complete his investigation, Staudenmaier compared the number of publications in TC with internalist approaches to technology against the number of publications with contextual approaches to technology. Within Staudenmaier's parlance, internalist technological history is the exclusive interest in the design characteristics of human mechanisms, focusing almost entirely on the item itself.[2] This study of objects within a societal vacuum paralleled the projection of technology as independent from societal forces while proposing a rather compartmentalized view of culture; technology could progress and impact our lives, but not vice versa. A contextual approach, in contrast, is a synthesis of technical design and historical context. By recognizing technology's integration in society, as an inevitable creation of everyday events, technology was thus susceptible to the same forces that we are and its progress was no more linear than our lives. Lynn White's *Medieval Technology and Social Change* from 1962 is a good – if not fairly determinist – example.[3] By comparing the shifting ratio between these two types of essays, Staudenmaier found that he was not the only member of SHOT who saw linear technological progress as a myth. Whereas the percentage of internalist publications in the corpus steadily decreased, down to 16 percent of the essays published between 1974 and 1980, the number of contextual publications increased steadily, up to 59 percent of all essays in the journal in the same period.[4] The increasing number of contextual approaches within the journal demonstrated that contributors, and likely SHOT as a whole, were shifting from older to newer perceptions of technology and to newer perceptions of their discipline as well.

A study conducted by this author between 2008 and 2011 purposefully applied Staudenmaier's approach to the corpus of articles published in *The International Journal of Nautical Archaeology* (IJNA) to make a similar assessment of identity and shipwreck studies and to trace changes in disciplinary perceptions. Similar to SHOT, the practice of maritime archaeology began as a formal academic discipline in 1960 and was predominantly represented on a global scale by a single journal, IJNA. Equally, both disciplines are relevant on a global scale yet scholars in North America, Western Europe, and Australia dominate. Lastly, both disciplines seem to have had similar foci when they began. As the history of technology had its internalist phase, particularly prior to the appearance of *Technology and Culture*, maritime archaeology had a similar emphasis in the 1960s, 1970s, and 1980s. In addition to the development of new field techniques, the practice seemed drawn to the dimensions of ships' frames, shapes of hulls, and their typology and categorization.

Completed in 2013, this study of IJNA determined that the uses and applications of identity with shipwrecks, unlike perceptions of technology, did not appear to be changing within the practice. Overall, identity was applied to shipwrecks and the past ships they represented in a very essentialized and normative fashion. That is, these archaeological sites not only embody fixed norms that represent a culture, but the culture itself is a homogeneous and predictable mixture of those norms. Equally, these norms are universally understood by all participants and observers of that culture.[5] Just as we tether ships to a discrete chronological and cultural milieu today with registrations and names, then, we seem to do the same to ships from antiquity by identifying them as "Greek" or "Venetian."[6] A subsequent collection of additional passages from IJNA published between 2008 and 2016, as well as similar data from the *American Journal of Archaeology* (AJA) published between 1961 and 2016, has reinforced this conclusion (Figure 1.1).

With a larger dataset of 284 articles from the two journals, it still appears that archaeologists investigating wreck sites prefer to apply these singular and fixed identities.[7] As will be discussed later in this chapter, there are important reasons why this approach is pervasive within the discipline, but it is only necessary now to summarize its perspective. By applying labels such as "Etruscan" or "Levantine" to characterize or identify the wreck sites we study, we rely on the label to transcend lacunae between corpora of textual, epigraphic, pictorial, and archaeological data. Like a specific name, the label becomes a framework upon which a constellation of data from these different media may be oriented and affixed together. Thus, just as Watts can integrate different types of information about the Civil War-era ironclad USS *Monitor*, Lionel Casson can entangle textual, pictorial, and archaeological information about "Roman" merchantmen, and Mark Polzer can characterize "Greek" shipbuilding techniques.[8]

The conclusions of this 2013 study and its subsequent expansion are important because they are the foundation for the investigations in this book that argue for an alternative way to interpret the wreck sites we study. Rather than building our interpretive context on cultural or geo-ethnic labels extrinsic to the archaeological record, this book proposes that an equally valid context is created by the corpus
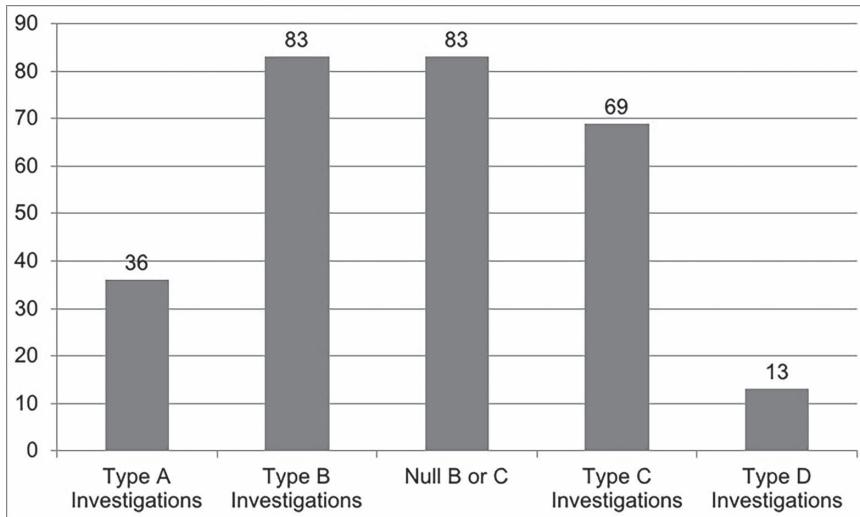
Figure 1.1 Chart of different types of forming an identity within an updated dataset of articles published in *IJNA* and *AJA*. Type A investigations begin with a historically attested identity, such as *Monitor*, and use archaeological data to support that conclusion, and Type B investigations begin forming a specific identity with archaeological data but refine the results with textual data. Null B or C studies were unsuccessful attempts to form an identity. Type C investigations use only archaeological data to apply normative, geo-ethnic labels like "Roman," and Type D studies also use only archaeological data but apply modern labels like "Northern European" or "Clinker-built" that have no historical analogue.

of archaeological data alone. Before that, however, much of the remainder of this chapter will investigate the intellectual history of this dominant interpretive approach, then suggest why it may also be inherently problematic.

Building maritime archaeology in the Mediterranean: from Gordon Childe to George Bass

Proposing that, generally, archaeologists investigating shipwrecks prefer an approach that prioritizes a cultural or geo-ethnic label invites a corollary investigation – why do we apparently do this, and where does this interest come from? Perhaps predictably, unravelling the roots of this tradition follows the history of archaeological thought and practice. Equally, George Bass' excavation of the Late Bronze Age site at Cape Gelidonya, Turkey, in 1960, and his methods of interpreting the material, played a key role. Bass' project was groundbreaking as it represents the beginning of maritime archaeology as an academic practice. The excavation demonstrated that an archaeologist could dive and direct the progression of an excavation occurring under water, that it was possible to apply standard professional archaeological techniques to retrieve data from the assemblage,

and that the results could substantially add to what was known about the past. The publication of the preliminary report in AJA in 1961 is also a testament to the project's quality. Its appearance in the journal demonstrates the acceptance of the work among Bass' peers and represents the acceptance of the practice because it was the first such peer-reviewed article on the excavation of a shipwreck to appear in the journal. It is highly likely that other aspiring maritime archaeologists sought to emulate Bass' methods in the field, the structure of his publications, and his interest in discerning the nationality of the ship.[9]

To propose that the current state of the discipline derives solely from Bass' project in 1960 is too simplistic, however. The project's accomplishments were impressive, but the theoretical foundation of Bass' interest in deducing a singular nationality of the assemblage was not new, nor was his method of doing so. Instead, Bass' interest reflected what his colleagues, teachers, and predecessors in archaeology had been doing on land for a century or more. By associating an assemblage of material culture with a pre-determined group of people, archaeologists like Bass were fashioning a link between a tangible remnant of the past and the intangible human activities that the artefact was once a part of. Like spear points or temples, as ships and their contents were constructed by people in a culture, presumably they may be deconstructed to understand the culture that created them. This process of deconstruction and decipherment is not simple, however, because it partly relates to changing perceptions of culture itself.

In the 19th century, individuals like John Lubbock or Gabriel de Mortillet felt that culture was a fixed structure extrinsic to society because they subscribed to the theory of unilinear cultural evolution. This was the perception that culture is a hierarchical series of epochs, such as the Solutrian or Magdalenian, through which all human groups progress to culminate in a refined civilization.[10] With this perspective, societies progressed through a stratified system of cultural evolution, so artefacts were expressions of the cultural stage that a society has achieved. In contrast, the efforts of Heinrich Schliemann, Arthur Evans, and Gustaf Kossinna in the late 19th and early 20th centuries refined a perspective of cultural relativism.[11] Their ideas emphasized the presence of individual cultures and ethnicities past and present, and catalysed the perceptions of archaeological cultures and the rise of the culture history archaeological approach. Determining the ethnic or cultural affiliation of artefacts was now an archaeological imperative because the data were no longer categorizing society but partially representing society. There was now more than one culture to study and describe, and more than one history to write.

In particular, V. Gordon Childe applied the concept of an archaeological culture to his study of societies in prehistoric Europe, fashioning a history of the culture's movement and growth or decline over time.[12] He also attempted to refine how a culture was expressed in an archaeological assemblage. He recognized that not all artefacts may represent the presence of a particular culture, as some artefacts may diffuse even when the people and their ideas do not. As a result, he proposed two related solutions. First, when a whole complex of cultural traits such as burial rites, artistic styles, tools, and weapons appears in a new location, then the people

of the culture have moved.[13] Second, in a functionalist fashion, Childe argued that specific cultural groups could be identified within a mixed archaeological record via items that played culturally specific roles and were resistant to change. In this case, utilitarian pottery, ornamentation and decoration, and elements of burial rites were particular signifiers. Tools and weapons may represent a particular culture as well, but, as they also had uses that transcended cultural boundaries, they were less likely to represent the presence of the people.[14]

Childe's method of discerning a particular culture within an archaeological assemblage became the predominant model among mid-20th-century Bronze Age archaeologists in the Mediterranean. It reinforced Schliemann's and Evan's methods at Hissarlık, Mycenae, and Knossos and complimented the long-standing antiquarian tradition of using Greek and Roman antiquities to supplement the textual and epigraphic histories of these cultures.[15] It was the perspective likely adopted by Honor Frost as she worked at Jericho, and by Joan du Plat Taylor in her studies in Turkey, Cyprus, and Syria, well before either began engaging maritime topics.[16] Similarly, it remained the standard technique of prehistoric archaeologists in Europe and North America until it was roundly challenged by some scholars who perceived culture, and its purpose and expression, in a new way.[17]

As Bass began his work at Cape Gelidonya in 1960, however, this challenge to Childe's approaches was only just taking shape. Indeed, the application of Childe's methods of defining an archaeological culture had remained fairly steady for the previous decades and were incorporated into the scholastic atmosphere of Bass' graduate training. While at the American School of Classical Studies in Athens from 1955 to 1957, Bass spent two summers conducting field work at the Neolithic/Helladic site of Lerna in southern Greece. John Caskey, the director of the excavation, integrated these culture history perspectives into his field reports, writing of cultural change following catastrophes, and equating stylistic and typological changes with the arrival of new groups of people.[18] Rodney Young, Bass' supervisor at the University of Pennsylvania, expressed these ideas in a publication on his work at Gordion, in Turkey, and they are evident in the sources used in Bass' dissertation as well.[19] John Pendlebury's *The Archaeology of Crete* was cited in Bass's bibliography, and it equated the steady stylistic progression of arts and crafts on the island to continuity among the races inhabiting it.[20] Similarly, William Albright's *The Archaeology of Palestine* paralleled the Hyksos period with more "originality" and "high art," the appearance of horse-drawn chariots with the arrival of the Indo-Aryans, and Canaanites represented by a "common material and religious culture."[21] Rather than perceiving change within the local population, Albright attributed stylistic shifts to outside influences; the local Semitic population in Palestine absorbed non-Semitic groups and were later displaced by the conquering Israelites.[22]

These archaeological perspectives surrounding Bass likely informed and shaped much of his techniques and methodologies in 1960 because his goal was to conduct archaeology, not specifically to investigate a ship.[23] As he wrote, underwater archaeology is only archaeology that is conducted under water, and the aqualung is only a tool.[24] Directing the excavation of the site at Cape Gelidonya,

therefore, meant applying the culture history perceptions he likely knew and was taught because that was how archaeology proceeded and there was no alternative nearby. Indeed, it may have been an inevitable element as du Plat Taylor, following years of archaeological experience in the Near East, participated in Bass' expedition cataloguing and identifying artefacts on shore.[25] The novelty of the research at Cape Gelidonya was its location – these interpretive approaches were being applied through the scientific investigation of a site on the bottom of the sea.

Moreover, Bass' use of the 1963 edition of Childe's *The Bronze Age* may be an impetus behind his proposal that the personal items from the Cape Gelidonya assemblage represent the nationality of the ship. Childe's perspective and methodology are based partially upon the perceived purpose of an object.[26] Within an assemblage, the culturally representative items are less likely to be modified or repurposed for a different use. Such functional divisions are clear in the Cape Gelidonya assemblage. The ton of concreted copper and possibly tin ingots that represented the bulk of the site became the ship's cargo, because the ingots were meant to become something else. Most of the used, partial, and complete bronze tools became cargo as well – items to be melted down or resold.[27] As these objects were commodities and raw materials to be processed, then they could not also be cultural signifiers because, from Childe's point of view, the two purposes are incompatible. Different cultures or peoples may have the same items put to the same purposes, like pots or tombs, but it is the reiteration and preservation of the culturally distinct attributes of those items that enable them to represent the group that created them. The destruction of the object means the loss of those attributes and their representative power as well. The ingots in the Cape Gelidonya assemblage may have been from Cyprus, but – applying Childe's perspective – they would not have given the ship a *Cypriot* identity.[28]

In contrast, other items in the assemblage were classified with purposes beyond the mundane. The five scarabs found together may have been good luck charms or religious talismans.[29] The hematite cylinder seal was the personal insignia of the merchant on board, whereas the various weights represented the metrological system of a particular culture.[30] These items and other unique pieces found nearby became personal items for two reasons. The first was their location – where a cabin in the ship may have been – and the second was because their intact nature meant they were fulfilling their perceived purpose while retaining their cultural attributes. Faced with artefacts segregated between those used in their original form and those meant to be processed and changed, the conclusion that the small suite of intact items in the ship's stern is representative of the vessel's nationality was the best interpretation to apply. The late Bronze Age assemblage excavated at Cape Gelidonya became a Phoenician ship.

The ubiquity of Childe's approach, or culture history archaeology in general, is evident in the atmosphere surrounding Bass as well as the reviews of the final publication on Cape Gelidonya. Among the reviews of the book, only Cadogan and McCann had reservations about perceiving the ship as Phoenician or Syrian.[31] Linder did not question the affiliation at all, and Stieglitz welcomed the result, writing that it reinforced other recent studies about Western Semitic maritime

activity.[32] Moreover, although McCann was the only reviewer that questioned if the personal items represented the origin of the ship, her concern was not methodological but one based on their quantity and rather generic nature. Her alternative, that the cargo from Cyprus may instead represent the home port, is a different application of a similar interpretive perspective.[33]

Building maritime archaeology in the Mediterranean: from 1840 to 1950

This intellectual lineage from Childe to Bass may not be the whole story, however. Bass' excavation at Cape Gelidonya and the publication of the final report in 1967 represent a conduit through which modern methods of archaeological excavation and interpretation were applied to an assemblage under water. Within archaeological practices, the work was seminal and groundbreaking. Within the broader body of scholarship, however, Bass' work represented something else for he was not the first individual to investigate the extant remains of ships, nor the first to apply a culture-history approach to the study of ancient seafaring. Instead, as evident from Figure 1.4, Bass' work may be seen as a modification of a very old interest – seafaring in the ancient Mediterranean world.

In many ways, this interest dates to the Renaissance. One of the two Roman-era vessels in Lake Nemi was investigated in the 15th century by Genovese sailors employed by Cardinal Colonna and in the 16th century by Francesco de Marchi.[34] The humanist Vettor Fausto reportedly built a replica of a Hellenistic quinquireme in 1529 in Venice, and Lazarus de Baïf published recreations of ancient galleys in 1536, 35 years before the Battle of Lepanto.[35] By 1671, Nicolaes Witsen had his own fanciful versions of ancient galleys in his *Aeloude en Hedendaegsche Scheeps-Bouw en Bestier*.[36] More formal scholarship on ancient seafaring, however, began by the middle of the 19th century.

One key text is August Böckh's *Urkunden über das Seewesen des Attischen Staates*. As the third book in his series, *Die Staatshaushaltung der Athener*, Böckh's work printed transcriptions and an analysis of the 18 fragments of administrative and materiel inventories from Athens' 5th-century BC navy, excavated by Ludwig Ross near the Piraeus in 1834.[37] In particular, Böckh tried to glean minutiae of triremes' structures from the preserved inscriptions because theories about ancient warships had abounded among humanists for more than two centuries – since galleys themselves had been in active service in European navies. Moreover, Böckh not only brought the naval affairs of ancient Athens into classical scholarship by including the naval inventories within his *Corpus Inscriptionum Graecarum*, but the inscriptions also provided new insights into the designs of the triremes themselves. The examination of the Lenormant relief, uncovered in 1852 at the Erechtheum and partially depicting what is felt to be a trireme, was more valuable and illuminating due to Böckh's work over the previous decade.[38] Further combined with the discovery of the ancient Athenian arsenal's slipways in the Piraeus in 1885, scholars were able to demarcate more precisely the boundaries of what a trireme may and may not be. A variety of people had been debating

the scale and shape of ancient galleys for over a century yet, through three archaeological discoveries in 50 years in one city, many of those questions had become moot. Fundamentally, Böckh's 1840 study demonstrated the usefulness of epigraphy upon the study of ancient Mediterranean seafaring.

Also published in 1840, Jal's two-volume *Archéologie Navale* was the first of three works that he wrote in his attempt to understand all he could about ships and seafaring.[39] Relying heavily on a deconstruction of written material but including paintings, engravings, and drawings, Jal compiled nine essays spanning 1,100 pages. He not only explored the seafaring practices of the Egyptians and the Normans but also gleaned seafaring terms from a wide variety of sources, such as the 10th-century Anglo-Saxon *De nave et partibus ejus*, voyages of Rabelais' Pantagruel and Gargantua, an English sea shanty from the 14th century, and the 15th-century *Fabrica di Galere*. The etymological work in Jal's *Archéologie* is important as it prefaces his later *Glossaire Nautique* of 1,591 pages and over 25,000 entries, his attempt to record and define the polyglot of seafaring terms in French, Russian, Swedish, English, Danish, Latin, Turkish, and Venetian, among other languages.

Jal's *Archéologie* and *Glossaire* established the historical study of ships and seafaring as an intellectual pursuit equal to any other within early modern Europe. He was not the first to apply a broad investigative approach to the study of seafaring activities, for Witsen's 1671 publication did the same. However, by publishing in French, the literal *lingua franca* of 19th-century Europe, Jal likely eased the dissemination and incorporation of his work into the body of scholarship.[40] Moreover, unlike Falconer's *Universal Dictionary* or Partington's *The Ship-Builder's Complete Guide*, both productions of former seamen, Jal's *Glossaire* presented and studied the language of seafaring as an outsider. For Jal, language was a tool through which the elements of ships could be reduced to cold bits of data, and a maritime life could be dissected anatomically.[41]

Building upon the work of Böckh and Jal, elements that characterize the study of ancient Mediterranean seafaring coalesced in the following decades. Archaeologically, an increasing amount of material culture related to maritime activity was being uncovered and published. In addition to the numerous decorative representations of ships and boats uncovered almost annually in these years, harbour works and related structures at Rome, Carthage, Sunium, Miletus, Chalcedon, Ephesus, the islands of Poros and Delos, Germany, and Egypt were studied and published between 1886 and 1908.[42] On land, two prehistoric dugouts were uncovered in Brigg and Woolwich, England, in 1888, two Middle Kingdom-era craft were found at Dashur, Egypt, in 1894, and two boats were found while digging a canal near Adria, Italy, in 1900.[43] In the water, a Roman-era vessel was unearthed during the dredging of the Marseille harbour in 1864, the two vessels in Lake Nemi were examined in 1895 and 1896, and the wrecks at Antikythera and Mahdia were salvaged in 1901 and 1907.[44]

With this increase in data in this short period, there was a parallel increase in its compilation, analysis, and related attempts to write about the topic. This blossoming interest was marked by the publication of Cecil Torr's *Ancient Ships*

GLOSSAIRE NAUTIQUE.   129

quelque chose quand nous aurons dit qu'il est composé d'une longue verge à l'une des extrémités de laquelle, et sous un angle dont l'expérience a déterminé l'ouverture, sont fixés ordinairement deux bras, terminés quelquefois par une pointe, le plus souvent par une pelle ou patte, de forme triangulaire, destinée à entrer dans la terre pour y fixer l'Ancre, et, par conséquent, le navire qui y est attaché? Qui ignore qu'à l'extrémité du levier opposée aux bras, est un trou où passe l'anneau auquel vient se nouer le câble de chanvre, ou bien se joindre par le dernier de ses maillons la chaîne de fer qui remplace ce gros cordage?

Chacune des parties de l'Ancre a reçu un nom qu'il est bon de faire connaître. Nous avons déjà nommé la *Verge*, les *Bras*, la *Patte*; ajoutons que la pointe du bras ou de la patte se nomme le *Bec*; que chacun des autres angles de ce triangle se nomme *Oreille* de la patte; que l'anneau passant par un *OEillet* ouvert à l'extrémité de la verge est appelé *Arganeau* (V. *Anchre*), et, par corruption, *Organeau*; que le point de réunion de la patte ou des pattes avec la verge a reçu la dénomination de *Collet*; que le sommet de l'angle sous lequel se joignent ces parties est nommé *Diamant*, à cause de la façon qu'on lui impose, — façon qui consiste à tailler à facettes le solide angulaire formé par le concours de la patte et de la verge; — que la distance d'un bec à l'autre, ou l'ouverture des deux pattes, est nommée la *Croisée* de l'Ancre; enfin, que deux excroissances placées au-dessous de l'arganeau, dans le plan des pattes, s'appellent *Tenons* (V. *Anchre*), parce qu'ils servent à tenir en place le *Jas*, traverse composée de deux pièces accolées et liées, qui, étant dans un plan perpendiculaire à celui des pattes, contraint l'Ancre à mordre par un de ses becs le sol sur lequel elle est tombée. Voici la figure d'une ancre moderne :

amarrages de rotin, serrés avec des coins. Les bras ne sont point terminés par des pattes; ils sont taillés en biseau. Le jas est fait d'un fagot de rotins flexibles, auxquels on ajoute quelquefois des pierres pour lui donner du poids. Il n'est pas monté près de l'arganeau; quelquefois il est placé non loin de l'attache des bras; d'ordinaire, il est arrêté au milieu de la verge.
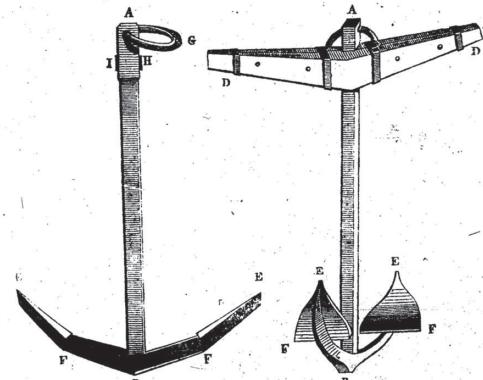
(AB, la verge de l'ancre; BE, les bras; FE, les pattes; EE, les becs; DD, le jas; EBE, la croisée; HI, les tenons; B, le diamant; G, l'arganeau; la réunion de la verge; AB, avec les bras; BE, ou le collet.)

Dans les marines européennes, les Ancres sont faites de fer forgé; il n'en est pas ainsi dans les marines de l'Inde, de la Chine, de la Malaisie, et de quelques-uns des archipels de l'Asie. Là, généralement, les Ancres sont construites en bois. L'Ancre malaise et chinoise (elle est nommée en Chine : *Sini-piti*, selon le *Dicc. marit. esp.* [1831]), dont nous donnons ici la figure, est composée d'une verge de bois, à laquelle viennent se joindre, au moyen de fortes chevilles traversant leur sommet, deux pattes de bois, que lient à la verge des
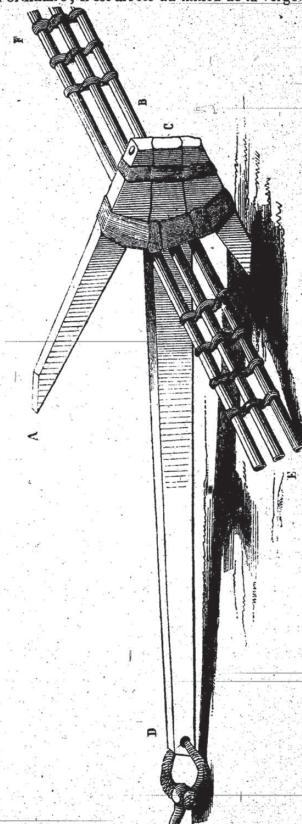
(DC, la verge; AB, le bras; EF, le jas de rotin.)

Quelques Malais, pour rendre plus solides leurs Ancres, font, au tiers environ de la longueur des bras, un amarrage qui, tendant à rapprocher ceux-ci de la verge, oppose une résistance énergique à l'effort fait par le navire sur le bec qui fonctionne.

Certains petits bâtiments de Java, armés pour le cabotage, se servent d'Ancres à un seul bras, qui ont un peu la forme

17

Figure 1.2 Page 129 from Jal's *Glossaire Nautique*, an example of his efforts to deconstruct and codify the components of a maritime life.

in 1894 and the establishment of the Society for Nautical Research in 1910. *Ancient Ships* was Torr's attempt at a history of ancient shipping, and it became the vade mecum for scholars studying the topic until the publication of Casson's *Ships and Seamanship of the Ancient World* in 1971.[45] The Society for Nautical Research, almost named the Jal Society after the individual its members felt
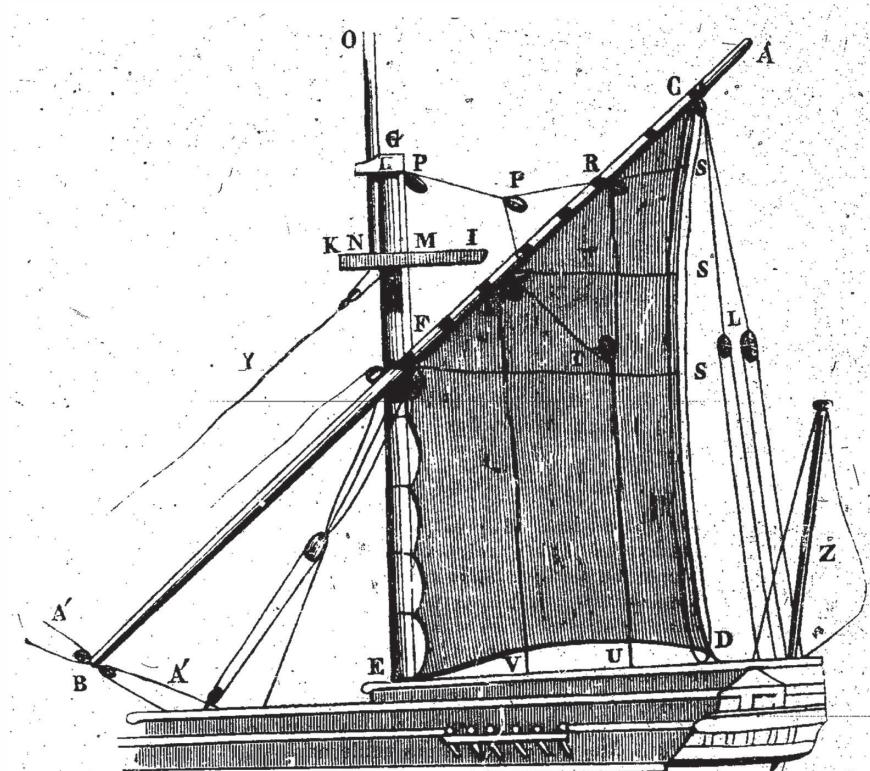
(AB, antenne qui portait l'Artimon latin, et qu'on appela l'*ourse*: BEF, partie de l'Artimon, qui disparut au xviiiᵉ siècle; BF, partie infé-rieure de l'antenne, qu'on fit disparaître ensuite; FC, partie supé-rieure, qui est devenue la Corne d'artimon, façonnée en croissant au point F; FGDE, Artimon dans sa forme actuelle; A'B, orses qui ma-nœuvraient l'antenne de l'artimon latin.)

Figure 1.3 Page 187 from Jal's *Glossaire Nautique*, dissecting the elements of an artemon sail.

was the first nautical archaeologist, was formed for the comparative study of all nautical institutions and uses.[46] Their journal, *Mariner's Mirror*, began in 1911, and the rapid growth of publications in English related to maritime history and archaeology in the early 20th century is likely a by-product of its establishment (Figure 1.4).

Throughout all this research and publication was an element that was already common among scholars undertaking related studies, and was perhaps inevitable: affiliating the archaeological data with ancient narratives to append or enhance the history of the culture in question. In 1896, Vars fashioned a link between the ancient grammar of ship construction in Ovid's *Metamorphoses* and the remains
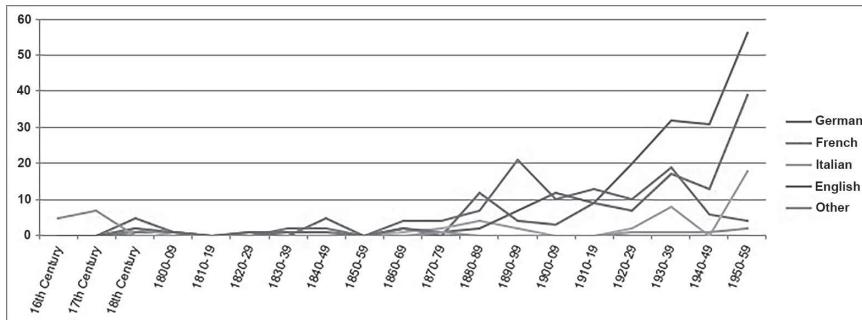
Figure 1.4 Approximate numbers of publications printed with maritime historical or related topics, delineated by decade and language. These data were gleaned from the bibliographies in the following sources: Basch (1987), Bass (1966 and 1972), Casson (1959 and 1971), and Torr (1894).

of the Roman-era vessel dredged near Marseille three decades earlier.[47] Similarly, Assman argued in 1895 and 1901 for the Phoenician affiliation of ships on a Dipylon-style vase from Thebes and on a metope of the Treasury of the Sicyonians from Delphi in 1905.[48] More potent were the conclusions that the vessels found in Lake Nemi were built by Emperor Caligula and that the vessels lost at Antikythera and Mahdia were once the property of the Roman commander Sulla.[49] The conventional, culture history interpretive approach already applied to terrestrial collections was applied to assemblages under water because they too were archaeological sites and because that was the way archaeology in the Mediterranean was conducted. Just as the Minoans, the Germani, and the Israelites were reified from finds on land related to terrestrial activity, so too was a maritime history of the Phoenicians, Greeks, and Romans as a seafaring past was fashioned from extant maritime cultural heritage.

Moreover, the integration of the submerged archaeological record into the historical narrative worked. The fine-grained nature of shipwreck sites easily complimented existing histories of seafaring activity.[50] The assemblage provided a detailed cross-section of information, all the result of a single, usually random, event, and all deposited at the same time. Other than proximity to a certain coastline, the assemblage had no apparent pre-existing context *in situ* and, with a date and an affiliation, it supplied otherwise unknown details that were unlikely to contradict textual sources. Repeatedly, in works such as Ormerod's *Piracy in the Ancient World* or Rodgers' *Greek and Roman Naval Warfare*, studies of seafaring in the Mediterranean relied on texts and epigraphy to create a path through historical events and relied on the material culture to provide details. Casson's *The Ancient Mariners* is ostensibly a Mediterranean maritime history that he claims could not have been written 50 years earlier, as the necessary material culture was yet undiscovered.[51] Nevertheless, the conventional historical narrative still frames his work as ships in depictions become Phoenician, Egyptian, Greek, Athenian, or

Roman, or *hemiolia*, *triremes*, or *liburnians*. At the time, Casson's work was the most concentrated collection and organization of archaeological data in English related to ancient Mediterranean seafaring. However, it was also a reiteration of the studies that Böckh and Jal had conducted over a century earlier.

Building maritime archaeology in the Mediterranean: from Cape Gelidonya to the world

Before Bass' excavation at Cape Gelidonya, material from the sea floor was being incorporated into studies of the past as archaeologists and historians applied a culture-history interpretive approach to the material they found. The permeation of this perspective of culture through the excavation and interpretation of the material at Cape Gelidonya was perhaps unavoidable, therefore, and its subsequent validation through professional publications entangled the old with the new. A longstanding interest in seafaring activity within the ancient Mediterranean was now enhanced with a new means of scientific investigation through archaeology under water.

In many ways, the publication of Cape Gelidonya reflects this culture-history dynamic between archaeology and history as it reaffirms the "big dig" model already mastered at Mediterranean sites on land.[52] Previous 20th-century work at such sites was characterized by regimented research descended from art-historical connoisseurship, and a functionalist segregation of finds meant to ease the incorporation of data into historical studies. Volume 10 of the Athenian Agora publication, for example, focused solely on the weights, measures, and tokens found during the excavation.[53] Volume 1 of the Corinth publication series is dominated by architectural studies, whereas volume 1 of the work at Tarsus doles out the material chapter by chapter: Buildings, Coins, Lamps, Stamped Amphora Handles, Pottery, Terracotta Figurines, Inscriptions, and Miscellaneous Finds.[54] These raw archaeological data fit into a historical narrative just as Victor Baltard's studies of Roman fine arts and architecture added "reality" to Jean Ingres' painting of *Antiochus and Stratonice*. Simultaneously, its strict regimentation eased this incorporative process and reinforced the supplementary nature of archaeological data for history, for a functional segregation of objects constructs associations only within the function. A historical synthesis creates links with people.

Bass' 1967 publication of his results from Cape Gelidonya in the *Transactions of the American Philosophical Society* followed this model. After the first three chapters address the discovery of the site and the methods of excavation and conservation, the following ten chapters have a familiar regimentation: The Ship and its Lading, Ingots, Bronzes, Pottery, Stone Objects, Miscellaneous Finds, Weights, Scarabs, the Cylinder Seal, and Basketry and Matting. It is the final, synthesizing chapter that completes this interpretive process as the archaeological data – imbued with an identity and a context – becomes a body of evidence from which meaning and a human component emerges.

The combination of a normative, culture history approach with the application of standard archaeological field methods on a site under water situated the

excavation at Cape Gelidonya within a conventional archaeological sphere. Completing this alchemy in some venues, however, was also the rubric of classical scholarship that was inevitable for most archaeological pursuits in the Mediterranean. Classically trained archaeologists were a necessity at Antikythera, Mahdia, the underwater investigations in the 1950s and, as evident, ancient seafaring in the Mediterranean had been a favoured topic of classical scholars for almost a century. Many in Bass' cohort, as well as Bass himself, inhabited this infrastructure of classics and related scholarship. Frost applied this new archaeological amalgamation as she honed her skills with Frédéric Dumas at the Roman-era wreck at Antheor off the coast of France, before investigating and publishing 11 sites between Byblos and Alexandria.[55] Gerhard Kapitän was steeped in the classical archaeological tradition in the Winckelmann-Institut at Humboldt University in Berlin from 1950 to 1953, prior to moving to Sicily and exploring its coasts in 1958.[56] For Philippe Diolé, the ideal archaeological situation was a diver "fully furnished" with passages from Strabo, Pseudo-Scylax, or Stephanus of Byzantium.[57]

Bass' training and the acceptance of his results in mainstream academic publications lent this combination of diving, archaeology, and classical scholarship a formal imprimatur that had been somewhat absent, at least in the United States. This meant that work by Bass and his cohort did not rely upon the creation of a discipline but on the expansion of classical archaeology instead. In turn, publications over these years focused on refining technology and methods, not interpretation.[58] This also meant the institutionalization of the practice within a respected and extensive educational structure, so Frederick van Doorninck Jr. and Bass' student, Michael Katzev, could each acquire similar philosophical perspectives and knowledge during their doctoral training in the Department of Classical Archaeology at the University of Pennsylvania.[59] This incorporation of underwater investigations in the Mediterranean within the classical realm was so seamless and encompassing that, by 1983, Watson presumed it had always been by design.[60]

Moreover, for a discipline traditionally investigating the historically particular and unique, what was more particular or unique for classical archaeologists than a shipwreck on the floor of the sea?[61] Here was a site more chronologically specific than any terrestrial site and, while related to Greek or Roman-era life on land, was unlike anything ever found in that context. It is not surprising that these sites underwater were, and still are, valued as "time capsules" – a valorization of both their collection of material culture and their uniqueness.[62] As individuals such as Katzev, Diolé, and Frost began to work underwater, they naturally brought their education and training with them and sought a ship's origin as Furtwängler or Beazley sought an individual artist.[63] As other curious divers began to investigate sites underwater, they too brought the culture-history methodology at the heart of the Great Tradition with them. After all, most of the sites in the Mediterranean Sea were from the same eras as the classical sites on land, they contained the same material culture, and it was the predominant and common means of interpreting the finds.

There were advantages to the application of this interpretive approach in the formative years of the discipline, due primarily to the uneven and rather haphazard

nature of the collection of material available to study. After the creation and wide-spread use of the aqualung following World War II, sites were being discovered by the dozens each year in the Mediterranean, what Cousteau described as a haphazard "census," but there was little or no supervision over this process nor protection to secure the sites for scholarly study.[64] Approximately 20 sites were known along just the coast of Provence, France, by 1958, but in 1965 and the publication of Taylor's *Marine Archaeology*, only eight sites across the entire Mediterranean region were included in her collection.[65]

The scientific value of this emerging dataset was nevertheless clear. With no more than 20 sites available to study in the Mediterranean, Casson and Frost distinguished two methods of ship assembly in 1963 and wrote of a technological shift from the ancient "shell-first" method of assembly to the early-medieval "frame-first" method.[66] Two years later, Dumas and Taylor called for the creation of national or pan-Mediterranean catalogues that could act as a corpus of comparative material and be the source of shipwreck distribution maps and trade routes.[67] By 1971, in Casson's *Ships and Seamanship in the Ancient World*, 23 sites had sufficiently preserved and studied hull remains to refine this "shell-first" and "frame-first" dichotomy, and additional data over the next 10 years allowed scholars to characterize a "transitional" type between these classifications.[68] In 1972, Bass' *A History of Seafaring based on Underwater Archaeology* discussed 25 sites in the chapter on Roman seafaring alone.[69] By 1979, Parker and Painter had amassed a list of approximately 660 shipwrecks in the Mediterranean region and estimated that 80 new sites were being added each year.[70] With this mass of data, Parker was able to sift through his entries to demonstrate in 1980 that there were at least 50 well-preserved wrecks in less than 12 m of water, a conclusion that contradicted the conventional wisdom at the time.[71] Parker's list had 821 sites in 1984 and, in 1992, he published a catalogue that contained approximately 1100 sites in the Mediterranean Sea.[72]

Investigation of this dataset highlighted the profusion of Roman-era wrecks, the dearth of Iron Age wrecks, the absence of clothing, and the ubiquity of amphora cargoes preserved across the Mediterranean seafloor. Criteria intrinsic to the assemblages or criteria that are easily quantifiable – such as location, date, or preservation – were revealing trends, yet it was the use of the culture-history approach that framed and contextualized these results. "Roman" ships were larger than their "Greek" predecessors, due to the *pax romana* across *mare nostrum*, whereas "Byzantine" craft were smaller and more poorly built, reflecting harder economic times and piracy at sea.[73]

The adaptation and adoption of this culture-history perspective were both inevitable and serendipitous. Without it, Frost's site near Marsala, Sicily, would not have been Punic, there would have been no discussion of Arab, Minoan, Mycenaean, Phoenician, or Achaean ships in Casson's *The Ancient Mariners* or Wachsmann's *Seagoing Ships and Seamanship in the Bronze Age Levant*, and Hagy could not have written about Etruscan seafaring.[74] Similarly, without a label that draws the site into a group and a pre-existing narrative, the anonymous site has virtually no purpose.[75] Instead, the label gives the site meaning by populating

history with details and validating our perceptions. To Keith De Vries, the 6th-century BC wreck from Cap d'Antibes, France, appears to confirm an extensive Etruscan trade network.[76] For John Coleman, the wreck at Cape Gelidonya affirms Martin Bernal's interconnections between the Aegean and the Eastern Mediterranean, whereas three 10th-century AD "Arab" vessels may have revealed an important new element of Western-Mediterranean trade to Michael McCormick.[77] Alternatively, the absence of "Phoenician" vessels in the archaeological record is not an obstacle to recreating their means of navigation.[78]

The use of these discrete labels and the associated normative perspective of culture thus had many benefits for the emerging practice of maritime archaeology. These labels eased the process of understanding the meaning of the vessels under investigation and similarly supplemented models of past seafaring activity with new sets of data. Moreover, not only could the data under investigation fit into a pre-existing context, but the emerging discipline could as well. It was already forging a new path in understanding the past, but by incorporating this traditional interpretive approach, it was not straying too far from common conventions.

Due to the incorporation of this perspective bringing essentialist identities into maritime archaeology during its formative years, and particularly its role in the seminal publication of the wreck at Cape Gelidonya, this approach has become more than one way of interpreting the affiliations of sites under water. Instead, as evident from the 2013 study and its update, it has become the dominant method of interpretation and its characteristics have permeated the discipline, spreading beyond the chronological and spatial boundaries in which it began. It appears in reports on a 9th-century site off Indonesia, a 13th-century wreck in China, a 15th-century wreck off France, and a 16th-century site off the United Kingdom.[79] Wreck sites labelled as English or Chinese are such because of this approach, as are sites identified as *Mary Rose*, *Queen Anne's Revenge*, or *Evstafii*. Without these labels, these sites could have no meaning and we, in turn, might have only a limited understanding of the past. Why, then, might the application of these labels and their associated methodology be problematic? Why is this study proposing an alternative approach?

Deconstructing maritime archaeology in the Mediterranean

It could be argued that an alternative approach is needed because presently, we only seem to have one interpretive perspective that is driving the discipline. This is a methodological and theoretical homogeneity that belies our geographic and chronological scope and is possibly unique within archaeology as a whole. An alternative interpretive approach could be an experiment testing the discipline's potential, or a catalyst prompting introspection and new ideas. A more pragmatic reason for an alternative, however, is embedded in the philosophy guiding these labels' use. As mentioned at the beginning of this chapter, a label like "Roman" represents a framework upon which a constellation of textual, pictorial, and archaeological data may be amalgamated. Thus, the archaeological remains of a "Roman" ship reveal structural characteristics and the vessel's contents, textual

data suggest how "Roman" ships were used and where, while images of "Roman" ships add details such as decks, masts, or sails. Variations of this process have been used by Casson, DeVries, McCormick, Sauvage, Tartaron, Throckmorton, Wachsmann, Ward and Ballard, and others.[80] As some scholars have already acknowledged, however, there are difficulties in creating and assigning a label to a wreck assemblage.[81] Rodgers, Richards, Lusardi, and others have similarly focused on personal motivations for identifying a shipwreck with one classification instead of another, and some studies have questioned the identification of the ship, the individuals on board ships, or the categorization and classification of the vessels.[82] Contentions have also arisen regarding the style of ship represented by an assemblage on the seafloor, and if the site is a ship at all.[83]

What each of these critiques alludes to is the first reason that the application and use of these labels can be problematic. Determining the affiliation of a site tethers the archaeological data to a particular historical narrative, but commonly the process of determining the affiliation is inherently intuitive and cannot be tested.[84] As a result, we may not have the ship we perceive, and the site may or may not be appending the appropriate history. There are clear exceptions, such as the studies of *H.L. Hunley*, *Monitor*, and S.S. *Dago*, but two examples highlight how the absence of an explicit methodology to create and assign an identity can generate problems.[85]

Site 31CR314, in Beaufort Inlet, North Carolina, said to be *Queen Anne's Revenge*, exemplifies some of these issues. In 1986, Phil Masters formed Intersal Inc. to finance the excavation of treasure and historic ships. In particular, Masters was interested in *El Salvador*, a Spanish vessel that had sunk in Beaufort Inlet in 1750. While in contact with the Underwater Archaeology Unit (UAU) of the North Carolina Department of Cultural Resources (DCR), Masters was shown a report written by David Moore about the potential presence of the ships *Queen Anne's Revenge* and *Adventure* in Beaufort Inlet as well. These were ships once captained by Edward Teach, also known as Blackbeard the pirate, and had sunk off the coast in 1718.[86]

Intersal's progress in finding these ships was limited for years until November 1996, when divers found a collection of anchors and cannons, a bronze bell, and other items dating from the early 18th century. Clearly, an early 18th-century craft had been found, and it was presumed to be Blackbeard's *Queen Anne's Revenge*.[87] This site was designated 0003BUI by the UAU.[88] Over the following years, from 1997 to 2004, Intersal continued their search in the area for *El Salvador* and *Adventure*; the former may have been located whereas the latter does appear to have been found.[89]

In 1997, the assemblage became a protected site, renamed 31CR314, and was deemed eligible for listing among the National Register of Historic Places. By 1998, a section of wooden hull was found to the north of the main concentration of artefacts, whereas lead shot, pewter plates and chargers, approximately 100 grains of loose gold, and other items were excavated to the south of the main collection.[90] Additional minor excavations, testing, and monitoring occurred over the following years until 2006 when the completion of the necessary conservation

facilities enabled the complete recovery of the remaining material on site. By the end of 2007, approximately 237,000 individual artefacts had been recovered from the seafloor.[91]

Throughout this work, in papers and documentaries, and by the Governor of North Carolina, the site was portrayed as *Queen Anne's Revenge*, although most authors qualified this conclusion. Moore, in 1997, referred to what "many consider the remains of Blackbeard's celebrated flagship," whereas Cantelas and Lusardi wrote of the site's "tentative" identification.[92] Lusardi and Wilde-Ramsing, the project director, also state in their 1999 management plan for the site that while no artefact has been located to tie the site to the historic vessel, the site will be referred to as *Queen Anne's Revenge* within the document.[93]

In 2005, however, Rodgers, Richards, and Lusardi published an article in IJNA critically questioning the identity of the site as *Queen Anne's Revenge*. Their argument was based upon incongruities between the description of the ship's wrecking and the site on the seafloor, as well as:

> the incontrovertible fact remains that no single piece of evidence, or trend of circumstantial evidence, indicates that this wrecked vessel is actually the *Queen Anne's Revenge*.[94]

As they also argue, *Adventure* had sunk within sight of the flagship, yet *Adventure* had not been found despite years of searching. These authors maintained that the investigators had fallen afoul of Ruling Theory, the process of achieving the conclusion sought by overemphasizing the importance of supporting evidence. As Masters had begun searching for *Queen Anne's Revenge* in 1989, this implicit bias apparently skewed the resulting interpretations of the data collected. They argued that the presumption that *Queen Anne's Revenge* had been found was not properly weighed against other, equally possible hypotheses.[95]

Moore and other investigators rebutted these arguments in the following issue of IJNA, correcting factual errors and charging Rodgers and his co-authors with the very bias they proposed. Just as the investigators found *Queen Anne's Revenge* in their data because they hoped to, Rodgers and his co-authors found something else in the same data for the same reason.[96] At present, Wilde-Ramsing and Charles Ewen propose that a combination of archaeological and historical factors may not "prove" what the site is but have ruled out other possibilities and accept the identification of the site as *Queen Anne's Revenge*.[97]

What distinguishes the excavation of site 31CR314 from those conducted for *Monitor*, *H.L. Hunley*, and S.S. *Dago*, is the apparent absence of an explicit methodology to determine the site's identity. For *Monitor* and the others, the investigators established sets of discrete criteria that would be tested against the remains on the seafloor and determined how these results would or would not warrant the application of a particular name.[98] As a similar interpretive process does not appear to have been used for the investigation of site 31CR314, it means that the decision to portray the site as *Queen Anne's Revenge* is an intuitive one; it feels correct, but the veracity of that label remains elusive. As a result, the parallel

charges of Ruling Theory are valid – lacking an explicit and common set of criteria against which the identity may be judged, both groups can equally claim what the site is and is not.

The research on the 11th-century AD vessel lost at Serçe Limanı, Turkey, contains similar phenomena. Based upon data from the first excavation season in 1977, the site was tentatively identified as a Muslim ship carrying Byzantine material.[99] As one of the investigators, Bass likely drew this initial conclusion by distinguishing between the cargo and personal items on site, like Cape Gelidonya, and determining the apparent affiliations of the objects owned by the crew. An additional two field seasons and further analyses and cleaning, however, parsed this initial identification into finer gradations. By 1989, examples of Greek graffiti and Christian symbols emerged on cooking wares and fishing weights, implying the presence of Christian crewmen, whereas the Islamic glazed bowls were likely cargo; one of the anchors may have been stamped with an Arabic inscription.[100] The final volumes on the site additionally reveal that the lead sinkers were decorated with imagery common to Christians, Jews, and Muslims, many of the metal vessels likely came from the Islamic Near East, the glass and ceramics were Islamic as well, and the anchors had links to Bulgaria.[101]

Like site 31CR314, the multiplicity of what the vessel lost at Serçe Limanı could be is emblematic of applying an intuitive process to generate an identity. It is equally emblematic of a culture-history interpretive approach, however, because of the imperative to generate an affiliation; without this association, the site has no meaning or archaeological value within this interpretive perspective. Like other ships older than the 15th century, however, the vessel lost at Serçe Limanı embodies an additional difficulty. As a textual record exists for *Queen Anne's Revenge*, it is possible to build an explicit methodology extrinsic to the assemblage to compare the textual "ship" to the archaeological "ship," much like the investigation of *Monitor*. The excavation could then proceed within the limits established by this comparison, driven by this research agenda. For wreck sites older than the 14th or 15th century, when textual or documentary data on seafaring increases in rarity and ambiguity, a similar analogy between textual and archaeological data cannot be established and tested. The perception of a "Phoenician," "Greek," "Muslim," or "Byzantine" ship appears to be generated by the investigators' expertise, leading to an intuitive comparative procedure.[102]

Problems associated with the process of generating and applying these labels are compounded by a second – that our portrayal of Mediterranean seafaring with "Phoenician" or "Sicilian" ships in antiquity is a modern construct. As demonstrated by authors such as Carol Kramer, David Lowenthal, Siân Jones, Nadia Abu El-Haj, Tuğba Tanyeri, and others, there is no methodology that systematizes how data from the past may be objectively compiled and amalgamated to generate "Phoenician," "Hellenic," or "Rhodian" characteristics and identities. Instead, as post-processual and postmodern scholarship has demonstrated, when we attempt to understand the past, our contemporary biases intrude because we do not simply apply labels, we create them. Like facts in a laboratory, these affiliated identities are complex social constructs with an attributed, but not inherent, reliability.[103]

There was no empirical, objective data intrinsic to the statuary examined by Johann Winckelmann in the 18th century that classified them as Greek, for example. Instead, Winckelmann equated "Greek" with beauty because he already believed that ancient Greece was the apex of the ancient world. In the early 20th century, Albright was part of the archaeological establishment in Palestine, and eventually the head of the American School in Jerusalem, determined to find the Biblical foundations of the region.[104] Thus, when he uncovered numerous examples of a new style of pottery appearing in early Iron Age Palestine, he equated the new material with the new population of Israelites which, according to the Book of Joshua, conquered Canaan.[105] Israelite pottery appeared in Biblical archaeology and has become the foundation of numerous interpretations since.[106] Kossinna's identification and description of the prehistoric Germani culture were not built upon a suite of explicit, objective criteria but inspired by his interest in prehistoric Germany and his intense German nationalism.[107]

To write of "Byzantine" merchantmen, then, is to write of vessels within a construct that never existed in antiquity. In particular, the notion of a "Byzantine Empire" arose centuries after the disappearance of the eastern portion of the surviving Roman empire.[108] When we see and describe ancient ships as "Punic," "Greek," "Roman," or any of the other affiliations evident in the corpus, we are framing the past in convenient modern constructs that may fit our analytical approaches, but also likely differ from past observations and categorizations.[109] We can be equally guilty of manipulating these ships within other modern dynamics.[110] Frost's Punic wreck, for example, may be only one of a few, so its perceived value to scholarship is much greater than a Roman wreck, of which there are dozens.[111] Equally, Beltrame has argued that the rarity of medieval galleys in the archaeological record leads to a "desire" and a "weakness" to identify them, purportedly without proper research.[112] Cargoes of grain, wine, and olive oil are "humble" in comparison to cargoes of finewares, and the loss of the 1st-century BC vessel found at Madrague de Giens, France, was a "major disaster" because its size, cargo, and construction are perceived as representing the vessel's importance within the Roman community.[113] Indeed, the notoriety of a famous historic vessel may be one reason for the relative prevalence of searching for such sites in the archaeological record; it is a charge made by critics to account for the persistent affiliation of Site 31CR314 as Blackbeard's *Queen Anne's Revenge*.[114] Less egregious but equally problematic were claims that the "importance" or "value" of a wreck in Australian waters varies between anonymous sites and those with a historically attested identity.[115]

In other ways, we are fashioning Mediterranean maritime activity around our modern structures of nations, states, and their appropriation of maritime spaces. Within the IJNA/AJA dataset, for example, the authors commonly describe where artefacts are *from*, positing a spatial origin for an item, but describe ships *of* a community, portraying the vessel as an encapsulation and expression of that community's characteristics.[116] The sea, as a result, becomes a *tabula rasa* populated by these political expressions and subsequently mapped with delineations equivalent to territorial waters today. Equally, the perspective has become so pervasive

that international conventions are built around the nature of these labels and upon the presumption that an affiliation will appear, and will be applicable to our current political environment.

The UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage, for example, presumes that links may be drawn between cultural heritage under water and State Parties that sign the convention:

> Any State Party may declare to the Director-General its interest in being consulted on how to ensure the effective protection of that underwater cultural heritage. Such declaration shall be based on a verifiable link to the underwater cultural heritage concerned, particular regard being paid to the preferential rights of States of cultural, historical, or archaeological origin.[117]

Further protection of the underwater cultural heritage is based upon the interests of the State Party that demonstrates its link to the site in question, or a combination of the needs and interests of multiple Parties that each demonstrate links to the same site. Integral to these procedures is the basis for a State's intervention – the perception that partial or complete ownership of a site may be built upon the claims of a nation that may not have existed while the ship was in use. Furthermore, the criterion that declarations of interest are based upon "verifiable" links assumes that such connections may be created by, or tested against, an already-existing methodology common to all the State Parties to the Convention. Neither the Convention's Rules nor the Guidelines define this verification process and, as evident from the deconstruction of the IJNA/AJA dataset, no standard methodology exists elsewhere.[118]

The 2001 Convention is not the first international convention that attempts to fit the underwater cultural heritage into the modern structures of nation states. The United Nations Convention on the Law of the Sea, from 1982, contains an earlier version of the phrasing evident throughout the 2001 Convention:

> All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin.[119]

The notion of a "State of origin" is not particular to material underwater. The UNESCO 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property contains the repeated use of similar language:

> The States Parties to this Convention recognize that the illicit import, export and transfer of ownership of cultural property is one of the main causes of the impoverishment of the cultural heritage of the *countries of origin* of such property and that international co-operation constitutes one of the most

efficient means of protecting each country's cultural property against all the dangers resulting therefrom.[120]

<div align="right">(Italics added)</div>

The States Parties to this Convention undertake:

(a) To take the necessary measures, consistent with national legislation, to prevent museums and similar institutions within their territories from acquiring cultural property originating in another State Party which has been illegally exported after entry into force of this Convention, in the States concerned. Whenever possible, to inform a *State of origin Party* to this Convention of an offer of such cultural property illegally removed from that State after the entry into force of this Convention in both States.[121]

   Nothing in this Convention shall prevent State Parties thereto from concluding special agreements among themselves or from continuing to implement agreements already concluded regarding the restitution of cultural property removed, whatever the reason, from its *territory of origin*, before the entry into force of this Convention for the States concerned.[122]

<div align="right">(Italics added)</div>

The function of these instruments is undeniable. They are attempts to systematize the protection of cultural heritage and to fit these systems into the international frameworks within which UNESCO operates. Indeed, it is understandable that an international organization built of nation states would promote nations' interests.[123] The very process of allying cultural heritage of the past with modern nation states, however, has unintended effects. It validates the culture-history methodology upon which it is based without ever questioning the applicability of the labels or the methodology itself, and reinforces the perception that modern nation states have inherent links to ancient material culture and the people and cultures that those items represent.

   By enabling such claims, they prompt expressions of nationalist tendencies in the maritime sphere. In maritime archaeology, these tendencies are potent in association with European warships from the 16th to the 19th centuries, when empires were built upon the strength of their navies. *Vasa*, *Victory,* and *Mary Rose* are acute examples of this, as they are manifestations of past power that once represented a nation, and still do so today on stamps and coins issued by Sweden and Great Britain and dispersed around the world. The predominance of British warships protected between 1973 and 1995 under the Protection of Wrecks Act (1973) in the United Kingdom is another reflection of this, as is the annual sailing, celebration, and idolization of USS *Constitution* in Boston Harbour, Massachusetts.[124] As these vessels were warships, their current role is tied to their past function of carrying elements of their state or empire to the borders of another. Their present incarnation as icons or gods, as Carl Olof Cederlund once implied, is a new facet of their representative role.[125]

   The nationalism and possession of the maritime cultural heritage may be projected much farther into the past. In 1965, a dive instructor named Andreas

Cariolou was diving off the northern coast of Cyprus, near the town of Kyrenia, and came across a pile of amphorae lying on the seabed approximately 1 km off the coast. In 1967, Cariolou brought Michael and Susan Katzev, and their survey team, to the site that was quickly identified as a wrecked ship from the 4th century BC; a two-year excavation began in 1968.

Throughout the excavation, however, the island of Cyprus was in the thralls of inter-communal conflicts between the Greek-Cypriot and Turkish-Cypriot communities on the island, prompted partially by nationalist tendencies. Portions of the Greek Cypriot community, striving for unity or *enosis* with mainland Greece, contended that the island was, and had always been, Greek. In 1974, in response to an attempted Greek military coup of the Cypriot government controlled by Archbishop Makarios, the Turkish military arrived on Cyprus with the purported mission of protecting the Turkish-Cypriot population. The Turkish military front advanced from the northern coastline southwards, eventually occupying the northern 38 percent of the island. The Turkish military is still in place, and the island remains divided. The southern portion of the island, with an internationally-recognized Greek-Cypriot government, is known as the Republic of Cyprus. The northern portion of the island is known as the Turkish Republic of Northern Cyprus but is recognized as a legal, sovereign state only by the Republic of Turkey.

As the excavation and study of the 4th-century BC vessel proceeded in the midst of these tensions, for some the ship became an icon of the desired link between Cyprus and mainland Greece. It contained material from islands allied with Athens during the 4th-century BC, and its construction with mortise-and-tenon joinery was already perceived as characteristic of ancient Greek shipwrights and possibly used by Odysseus himself.[126] Following the partition of the island in 1974, as the archaeological remains in the town of Kyrenia were encompassed within the Turkish-controlled territory, the ship became part of the Greek-Cypriot cultural heritage lost in the conflict.

One Greek-Cypriot government brochure writes of the ship as a hostage and a prisoner of war and portrays the first replica of the vessel behind a line of barbed wire.[127] Stamps issued by the Greek Cypriot government in 1987 describe the re-assembled hull as "imprisoned" in the Kyrenia castle.[128] An image of the ship is on the roundel mounted on the Greek Cypriot Kyrenia Municipality building adjacent to the disputed border between the communities, while a model of the ship and children's drawings of the vessel have been displayed inside the building's lobby. The first operational replica, sponsored by the Hellenic Institute for the Preservation of Nautical Tradition, was put on display as a museum object in 2005, in the Thalassa maritime museum in Agia Napa, Cyprus. The Republic of Cyprus has also used the recreations of the vessel to represent the island to the world. Images of the replica were on the 20-pound Greek-Cypriot notes, are still present on the Greek-Cypriot Stock Exchange building in Lefkosia and, most recently, on Euro coinage and Cypriot passports.

Our ability to create, apply, and use these broad essentialized affiliations in an objective manner is always tainted. As we transpose the past into the present, we

simultaneously entangle the present with the past, compounding the fickleness of these labels and reapplying them in ways that they may never have been used. Is it still a viable practice, then, to attribute essentialized or normative labels that embody fixed cultural or geo-ethnic perceptions to the wrecks we investigate on the seafloor? Our use of these labels is meant to ease the incorporation of archaeological data into a historical narrative of the past, improving both the depth and the resolution of that model, yet our use of these labels may, instead, be reinforcing a counterfeit history. Constructs and identities applied to ancient and early-medieval craft in the Mediterranean, such as "Phoenician," "Punic," or "Muslim," were useful as maritime archaeology was creating itself and sought an interpretive paradigm to work within. It is clear now, however, that their representative power can be challenged. Also, by applying these normative cultural labels to the assemblages we excavate from the sea floor, we are using a methodology that is likely inappropriate as we posit geopolitical structures in an unlikely context. Lastly and perhaps most importantly, we also lack the consistent ability to determine reliably the label or identity of the assemblage under investigation. What happens, then, if we strip these labels from the corpus of wrecks and perceive them as unheralded, "low commerce" craft that the Lydians took to Samos, or carried Cicero to Circaeum?[129] What happens if we counter this disciplinary trend and start again with a different interpretive context?

Notes

1 Staudenmaier 1985, xvii–xix.
2 Staudenmaier 1985, 9.
3 Staudenmaier 1985, 11.
4 Staudenmaier 1985, 208 table 14.
5 Johnson 2010, 16.
6 Harpster 2013.
7 Some critiques of this study may still be proposed, such as the reliance on English-language articles. Nevertheless, this corpus includes over 195 authors from approximately 30 countries, representing a significant sample crossing cultural boundaries. Outside the IJNA/AJA dataset, for example, there are scholars publishing in French that also display this preference. See Carra (1974) and his "Sarassin" ship at Batagu-ier, and Long et al. (2002, 34–5) who describe their effort to determine if the wreck Grand Ribaud F is "Etruscan," "Ionian," or "Massalian."
8 Casson 1971; Watts 1975; Polzer 2010, 2011.
9 Bass 1967.
10 Trigger 2007.
11 Daniel 1975; Trigger 2007. See also Veit (1994) for Kossinna's refinement and use of archaeological cultures.
12 Childe 1925. See also Boardman (1988, 40, 46) who equates the presence of fineware from Greece in Al Mina, Egypt, with the presence of the Greeks themselves carrying the goods overseas.
13 Childe 1930.
14 Childe 1930.
15 Dyson 1993, 195; Johnson 2010, 154; Storey 1999, 206; Trigger 2007, 40, 196.
16 Taylor 1965a List of Contributors; Bass 1975; Hirschfeld 2007; Croome 2011; www.brown.edu/Research/Breaking_Ground/introduction.php.

17 Hodder 1982.
18 See Caskey (1956, 173) "In time the Middle Helladic stock quite evidently super-seded the earlier people here," (1957, 161) "Pottery and other objects recovered throughout the site . . . gave an increasingly valuable index of the cultural sequence," (1957, 161) "These obvious indications of change . . . lead us to believe that a new group of people took possession of the site at the time of the great catastrophe or immediately afterwards," Caskey and Caskey (1960, 160) "The whole series [of stea-topygous figurines] belongs, we suppose, to one general period of cultural develop-ment," (1960, 160) "Group I thus offers evidence that Eutresis was inhabited in the Neolithic period, before the arrival of any elements bearing a stamp of the Bronze Age," and (1960, 162) "The users of these heavy vessels were perhaps a new group of settlers, coming, one must suppose, rather from the north than from the south."
19 Young (1968, 6). Equally significant was Young's reliance in the textual narrative to structure the Iron Age chronology of Gordion; see Rose and Darbyshire (2012).
20 Pendlebury (1939, 267) "Thus it is clear that any invasion must have been by people of an identical stock, a conclusion in which the steady progress in arts and crafts would incline us to believe."
21 Albright 1949, 86, 95, 109.
22 Albright 1949; El-Haj 2001.
23 Bass 1975.
24 Bass 1966.
25 www.brown.edu/Research/Breaking_Ground/introduction.php.
26 Bass 1964, 1967.
27 Bass 1967.
28 See Bass (1964, 275) "a cargo does not indicate the nationality of the ship which car-ries it; the cargo at Gelidonya, for example, was certainly Cypriot, but there is nothing to suggest that the ship was also Cypriot."
29 Bass 1967.
30 Bass 1967.
31 Cadogan 1969; Linder 1969; McCann 1970; Stieglitz 1970.
32 Stieglitz 1970.
33 McCann 1970.
34 Lehmann 1991; McManamon 2016.
35 Jal 1840a; Morrison 1941; Basch 1972.
36 Witsen 1671.
37 Böckh 1840.
38 Basch 1987.
39 Jal 1848; Carr Laughton 1912.
40 See Smith's biting critique of Witsen's work as well (1848, 235).
41 See Jal (1840, 297; 1848, 91–2, 105, 129–30, 160, 187, 221, 234, 256–9). Eighteenth-century attempts to rectify maps of the Mediterranean similarly prioritized scientific observation over vernacular experience; see Armstrong (2005, 250).
42 Frothingham 1886, 1891; Frothingham and Marquand 1896a; Anonymous 1898, 1900; Fowler 1901a, 1905b, 1906; Paton 1904, 1907; Bates 1908.
43 Frothingham 1888a, 1888b, 1894; Fowler 1900.
44 Frothingham and Marquand 1896b; Frothingham 1896; Bass 1972; Basch 1987.
45 Torr 1894; Casson 1971.
46 Carr Laughton 1911, 1912; Moore 1955.
47 Basch 1987. See also Autenrieth (1873), Merry and Riddell (1886), and Torr (1894) for early discussions of mortise-and-tenon construction.
48 Marquand 1895; Fowler 1901b, 1905a.
49 Frothingham and Marquand 1896b; Throckmorton 1970; Diolé 1954.
50 Gibbins 1990.

51 Casson 1959.
52 Dyson 1993.
53 Lang and Crosby 1964.
54 Fowler and Stillwell 1932; Goldman 1950.
55 Croome 2011.
56 Frost 1963, slipcover notes; Throckmorton and Kapitän 1968, 187; pers. comm. Prof. Dr. Stephan Schmid, January 6, 2014; DEGUWA 2012, 423.
57 Diolé 1954.
58 Diolé 1954; Bass 1966; UNESCO 1972. See also Daniel (1975, 363–6) who portrays archaeology under water as the application of new technology to archaeological investigation, equivalent to geophysical methods of dating and aerial reconnaissance.
59 Bruckner 1961; Bass 1975; Bass and Katzev 1968. See also Throckmorton (1970, 31), trained as a journalist but a Research Associate in the Mediterranean Section of the University of Pennsylvania Museum by Spring, 1962, who wrote that archaeology was "the raw material of history."
60 See Watson (1983, 25), who comments on Bass "reclaiming" shipwreck archaeology for classical archaeology, from sport divers and treasure hunters.
61 Snodgrass 1985.
62 Bass 1966, 17; Muckelroy 1978, 52, 56; Dean et al. 1992, 31–2; Green 2004, 4; Bass 2005, 10. See also Firth (2002, 24 and 33) for additional discussion on this particularism and the "time capsule" interpretation.
63 Snodgrass 2012.
64 Cousteau 1965.
65 Benoit 1965.
66 Basch 1972; Casson 1963; Frost 1963. See also Hasslöf (1963, 163–4) who made similar distinctions in northern Europe.
67 Taylor 1965b.
68 Casson 1971; Throckmorton and Kapitän 1968; van Doorninck Jr. 1972, 1976; Bass and van Doorninck Jr. 1982.
69 Throckmorton 1972.
70 Parker and Painter 1979.
71 Parker 1980a; Dumas 1965.
72 Parker 1984, 1992.
73 McGeer 1991.
74 Frost 1972; Hagy 1986.
75 See Shanks (1996, 89–90): "This metanarrative of diffusionist ideas involves a research strategy of searching for origins and tracing similarities. Without an origin any cultural element is meaningless: the culture to which that trait belongs provides its explanation."
76 De Vries 1972.
77 Coleman 1996; McCormick 2005. See also Kingsley (2009, 324) and the size of "Byzantine," "Abbasid," "Saracen," and "Fatimid" merchant craft.
78 Aubet 1987.
79 Green 1983; L'Hour and Veyrat 1989; Flecker 2000; Thomsen 2000.
80 Casson 1971, 183–213; De Vries 1972, 38–49; Throckmorton 1972, 66–78; Wachsmann 1998; McCormick 2005; Ward and Ballard 2004; Sauvage 2012, 213–263; Tartaron 2013, 48–89.
81 Basch 1972, 50–2; Fiel 1983; Wachsmann 1998, 4, 211–2; Greene et al. 2010, 437; 2011a, 312; Maarleveld 2012. Consider also studies that demonstrate the reuse or recycling of items in Antiquity (Peña 2007; Abdelhamid 2013; Brughmans and Pecci 2013). If the perceived cargo of a ship is commonly used to determine identity, reused or recycled items invariably complicate this interpretive process.

82 Hocker 1991, 22–3; Maarleveld 1995; Rodgers et al. 2005, 25; Bachhuber 2006; Beltrame 2007, 421; Bass 2011, 10; Eriksson and Rönnby 2012, 360; van Doorninck Jr. 2012; Openshaw and Openshaw 2013.
83 Kenchington and Rice 1983, 83–4; Beltrame 2007; Royal 2008b.
84 See Harpster (2013, 601, 608, 613–4) for critiques of this intuitive component of the identification process.
85 Watts 1975; Conlin and Russell 2006; Russo 2014.
86 Butler 2001, 40–1.
87 Wilde-Ramsing and Lusardi 1999; Butler 2001, 42; Lawrence and Wilde-Ramsing 2001, 3–4; Wilde-Ramsing 2009, 5–6.
88 Lawrence and Wilde-Ramsing 2001, 4.
89 Wilde-Ramsing 2009, 6–11.
90 Wilde-Ramsing and Lusardi 1999; Craig et al. 2001, 45–7.
91 Wilde-Ramsing 2009, 22.
92 Moore 1997, 31; Cantelas 1997; Lusardi 1999, 1. See also Butler (2001, 44) and Lawrence and Wilde-Ramsing (2001, 4).
93 Wilde-Ramsing and Lusardi 1999.
94 Rodgers et al. 2005, 25.
95 Rodgers et al. 2005, 25.
96 Moore 2005; Miller et al. 2005.
97 Wilde-Ramsing and Ewen 2012.
98 Watts 1975; Conlin and Russell 2006; Russo 2014.
99 Bass and van Doorninck Jr. 1978, 131.
100 Bass 1989, 152–3.
101 Van Doorninck Jr. 2004, 224; Bass and van Doorninck Jr. 2004, 265–71; Allan 2004, 345–56; Piercy and Bass 2004, 399–411; van Doorninck Jr. 2009, 4.
102 See Harpster (2013) for more discussion of this issue in general.
103 Latour and Woolgar 1979; Knorr-Cetina 1981.
104 El-Haj 2001, 22–44; Davis 2004, 66.
105 Albright 1949, 117–9; El-Haj 2001, 22–44, 99, 116–8.
106 El-Haj 2001, 99–104, 141.
107 Trigger 2007, 236.
108 Treadgold 2001, 1.
109 Stockhammer 2012a, 16. By using these labels and others, we are simultaneously framing the archaeological record within historical constructs extrinsic to the archaeological record, reinforcing a hierarchy of authority among sources of data. See Storey (1999, 216) who critiques Cornell on this point. Equally, this may be a weakness in past arguments by Watson (1983) and Gould (1983) who stressed the use of generalist and Anthropological perspectives while labelling ships with particularist "Spanish" and "European" labels, instead of decoupling ethno-historical identities from the material record.
110 See Fabian (2002, 121) who writes: "We do not 'find' the savagery of the savage, or the primitivity of the primitive, we posit them."
111 Abdelhamid 2011.
112 Beltrame 2007, 421.
113 Casson 1994, 29; see also Parker (1980b, 55).
114 See Rodgers et al. (2005, 24, 35) and Wilde-Ramsing and Ewen (2012, 110) who recognize this bias.
115 Kenchington and Rice 1983, 83–4.
116 See Bueno and Salis (1975), Liou (1975), Joncheray (1976), Gianfrotta (1977), Sleeswyk (1980), Gibbins (1991), and Pulak (1989) for Mediterranean examples.
117 UNESCO 2001, Article 11.4. This phrasing is repeated throughout the document: Articles 6.2, 7.3, 9.5, 12.6, 18.3, and 18.4.

118 Maarleveld et al. 2013. See also Strati (1995, 330–1) for a related critique of the UN Convention on the Law of the Sea, 1982.
119 UNESCO 1982, Article 149. See also the commentary by Firth (2002, 94).
120 UNESCO 1970, Article 2.
121 UNESCO 1970, Article 7 (a).
122 UNESCO 1970, Article 15.
123 The Council of Europe, which operates in a similarly international sphere but one of a globalized community, concluded that such associations were very often difficult, if not impossible, to determine and developed different recommendations on protecting underwater cultural heritage. See Roper (1978, 67–8).
124 Firth 2002, 46–8.
125 Cederlund 1995, 12–3.
126 Casson 1963; 1964.
127 Republic of Cyprus Press and Information Office 2008. For images, see Harpster (2015, 161). In contrast to this, "Greece" and "Greek" are notably absent in tourist brochures about the exhibit printed in northern Cyprus, suggesting an attempt at disenfranchisement, although there is no subsequent attempt to refashion the ship as "Turkish" or "Cypriot" by the northern community.
128 For images, see Harpster (2015, 160).
129 Diodorus Siculus *Library* 10.16; Plutarch *Lives* 1919*, Cicero* 47; Horden and Purcell 2000, 150.

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2 Theoretical and methodological foundations

Whereas Chapter 1 finished with questions, this chapter begins providing answers by discussing the theoretical and methodological background of this study's alternative. As discussed, a label like "Roman" acts as a framework that can transcend lacunae between different types of media. If a submerged assemblage becomes "Roman," therefore, it benefits from a pre-existing association with textual and pictorial information about "Roman" ships. Although this methodology can create narratives of "Roman" seafaring and models of Roman society's relationship with the sea, one critique is that the label is a characteristic extrinsic to the archaeological data. Therefore, such geo-ethnic or cultural labels are applied to the archaeological material according to our modern perceptions of the past and according to our own biases, interests, and agendas.

A second critique concerns the authority and utility of these textual narratives. Just as our knowledge of the people in the ancient countryside is second hand and written by those of the literate class for their peers, the same may be said of the lives of sailors in vessels passing by.[1] Life on board a merchant vessel is an amalgam of scenes from Suetonius, Lucian, Demosthenes, and others, not diaries from those pulling the lines.[2] Most of what we know of maritime traders in 4th-century BC Greece emerges from speeches delivered in Athens. Of the 5th- and 4th-century BC literary references to merchants listed in Charles Reed's catalogue, over 50 percent are anonymous. There appear to be no references to a Rhodian *emporos* or *naukleros* throughout the classical era, despite the widespread distribution of the island's amphorae and the popular wine inside.[3] Republican and Imperial-era inscriptions provide only schematic data. We see trading diasporas, but we know little of the individuals – a hometown or province, and perhaps their mercantile specialty.[4] We know more about the shipowner and shipbuilder Marcion because of his writings, but his skills were applied to a revision of the New Testament instead of his voyages. The gravestones of *naukleroi* are equally reticent, providing a hometown and a place of burial. They are also few in number and difficult to date.[5] The early-Imperial era tomb of Flavius Zeuxis proudly stated he sailed by Cape Malea 72 times, but this colourful detail only re-emphasizes the amount of other information we lack.[6] Early-medieval sailors are similarly faceless for none is named among all 828 citations examined by Michael McCormick.[7]

Rather than deciphering Pascal Arnaud's "echoes" of ancient Mediterranean mariners through delicate textual analyses, the maritime archaeological record offers an opportunity to model their lives.[8] As a result, this study is more akin to the archaeology of the underclass, like studies of slave communities in colonial-era South Africa, Chinese immigrants in the United States, or the pioneers and railroad workers that were central to early-American mythology but muted in prevailing narratives.[9] Indeed, by stripping away labels from media beyond the archaeological corpus, this study embraces a variety of perspectives and theoretical frameworks that shape a narrative of this muted maritime community. One necessary element recognizes that all interpretations of activity must emerge from a contextual chain created by the material data alone. A second element is the idea of a *maritime culture* – the group of people represented by the corpus of data on the seafloor – and the third is how this community valorizes the environment around them. Simply, how they generate an inhabited place from unconstructed maritime space. The fourth element builds on this progression. Proceeding from the people, and through the places they create in the surrounding environment, the final perspective is a reminder that a maritime environment impacts people as well. Sailing over the sea is an existential act – defying oblivion and, simultaneously, re-shaping individual identity.

Building archaeological narratives at sea

The singular reliance on the archaeological corpus to generate models and narratives in this study, even when varying amounts of documentary information are available, is not new within archaeology in the Mediterranean.[10] For example, the large-scale surface surveys in Greece that have refashioned perceptions of the ancient rural environment arose in the 1960s and 1970s, broadly overturning textual portrayals of a relatively empty and unused landscape.[11] Similar surveys and results have enriched Imperial-era Roman Italy, and Late Antique and early-Medieval era North Africa.[12] In relation to the activity and movement of people and things, Michael Fulford argued that textual data generates only intermittent and qualitative generalizations. Systematic studies of large collections of ceramics, he continued, can produce more nuanced and seamless models.[13] Partially prompted by the investigations in ancient Carthage, Fulford applied this idea to ceramics from the excavation to document relative changes in trade between AD 400 and 700, and demonstrated that coarse wares did not travel as far at sea as fine wares before their arrival in Carthage.[14] Next, he argued that the city had a much greater diversity of imported materials – and thus more maritime activities east and west – during the Vandalic occupation. The re-conquest of the city by the Byzantine general Belisarius in AD 534, in contrast, may have decreased the scale and scope of this activity.[15]

Other syntheses of ceramic corpora from sites on land have also followed Fulford's model to create narratives of activity. In his *Late Roman Amphorae in the Western Mediterranean*, Simon Keay argued that it was the needs of the late-Roman Empire that stimulated movement and activity within the western basin.

With the decline of that power in AD 475, more activity between the Eastern and Western Mediterranean arose.[16] Similar studies have focused on the changing scale of maritime trade at Carthage from the 8th to the 2nd century BC, the northern Sinai coastline between the Hellenistic and Byzantine eras, and the distribution of Late Roman/Byzantine era amphorae from Palestine.[17] Amphorae from the Western Mediterranean in the Aegean have been used to decipher patterns of circulation between the 6th and 1st centuries BC, whereas Roman-era cookware from North Africa has generated models as well.[18] Other types of material data are also applicable to Fulford's approach, as demonstrated by his own study of the commercial connections of Sabratha and Berenice, in Libya. In addition to amphorae and fine ware, Fulford also examined the quantities and sources of coinage and decorative stone within each corpus. His results propose that Sabratha, farther to the west, had greater connections and trade with the Western Mediterranean, whereas Berenice was more aligned eastwards.[19]

Similar efforts have been applied to the maritime archaeological corpus, commonly in coordination with the growth of theoretical and empirical models of maritime movement. In particular, most new perspectives of Mediterranean maritime activity were likely prompted by the investigation of the 1st-century BC wreck site at Madrague de Giens, France. Excavated primarily in a series of campaigns between 1972 and 1982 that revealed a well-preserved vessel, key was the recognition of two large collections of items within the ship: the amphorae from Terracina and an equally large collection of black-glaze pottery from Campania.[20] Although the size of the collection was exceptional – at that time, only the contemporaneous wreck from Albenga, Italy, was larger – its contents were perhaps more important. For Antoinette Hesnard and André Tchernia, the amphorae represented the primary cargo or the overall purpose for the voyage, and the pottery was a complementary cargo: items squeezed into the hold and sold as a means of making additional profit.[21]

Among the analyses of Roman-era maritime trade by their contemporaries, Hesnard and Tchernia's nuanced categorization was a clarification beyond the notions of "cargo" and "personal items." It prompted scholars to apply a more subtle structure to the contents of an assemblage and a more subtle hierarchy to a ship's activities. Within Keay's 1984 synthesis of late-Roman amphorae, he classified African Red Slip (ARS) ware as a secondary item on board ships, with a distribution pattern dependent upon the African amphorae they were transported with.[22] Moses Finley similarly stated that amphorae could determine the selection of routes, while table wares, cooking vessels, and lamps were "parasitic" upon them.[23] Sam Wolff also classified the pottery at Carthage as goods playing a subsidiary role in commercial transactions, or *vases-marchandises*.[24] For Fulford, the cooking and domestic wares "traveled with more valuable goods," and the lamps and ARS ware "were traded on the back of the principle commodities."[25] David Mattingly held the same interpretation, describing ARS as "pick-a-back on the cargo."[26]

Hesnard and Tchernia's subtle restructuring of a ship's activities is also important because it represents an interpretive tool that reconfigures maritime space in

ways that terrestrial, material-based analyses could not. In the 1960s and early 1970s, when texts were the largest source of information about sailing routes and speeds and Mediterranean maritime archaeological data were particularly rare, the singular and specific nature of the textual data foisted an equivalent singularity upon interpretations of submerged assemblages. Early archaeological models of routes would portray activity within an isolated context: one ship, travelling from an origin to an unexpected loss elsewhere in the Mediterranean, progressing from those items collected first to those collected last. Although since demonstrated to be flawed, Fernand Benoit's 1961 analysis of the Republican-era site Grand Congloué is a good example of this approach, proposing a route beginning at the island of Delos and ending near Marseille.[27] Gerhard Kapitän does the same in 1970 for the 6th-century AD assemblage Marzamemi B, following the vessel's final voyage from the northern Aegean Sea to the eastern coast of Sicily.[28] After all, if Peter Marsden could map the final routes of *Amsterdam* or *Meresteyn* in 1972 and 1976, or Richard Price and Keith Muckelroy could do the same for *Kennemerland* in 1974, the concept should be applicable to much older sites as well.[29] David Owen's statement in relation to a 5th-century BC wreck neatly encapsulates this idea in 1970:

> It is likely that these merchantmen picked up and discharged cargoes as they sailed, no doubt along with occasional passengers. Remains of a cargo, therefore, are nearly as good as a written itinerary of a ship's route.[30]

By proposing that ships travelled anywhere and everywhere necessary to gather their cargo and embodied no shared structure to their activities, the sea itself was an equally unstructured and haphazard place. As a result, life upon it was ambiguous and tenuous as well. As Hesnard and Tchernia's tool creates structure and a hierarchy of utilization, however, a more orderly sea can arise and, with it, the potential for a more orderly life upon it. As it was a structure that could also be deciphered through the archaeological record, additional data, such as that from the 1st-century AD Culip IV site at Cape de Creus, Spain, could append this model. Excavated by Xavier Nieto between 1984 and 1988 with Baetican amphorae and fine wares he characterized as principle and secondary cargoes, this assemblage was an ideal means of testing and expanding the conclusions of Hesnard and Tchernia.[31]

In his 1988 study, Nieto codified ports and the routes between them within a tripartite structure reminiscent of Jean Rougé's association of "grand commerce" with major entrepôts.[32] First were Nieto's longer principle routes between major ports or between centres of production and centres of consumption; Narbonne and Rome were examples of both. Next were shorter journeys that redistributed materials from these primary ports to secondary ports in the adjacent area, and last was the further carriage of these materials along rivers into hinterlands.[33] Moreover, the role a ship played in this system could be assessed archaeologically, based partially upon Hesnard and Tchernia's classification. Nieto's Culip IV site had a heterogeneous collection of goods and thus a low ratio between its different

cargoes. Combined with its relatively small size, Nieto assumed that this wreck was part of the redistribution phase of his system and was carrying a mixed collection of goods from Narbonne south to Ampurias, Spain.[34] In contrast, the wrecks at Madrague de Giens or Spargi, Italy, were representative of the primary movement of goods between major ports.[35]

Much like Hesnard and Tchernia's earlier idea, variations of Nieto's interpretation spread to related studies. Andrew and Susan Sherratt described a similar structure in their analysis of the growth and change in trade activity in the Bronze Age Eastern Mediterranean. "Arterial routes" connected major entrepôts where cargos were broken down and loaded onto smaller vessels for redistribution into the surrounding areas.[36] The importance of the connectivity and everyday movements implicit between ports gained recognition with *The Corrupting Sea* by Peregrine Horden and Nicholas Purcell, whereas Arnaud's studies have clarified the ubiquity of shorter journeys between ports, or cabotage, in parallel with longer journeys across the sea.[37]

The success of these two interpretive tools by Nieto, Hesnard and Tchernia, however, was tied to the continually growing maritime archaeological dataset; as data accumulated, so could its synthesis, categorization, and theorization. Indeed, Parker's article posing a correlation between zones of activity at sea and concentrations of assemblages on the seafloor is emblematic of this shift in the 1980s.[38] The appearance of his catalogue of sites in 1992, moreover, was a key moment. Now, like Fulford, Keay, and Wolff, Parker and many others could analyse a significant corpus of maritime data to produce results. In 1997, Nieto incorporated more wrecks into his system to classify the sites Albenga, Sud-Perduto 2, Petit Congloué, Diano Marina, and Grand Ribaud D as ships moving along principle routes between major ports.[39] Julia Strauss similarly reconstructed distribution patterns in the Roman Republican and Imperial eras with a dataset of 502 sites in 2007, and one year later, Parker compared the 110 sites containing Dressel 1 cargoes to a map of different *maria* in the Mediterranean Sea.[40] Based upon the cargoes' likely place of origin along the south-central Italian coastline, Parker argued that there was a greater preference to move this material at least one *mare* away from Italy than to remain in "local" Italian waters.[41] In 2009, with a dataset of 222 assemblages dating between the 4th and 12th centuries AD, Sean Kingsley compared cargoes to wreck locations and found a broad East/West division – sites in the west seemed to contain material predominantly or exclusively from the Western Mediterranean.[42] The 2012 volume edited by Keay, *Rome, Portus and the Mediterranean*, contains two studies that build upon the earlier theories of Hesnard, Tchernia, and Nieto and refine use and activity further. Using a set of 37 assemblages to examine the diffusion of African ceramics, Michel Bonifay and Tchernia modelled three different types of distributions. Direct lines are moving homogeneous cargoes from North Africa, commonly Carthage, to Sicily and/or Rome, whereas indirect lines and "proximal cabotage" may be transporting African items to Spain or Alexandria first and then to Rome.[43] Focusing on 38 sites in the Strait of Bonifacio, a natural locus of activity between Italy and Spain, Giulia Boetto's study correlated a relationship between cargo size and composition and

expanded upon Nieto's previous distinctions. Rather than three roles in maritime activity, Boetto proposed five roles that vessels could play, with archaeological examples of each. Once again, the material from the Culip IV site represented the redistribution of goods from a primary to a secondary port, and the Madrague de Giens site reflected activity between primary ports. Cabrera III was also moving between principle ports but carrying a heterogeneous collection of goods. Cavalière was representative of coastal tramping activity, and Barthélemy B was carrying a specialized collection of goods requisitioned for a specific purpose.[44] More recently, in 2013, Ben Russell used a dataset of 96 sites dating between the 2nd century BC and the 7th century AD to decipher similar scales of maritime activity related to the carriage of stone. The large, specialized cargoes from one source and likely destined for a particular building project were *locatio navis per aversionem* – a specialized charter similar to the Barthélemy B site. Smaller, more heterogeneous collections were evident as well and likely represented other scales of activity within a micro-region, deliveries of small consignments, or the redistribution of second-hand materials.[45] Lastly, Justin Leidwanger and Elizabeth Greene have explored different applications of network modelling and analysis to discrete corpora of wreck sites. Their work has discerned possible zones of activity in the Aegean and Eastern Mediterranean or different scales of activity from the very local to the inter-regional.[46]

Hand in hand with these increasingly detailed models of maritime activity, however, has been their concomitant independence from other media, similar to studies by Fulford, Keay, or Wolff. In the 1960s and early 1970s, models portraying a single ship sailing across an empty sea paralleled both the absence of a context created by maritime archaeological data and the reliance on sources extrinsic to the archaeological record to explain the voyage in question. Again, the collection of data on the seafloor was appending other narratives, not a corpus generating its own. The new perceptions of maritime activity arising in studies after the 1970s – of primary and secondary cargoes, principle movements between primary ports, routes of redistribution, and so on – have changed this dynamic because they are constitutive, generalized models of movement built up from data exclusive to the maritime corpus.[47] Little by little over the past decades, this trend has created hypotheses and contexts particular to maritime archaeology and, in turn, found order in activity on the Mediterranean Sea. In this study, Chapters 4 and 5 hope to do the same. By applying a new interpretive approach to a large body of data, it hopes to generate a new archaeological context to understand the human relationship with the sea and a variety of new narratives.

Building cultures of the sea

These methodological precedents demonstrate that, using only the maritime archaeological corpus, it is possible to generate a narrative of maritime activity in the ancient Mediterranean. Equally, they also demonstrate that these narratives can contribute to a different understanding of the past. Rather than attempting to amalgamate different types of media into a single model, they suggest that a

multiplicity of perspectives is equally valid. This study extends this approach to its theoretical foundations by building on two concepts. The first is the idea of maritime cultures and landscapes, and the second is the generation of *place* at sea. This study uses these foundations because they foreground an individual's formation and valorization of their world and have a decidedly different approach to constructing our ideas of the past. Unlike a culture-historical, top-down narrative that begins with a "Roman" framework dictating what elements to add, this alternative emphasizes the comparison, not amalgamation, of multiple perspectives of the past. Fundamentally, this is the idea that textual and archaeological data are not only incomplete records of an unknown reality, but they also inhabit different epistemological venues – likely created and manipulated for different purposes, and lost by different groups of people.[48] In this study, the submerged archaeological dataset is not supplementary to a documentary record when fashioning "Roman" maritime activity, but an independent corpus representative of a muted maritime culture.

Within maritime archaeology in Europe and the Mediterranean, the work of Christer Westerdahl has been promoting the concept of a maritime culture and its landscape since the 1970s. In 1975, Westerdahl was commissioned by the National Maritime Museum in Stockholm to investigate maritime activity on the eastern coast of Sweden along the Bothnian Gulf. Due to its success, this work was later extended to include much more of the coastline; eventually, the project lasted almost eight years.[49] It was during this work that Westerdahl began to use the term *maritime cultural landscape*.[50] As he described it, this landscape was an intermittent scatter of the elements of maritime activity: routes, anchorages, beacons, wrecks, and the like. Areas where these elements were concentrated, such as harbours, were labelled *maritime cultural centres*.[51] By the end of his 1979 season, Westerdahl had identified approximately 200 of these centres along the eastern coast of Sweden.[52]

Initially, this taxonomy was an integral part of the overall inventory that Westerdahl had created, but, over the following years, he explored its potential as an alternative means of describing and modelling maritime life. In Westerdahl's 1992 article, "The maritime cultural landscape," he explored maritime space as a cognitive landscape similar to any other – one that has constructed human activity and one that has been constructed by human activity. He wrote of the material and immaterial components of the space, such as shipwrecks, terrestrial structures, traditions, topography, and names, and mapped the space under a maritime rubric. *Maritime cultural centres* were included within larger networks with *transport zones* and *points of transit* or *pivots* where shifts in the carriage of people and/or goods take place.[53] In 1994, moreover, Westerdahl explored the tangible and intangible signifiers of a maritime culture or community and no longer perceived the elements of human activity along the coasts and seas of northern Europe as simply functional.[54] Instead, these components were representative of the inhabitation of a space by a particular maritime community, one that ascribed values, meanings, and perspectives to an environment distinct from the land.

Much like George Bass' interpretive methodology at Cape Gelidonya, Turkey, Westerdahl's ideas arose as a function and reflection of his place and time, also related to the continually changing perceptions of culture. Whereas Bass' intellectual lineage is predominantly the culture-history perspective common for Bronze Age and classical archaeologists, however, Westerdahl's scholastic background is grounded in central and northern Europe, with a stronger emphasis on the relationship between culture and the environment.

This emphasis emerges partially from a systemic view of culture promoted in the mid-20th century by anthropologists like Alfred Radcliffe-Brown, Bronislaw Malinowski, and Franz Boas, and archaeologists like Grahame Clark. Although their predecessors like Jens Worsaae or Edward Tylor also perceived archaeological cultures, these four scholars proposed a refinement. For them, cultures have a universal, interactive system of components such as family units or subsistence patterns, even if those components are differentially expressed.[55] Moreover, as Clark's work in northern Europe represented this new philosophy among prehistoric archaeologists, it also prompted the study of a landscape by stressing the relationship between culture and the surrounding environment.[56] As Timothy Darvill later wrote, people are the agent acting upon the environmental medium, and a landscape is the result.[57] Westerdahl's work paralleled the growth of landscape archaeology by incorporating these interactive views of the environment, moving beyond the limiting concepts of "site" or "monument" with the more diverse precept of a landscape, and through his *maritime cultural centre*, a space with a density of maritime-related activities.[58] Moreover, his neologism *maritime cultural landscape* emerged from perspectives inherent in his cultural resource management efforts.[59] One perspective was a modification of the *Kulturlandschaft* coined by 20th-century German cultural geographers: As there was a cultural landscape for agrarian material, Westerdahl presumed that an equivalent should exist for items related to maritime activities on the shore and underwater.[60] The other perspective presumed that if a *Kulturlandschaft* equalled the presence of agrarian methods of food collection, trade, and society, then similar maritime methods of subsistence, or Olof Hasslöf's *sjöbruk*, may be presumed through the concentrations of maritime cultural heritage.[61]

This systemic model of culture did more than introduce the concept of an archaeological landscape into Westerdahl's rubric, however. It also contributed to his more fluid perceptions of culture. In particular, as systemic studies by Malinowski, and Marshall Sahlins and Elman Service, set the foundation for Lewis Binford's more rigid processual approaches and Patti Jo Watson's critiques of maritime archaeology, they also began to highlight idiosyncrasies in their own ideas.[62] The increasing discontinuity between a systemic concept of a culture in equilibrium and the operations of the real world dissolved the apparent unity between an archaeological culture and an ethnic group. The idea that "Minoan" or "Magdalenian" was both a construction of institutions expressed in the archaeological record and a uniquely identifiable group of people could be fundamentally challenged. By the end of the 1950s in the United States, scholars such as Walter Taylor, James Ford, and Leslie White were posing an increasingly

abstracted philosophy of culture, that it was "a mental construct consisting of ideas," an extrasomatic means of adaptation, and not simply the intangible equal to the tangible archaeological record.[63] For Binford in 1965, culture was a "field" of components that people participated in, not necessarily something shared or consciously passed from one generation to the next. Binford also argued that people not only participate in a culture in varying ways, but the complexity of that participation also increases in a direct relationship with the complexity of the culture itself.[64] In 1969, Frederick Barth reinforced this ongoing dissolution, as well as the subjectivity of knowledge and perception, by arguing that key to the ascription of a cultural boundary is the exhibition of cultural traits by one actor and the consideration of their significance by another.[65] As demonstrated by civil rights movements that reinforced individuals' abilities to be different types of Americans, the relationship between people and culture was becoming more dynamic than previously suspected, and the boundaries of a culture were apparently much more fluid.[66] *Culture* tried to remain a systemic collage of elements but, as scholars related their theories to the world around them, the fixity of this construct was disaggregating.

In the second half of the 20th century, a new model of culture was emerging to replace the old. As the rigidity of John Lubbock's and Gabriel de Mortillet's uni-linear perceptions were replaced by the relativism of Gustaf Kossinna and Gordon Childe, their units of culture were hampered by unpredictable human behaviour – a problem that neither Sahlins and Service, Malinowski, nor Clark could convincingly overcome.[67] As these fixed systems were replaced by Taylor's, Ford's, and White's multivariate murmurations of elements, the post-processual work of Ian Hodder and his students in the 1980s similarly demonstrated the complexities of the real world. Material culture was not merely an expression of normative or mechanistic cultural phenomena. Instead, it was a contributor to an ongoing dialogue within or between groups and may be used to disguise, distort, or eliminate societal differences in ways that countered any predictive general laws.[68] As the increasing recognition of human agency and its vagaries prevailed, it was clear that culture was guided and carried by people as much as it could be a collective expression of individual interests. By becoming a socially expressed construct instead of an ethnically and spatially laden concept, people were no longer bound to the institutions of one particular culture and could slip from one to another as appropriate.[69] Equally, and key to Westerdahl's work, cultures could emerge where they were previously presumed to be absent and could coalesce within a palimpsest of expressions.

Indeed, anthropological and archaeological thoughts on *maritime culture* generally followed a path of development similar to broader notions of culture. Whereas some early characterizations were fairly diverse – "maritime culture" was the aquatic equivalent of "horticulture" in 1864, for example – the term gained clarity with widespread investigations around the Pacific rim in the early 20th century.[70] Primarily, it acquired a flexible application most commonly related to a sea-going means of subsistence describing either a single group or a collection of cultures.[71] Nevertheless, a few authors created a formal taxonomy: Richard

Daugherty's "Early Maritime culture" and Donald Clark's "Northern Maritime people" and "Maritime Archaic people."[72] Other examples associated the term with the particular toolkit used by the group in question.[73]

Until the late 1970s, however, the term's application was dominated by the culture-historical view that changes in maritime cultures emerged through either diffusion or migration. Like earlier studies of terrestrial groups, this led to investigations that linked older interior cultures to younger coast cultures, Pacific Islanders with a common ancestor, Pacific Northwest communities with the Eskimo, and the Eskimo with older groups in Siberia and Japan.[74] Beginning in the 1950s, however, a series of related critiques began to dissemble this orthodoxy of maritime culture as a discrete unit of people to propose more flexible perceptions.

In 1956, Douglas Osborne, Warren Caldwell, and Robert Crabtree and, in 1957, Wayne Suttles published articles critically investigating the emergence of maritime cultures along the North American Pacific coast. Similar to other challenges to diffusionist ideas, Osborne and his co-authors questioned the proposal that interior groups were the root of coastal cultures, a migratory and adaptation hypothesis proposed by Boas in 1902.[75] Suttles also questioned this migratory idea, proposing that the increasing antiquity of the coastal communities may soon demonstrate the contemporaneity of the two groups.[76] Other articles between 1956 and 1974 by Marian Smith, Allan McCartney, and Luther Cressman and his co-authors successively questioned what the maritimity of a maritime culture means. Whereas earlier perceptions presumed an almost-exclusive reliance on open water resources, Smith's re-evaluation of archaeological data from a prehistoric site in Puget Sound, Washington, argued that this maritime group was exploiting terrestrial and marine resources equally.[77] Cressman and his co-authors highlight similar subsistence patterns at Five Mile Rapids and in The Dalles, Oregon, increasing the ambiguity of cultural patterns presumed to be solely marine based.[78] McCartney, in 1974, evaluated different definitions of maritime culture and subsistence and concluded:

> The marine experience is a multifaceted one in which many organisms from related habitats are procured and no large dietary and raw material organisms are ignored. The hypothesized gradual adaptation to the sea over past millennia applies to the increased degree of habitat utilization, not to a series of organisms utilized (excepting large whales which at least were washed ashore periodically).[79]

As other scholars were re-evaluating the nature of culture as a whole, therefore, a similar process led to a perceptual expansion of "maritime culture" by questioning the view equating a maritime culture with only a seagoing means of subsistence. As evident in Adriaan Prins' 1965 *Sailing from Lamu*, "maritime" became more of a trait like "seafaring" and not a means of food collection or trade defining a cultural type. Similar to Taylor, Ford, and White, Prins defines culture as a recurring set of human activities, not necessarily something with ethnic or spatial boundaries. Thus, Prins' maritime culture emerges through the common expression of

this trait cutting across ethnic, religious, national, and linguistic borders on the East African coast.[80] People in Lamu were members of this maritime culture while conducting maritime activities and parts of other cultures when expressing other traits.

More recognition of "maritime" as a characteristic and not an exclusive lifestyle appeared in Harold Driver and James Coffin's 1975 matrix analysis of traits among North American Indian cultures. Their study of 392 traits in 245 groups demonstrated that "maritime" hunter-gatherers such as the Aleuts, Tlingit, and Eskimo shared the remainder of their cultural traits with relatively terrestrial groups in central Canada, the American Southwest, and Texas.[81] Similarly, the suite of cultural characteristics associated with fishing groups along the North American Pacific coast clustered them very closely with farming communities spread across the continent.[82] Muckelroy, too, was unable to distinguish convincingly between "maritime" as a culture and "seafaring" as a characteristic in his 1978 theoretical framework; David Yesner's 1980 attempt to define the cultural processes of maritime hunter-gatherers was weakened for similar reasons.[83] As Yesner's commentators point out, the majority of the characteristics Yesner applied to maritime groups are applicable in any biome, and his segregation of coastal peoples into a distinct group distorted the variety of ecological adaptations their lives included.[84]

Westerdahl intuitively used these ideas on the fluidity of culture in his early investigations of maritime culture and its landscape at four levels. The first is his application of "maritime." In comparison to earlier authors who used a maritime means of subsistence to define the group, or to Muckelroy who limited his view of maritime culture to activities on board ships, Westerdahl is using not only "maritime" as an expressed trait but also one that is differentially expressed among individuals inhabiting the same space.[85] Thus, buildings on land may be religious or secular, but from the sea they may all be waypoints along the coast. Similarly, the locations and names of good fishing spots may be unknown to others on land.[86] Second, and particularly after his adoption of Prins' definition of culture, Westerdahl demonstrated that if "maritime" is a cultural trait and not a definitive type, it is possible for any group – simple, complex, transitory, permanent, heterogeneous, or monolithic – to be a maritime culture.[87] A maritime community or culture is not defined solely by functional characteristics or subsistence methods, but through the collective and coordinated nature of maritime activities; a communal expression of synchronized individual interests.

The third level is the questionnaire Westerdahl distributed among residents on the Bothnian coast as part of his cultural management efforts in the 1970s. His poll incorporated emerging views of culture and landscape by asking individuals to identify remnants of a maritime culture that they may not have been a part of, but maintains a presence in their community nevertheless.[88] Rather than adopting Muckelroy's argument that terrestrial and maritime spaces, and their representative cultures, are mutually exclusive, Westerdahl presumed that the spaces contain superimpositions of group expressions.[89] Equally important, this reflected the more abstract views of culture proposed by Taylor, White, Binford, and

particularly Barth. In this case, the presence of the maritime culture emerges not only through its own agency but also by the recognition of this culture's expressions by outsiders.[90] Fourth, as epitomized in Westerdahl's essays from 2000 and 2005, is his recognition of the symbiosis between a maritime culture and a maritime environment.[91] Not only is a maritime culture more than a functional system of subsistence, but it is also a community of people changed by the transformative power of the sea.

In comparison to the culture-history approach discussed in the previous chapter, this is a very different perspective of what *culture* is, or could be. Within the conventional rubric that generally guides the interpretation of wreck sites, culture and identity are intrinsic elements deciphered by an archaeologist in the process of constituting a ship's meaning. As research proceeds, archaeologists are not only uncovering material data in the assemblage but also *facts* and an *identity*.[92] As an apparently intrinsic characteristic, the "Levantine-ness" of a ship is no more debatable than the vessel's size.[93]

The more fluid concept integral to the notion of a maritime culture embodies the contrast that *culture* is a shifting and personal expression and observation. Rather than a fixed component of life, it is a scalable construct emerging from participants sharing common signifiers, and observers recognizing and valuing the meaning of those expressions. Nineteenth-century oceanographers on board naval vessels became part of the ship's maritime culture as they internalized its schedule and rituals.[94] In contrast, once the oar Odysseus carried was mistaken for a winnowing shovel, his identity as a mariner disappeared.[95] As an individual or an object is not permanently fixed with one identity, it is possible to slip from one culture to another through varying expressions of those cultures' elements – a perceptual and spatial flexibility common in the present and the past. For example, Herodotus' notion of ethnicity – his *ethne* – varied in size: it could be the collective Libyans and subgroups of Libyans. For Homer, *ethnos* could be a simple collective noun.[96] For other writers, the Dorians distinguished themselves from Ionians through dress and customs, but not necessarily dialect as the Dorian inhabitants of Halicarnassus spoke a version of Ionian Greek.[97] In contrast, Akhaians in southern Italy apparently spoke a dialect similar to Dorian, although they identified themselves with the pre-Dorian inhabitants of Lakonia and the Argolid.[98] Or, what of the growth of the "Hellenic" community in the 5th century BC in opposition to the Persians? Dorians and Ionians were both Hellenic, but at what perceptual scale did this larger social expression end and their differences begin?[99] Notions of Roman-ness were similarly fluid. Cato the Elder wrote the canonical *Origines* establishing the history of Rome and its elements in opposition to Greece. Yet, he did so through his knowledge of Greek customs and language, characteristics likely unrepresentative of his descendants in the Roman community centuries later.[100]

Like a scientific, religious, or political culture, then, a maritime culture is not a fixed system but a construct emerging through the collective expression of maritime signifiers and activities, as well as their recognition and understanding.[101] As a result, this study has more than one element it shares with historical and

prehistoric archaeology. In addition to prioritizing a narrative generated by a large corpus of material data, it also embraces culture as a complex, multi-vocal, and fluid murmuration of elements that can vary depending on the actor and observer. Stripping the essentialized nomenclature of "Roman" or "Byzantine" ships from the corpus thus eliminates much of the disciplinary and historical baggage packed in those affiliations while preserving the explanatory potential. The data on the seafloor may be representative of the activities and interests of one or many muted maritime cultures and, as will be explored in Chapters 4 and 5, their expressions and presence at different scales.

Building places of the sea

That a group of people can inhabit or construct a sea within and around certain social needs and patterns is the second theoretical foundation of this study. Like notions of culture, there are two ways of perceiving and understanding this spatial valorization although, luckily, they are closely related. One perception relies on the distinction between *place* and *space*, while its corollary focuses on how place can be made.

The distinction between place and space is important and is similar to Darvill's explanation of a landscape emerging from an environment.[102] For Darvill, the environment is the medium of nature untouched or unobserved by people. A landscape emerges from this raw medium through our presence because we create content and meaning.[103] Place can be distinguished from space in a similar way, so *space* is the raw absence of those two characteristics, whereas *place* is the human imposition of those characteristics.[104] The construction of a place is thus inseparable from its observation and valorization and, since the middle of the 20th century, there has been an increasing amount of scholarship investigating places within maritime space.

Described as a "maritime turn" by Christopher Connery, this trend incorporates a variety of approaches.[105] In some cases, it has been a blossoming of historical, geographical, and anthropological scholarship on the seas. The past decades have seen new volumes on the Indian Ocean, the island region of Southeast Asia, the South China Sea, and how the seas are constructs within capitalist world dynamics.[106] In contrast, Sue Jackson described how aboriginal valorizations of the sea have been neglected by western cartesian systems of power.[107] Since 1972 and the English publication of Fernand Braudel's *La Méditerranée et le Monde Méditerranéen a l'époque de Philippe II*, at least 40 books focusing on the Mediterranean have appeared as well.[108] More specifically, a growing number of scholars have re-imagined the social construction and valorization of the seas, and what they represent. Martin Lewis and Kären Wigen, for example, proposed in 1997 that the seas may represent a spatial hierarchy that counters the longstanding hegemony of continents, an idea further explored in special issues of *The Geographical Review* and *The Professional Geographer* in 1999.[109] Re-interpretations of the Atlantic have acquired a variety of colourful guises. Paul Gilroy created a "Black Atlantic" in 1993, as a space inhabited by refugees of the African diaspora; Kevin Whelan's

Atlantic, encompassing Irish migration, was green, and David Armitage's was red with expropriation, capitalism, and resistance.[110] In 2013, Cyprian Broodbank even argued that until approximately 1,000 BC, the Mediterranean Sea we know as a place did not exist.[111] Instead, being unexplored it was simultaneously unobserved and, thus, raw unstructured space.

The past four decades have also seen a similar growth in maritime archaeological studies using material data to decipher the structuration and meaning of maritime landscapes; Westerdahl's work is no longer the only advocate for these perspectives. In 1999 alone, publications by Parker, Reidar Bertelson, Nigel Bannerman, and Cecil Jones examined Iron Age and Medieval coastal spaces between the terrestrial and maritime, the role of fish traps in maritime space, and the maritime cultural landscape of Bristol in the Middle Ages.[112] In the new millennium, Barry Cunliffe's study of the Atlantic façade of Europe was published, and *World Archaeology* published a thematic volume in 2003 on Seascapes. The collection included examinations of spatial relationships in Maori fishing practices, changing seascapes along East Africa, and ancient Greek perceptions of the Mediterranean Sea. Also included in this volume was an essay by Robert Van de Noort on the seascape of early Bronze Age England, one of a series of studies he has conducted on Bronze-Age maritime landscapes around the North Sea.[113] These studies culminated in his 2011 book *North Sea Archaeologies*, his investigation of that sea as a unifying landscape for the communities that surrounded it, and an agent of change within those communities' lives.[114] Ben Ford's *The Archaeology of Maritime Landscapes* also appeared in 2011, with essays built upon Westerdahl's concepts, and three publications appeared in 2014: *Ships, Saints and Sealore* focusing on the communities encircling the Mediterranean and Red Seas, *Water Folk* reconstructing the aquatic lifeway in Michoacán, Mexico, and *Coastal Hinterlands* exploring the network along the Corinthian Gulf in antiquity.

Much of Parker's work has also entangled Westerdahl's ideas. In the new millennium, for example, Parker repeatedly wrote of a maritime cultural landscape in the Mediterranean region and used it as the foundation for the region's transport zones, areas he distinguished from "foreign" waters around them.[115] A selection of his studies since the 1980s, however, emphasizes the generation of maritime places through concentrations of movement. In 1984, he argued that the density of assemblages in the Strait of Bonifacio reflects the volume of trade passing through that place, demonstrating a predilection for that particular route.[116] Utilizing the larger dataset in his catalogue, Parker similarly highlighted regional changes over time in 1992. The Levantine coast has a relatively even distribution of wrecks chronologically, whereas near Sicily and Malta, they are concentrated in the Hellenistic and Middle Roman eras. In the Strait of Bonifacio again, all activity is confined to the Roman period from the 3rd century BC to the 4th century AD; off the coast of France, sites from the 2nd century BC predominate. If these concentrations reflect the scale of use, then it may be construed that preferences for particular maritime places across the Mediterranean Sea changed over time.[117]

This emphasis in Parker's work on the construction of place through movement is important because it embodies broader thinking about how place can

be generated. Initial perspectives on the construction of place had a sedentary rubric, portraying a place as an origin or destination.[118] Yet, the theory that a place emerges from space through its valorization by people clashes with this perspective – it assumes that a place's meaning continues in the absence of an observer. Thus, a sedentary perspective grounds and reduces meaning to a single label, such as "theater" or "temple," and this meaning becomes independent of those travelling to or from the location. The alternative to this sedentary perspective still proposes that a place arises through the complex relationship between people and their surroundings, creating meaning that is contingent upon the observer and time.[119] Through this relationship, however, a single space can become a multiplicity of places – a "theater" and a "temple."[120] By entangling the valorization and construction of raw space with a mobile observer and not a static location, it also means that the creation of place is continual and dynamic. So, to an individual, a place may be the beginning or the end of a journey, or the route itself.[121] As a result, a footpath or a road, or a river, a lake, or a sea is the *place* where a journey occurs. Equally, the agglomeration of routes, as Jo Lee and Tim Ingold have argued, can create a place as well.[122] As Parker has suggested, and as Chapter 5 will explore more, it is this dense superimposition of activity that can also generate one or more *places* at sea.

Building agency of the sea

Before closing this chapter, one last element of this study needs to be discussed – the transformative power of the open sea.[123] As cultures and places are collective expressions emerging from individuals, both invariably inform and integrate each other. A landscape emerges from a culture's values, and a culture's patterns and signifiers can be reactions to their surroundings. The radically different nature of the sea as a wholly dynamic and inhumane environment, however, requires an almost equally radical re-construction of individual identity.

Among many communities, there was a perceived control over bodies of water that bordered the sea. Aqueducts, fountains, and bath houses could be tools for political power and class expression, and water conduits and pools in Roman villas were allusions to Romulus' control of the marsh where he founded Rome.[124] Similarly, artificially and naturally contained features like ponds, lakes, rivers, and harbours around the Mediterranean were often controlled, closed, or taxed.[125] The 11th-century BC Pharaonic emissary Wenamun portrayed the local rulers in Dor and Byblos as controlling their harbours, and a 5th-century BC treaty between Oeanthea and Chalium, in Locris, was similarly enforceable on land and in the cities' harbours.[126] The Macedonians piqued Demosthenes' call for war when they sailed a galley into the Piraeus, violating its agreed sovereignty, and Plato included harbours among the components controlled by a state system.[127] More bluntly, access to the ports of Damietta, Akko, and Tyre was controlled by chains spanning their entrances.[128] In contrast, the sea coast was more legally ambiguous. In Greece and Rome, fish and jetsam could be collected, claimed, and sold, no formal claims to the land were recognized, yet informal codes of practice and

ownership were maintained.[129] Within Islamic law, however, the state's regulatory power extended somewhat beyond the high tide line, where Justinianic civil jurisdiction ended. For example, commercial treaties between the Islamic empire and foreign powers recognized Islamic sovereignty over coastal waters.[130]

The open sea, however, was untouched. The Greek *polis* made no practical claims of ownership over this space, it was beyond the reach of the Muslim caliph, and, to the Romans, the open water was *res communae*, like air, and accessible to all by virtue of its illimitable characteristics.[131] It was a primordial substance of ambiguity and danger, a key element in the Mesopotamian and Western Semitic tropes of the struggle between order and chaos, and a space that transcended the everyday.[132] For the ancient Greeks, the sea embodied horizontal and vertical liminality: a surface buoying an individual between the known and the unknown, and a membrane between the living above and the dead below.[133] Among their miracles, Shi'ite Imams would portray a white sea between earth and paradise or a black sea between earth and hell.[134] For Late Antique and Medieval pilgrims, the Mediterranean Sea was a sacralized path from the profane to the holy.[135] Emperor Augustus even established the practice of *deportatio ad insulam*, the banishment of his enemies to the Cyclades islands, figuratively removing them from the world; slaves guilty of plotting or committing murder in the Visigothic Empire were similarly "transported beyond the sea."[136]

The sea also served as a container for refuse, the unwanted, and the dirty. A criminal banished from Athens and later accused of murder, for example, may be tried in the seaside court at Phreatto by standing in a boat offshore, isolating their miasma while including them within the deliberations.[137] Equally, following his ignominy in 4th-century BC Athens, Demetrios of Phalerum was symbolically cast out as his bronze portraits were cast into the sea.[138] The banished, guilty, or disfigured were thrown into the sea as well, and to be lost at sea was to be lost for eternity.[139] This particular fear was manifested in Homer's tale of the lesser Ajax's absence from Hades due to his drowning by Poseidon, a tale that haunted Bishop Synesius during his voyage to Libya in the 5th century AD.[140] Fears of this eternal limbo were also prompted by the fact that, as Nicholas Purcell points out, fish were the only animals common to the ancient Mediterranean diet that would also eat people.[141]

Willingly moving through such a foreign, otherworldly environment, as a result, was entirely unlike travel on land. It was a conscious decision to transform oneself by leaving the normal confines of society and traversing a suite of perceptual, geographical, and cosmological boundaries. Indeed, the significance of these boundaries, if not the maritime place itself, was emphasized by the rituals and superstitions accompanying sea travel. Sailors on Hellenistic and early-Roman era Rhodes may have performed annual supplications to Phorbas before every sailing season.[142] Similarly, Muslim sailors might carry dust from the grave of Muhriz in Tunis to protect them and safeguard their journey.[143] Some craft had small altars or niches for prayers while at sea, possibly to Mercury, Serapis, or Minerva, whereas the sanctuaries on Thasos, Syros, and Prote containing invocations from sailors for fair weather demonstrate that they may stop en route to

pray as well.[144] Striking are the human and animal sacrifices made or promised to the Nereids, Neptune, Eryx, and other divinities for speed or victory while at sea: Cloanthus and Aeneas in Vergil's *Aeneid*, Themistocles prior to his battle with Xerxes' fleet, Scipio prior to attacking Carthage, and Octavian prior to meeting Pompey's fleet.[145] Moreover, leaving harbour meant departing from a familiar social dynamic and entering another on board a ship, all while traversing an inhumane environment on a man-made object. The projection of the Church as a ship, as a vehicle to physical and spiritual salvation, is not particularly surprising. Neither is the reinterpretation of Odysseus and the Sirens as Christian allegory by Bishop Maximus of Turin – Odysseus is the tortured human condition, the mast is the Cross, the Sirens are temptation, and the sea is a corrupted, hostile world.[146]

These habits prior to, and during, travel are not unique to movement in the ancient Mediterranean, for communities such as the Navajo in North America or the Yao in Africa ritualized journeys both physical and spiritual.[147] Even the launching of military craft in 18th- and 19th-century England was packed with ritual – naming the ship as it slid into the water, the patriotic fervour, the presence of royalty, and the clergy blessing the craft.[148] Common among all these groups is not necessarily the immanent journey, but the traveller's passage through the unfamiliar or otherworldly, regardless of the regularity of the movement itself. Equally common are the results of such journeys.[149] In all cases, individuals who cross an unconventional boundary are changed as a result and become extraordinary in ways both good and bad.[150] Pilgrims to Jerusalem or Mecca gain stories, knowledge, and an added sacredness that may be valued or resented among those they left behind.[151] Traders become the "desirable outsider" through their exotic linguistic, cultural, and economic knowledge that may not only aid the social elite at home but also lead to the traders' isolation.[152] Even accidental journeys lead to similarly contrasting results. After surviving the loss of *Caldas* in 1955 and washing ashore in Colombia, Luis Alejandro Velasco said,

> I have been asked how it feels to be a hero. I never know how to respond. So far as I'm concerned, I feel the same as I did before. Nothing has changed internally or externally. The terrible burns from the sun have stopped hurting. The knee injury has become scar tissue. I am Luis Alejandro Velasco again, and that's enough for me.
>
>   It is other people who have changed. My friends are friendlier than before. And I imagine that my enemies are worse enemies, although I don't really think I have any. When people recognize me on the street, they stare at me as if I were some strange animal. For that reason, I dress in civilian clothes and will do so until people forget that I spent 10 days on a raft without food or water.[153]

Despite his best efforts, Velasco had become someone else through his journey, a change recognized by himself and those around him. Moreover, in Mulatos where Velasco recovered, townspeople stood in line to see him. Like proximity to a saint, they could experience his travails but relive the disaster while safe on shore.[154]

The pre-modern Mediterranean Sea was a source of sustenance, populated with the real, imagined, and fantastic, and a highly complex agglomeration containing cosmological boundaries, unconventional food, and otherworldly environments.[155] It was a landscape as vibrant as any topography on land and populated by multitudes of people who nevertheless inhabited it on an intermittent basis. These multitudes – the sailors, fishermen, captains, passengers, traders, pilgrims, slaves, and stowaways – are the maritime culture that has partially constructed this place from maritime space. And, as this maritime culture may be the alternative model necessary to re-interpret maritime archaeological data, the constructed sea is the place in which the data on the seafloor may be understood. The next chapter, then, incorporates these theoretical concepts into this study's alternative methodology to demonstrate how the archaeological corpus on the seafloor may reveal the human relationship with the sea.

Notes

1 White 1979, 1–6; Dyson 1992, 20–1; Horden and Purcell 2000, 259–60. They may be classified as the "invisible Romans" written about by Knapp, who also describes the difficulties of writing about a community present in only incidental evidence (2011, 2–3).
2 Casson 1971, 176 n.40, 177 n.50, 180 n.64; 1979, 72.
3 Reed 2003, 2 and n.4, 31, Appendix I.
4 Rice 2012, 116–23, Appendix I; 2016. See also Arnaud and Keay (2020, 45), Terpstra (2020, 193), and Purcell (2020, 427) who comment on the paucity of information.
5 Schmidts 2012. Two gravestones are from the 2nd or 3rd century AD (IG XIV 337* or Pleket and Stroud SEG 32–1036; IG XIV 830 or De Salvo 1992, 614 no. 17), one is from the Imperial era (SEG XXXIII 490), and three are from Late Antiquity (Dyggve and Egger 1939, 12a; Pflaum 1957, nos. 74 and 75 or De Salvo 1992, 626, nos. 141 and 142).
6 Schmidts 2012, 15; SIG III³ 1229.
7 McCormick 2005, 265.
8 Arnaud 2014. See also Deetz (1991) who describes the numerous benefits of archaeological data to understand un-self-documented communities, and Beltrame (2002) who used material data to recreate elements of a Roman-era maritime life on board ships.
9 Deagan 1991; Hall 1993, 186–191; Perry 2002, 49–50; Smith et al. 2012.
10 For general discussions and dissections of the dynamic between archaeological and textual corpora, see Little (1992), Moreland (2001, 2006), and Foxhall (2018). Stewart (2013) provides a clear summary of the difficulties, biases, and problems associated with amalgamating the two corpora when studying the classical world.
11 See Alcock (1993, 33–92). For early survey efforts in the Aegean area, see McDonald and Simpson (1961), Hood et al. (1964), Hood (1965), Sackett et al. (1966), Hood and Warren (1966), Blackman and Branigan (1975), and Bintliff and Snodgrass (1985). In particular, see Blackman and Branigan (1977, 13), for the cultural resource management aspect of their work.
12 Dyson 1978, 1981b; Potter 1979; Sanders 2004.
13 Fulford 1980, 68; 1987, 59. See also Peacock (1984, 3) who writes of the "piecemeal and sparse" literary evidence that may be "heavily biased by the limited experience and preoccupation of the author."
14 Fulford 1980, 68–9; 1984, 256.
15 Fulford 1984, 262. Fulford's study was not the first ceramic study to amass a large corpus of data for analysis. Hayes' *Late Roman Pottery* (1972) and its predecessors did as

well, but distinct is Fulford's goal of using the resulting synthesis to model patterns of use, whereas Hayes and others were more concerned with the refinement of typologies.

16 Keay 1984, viii.
17 Wolff 1986; Arthur and Oren 1998; Kingsley 1999, Figure 131, Tables 17, 18.
18 Lawall 2006; Leitch 2013.
19 Fulford 1989. See also Tomber (1993), who used discriminant statistical analysis on the corpora from Carthage, Berenice, and Caesarea in Palestine to reinforce presumptions that the extant collections of ceramics are accurate barometers of changing patterns of circulation and the associated economic shifts. Lastly, also note Peña (2007, 6–10) who applies Schiffer's "artifact life cycle" from an American processual approach to interpret the use and reuse of Roman pottery.
20 Pomey and Tchernia 1978, 234–5; Tchernia 1978, 11.
21 Hesnard and Tchernia 1978, 14.
22 Keay 1984, 399.
23 Finley 1985, 23.
24 Wolff 1986, 168. See also Bonifay and Tchernia (2012, 235) who also distinguish elements of maritime assemblages with this characterization.
25 Fulford 1989, 176, 180. See also Gill (1991), who makes a similar distinction regarding the presence of finewares and kitchen wares in Archaic and Classical-era wrecks.
26 Mattingly 1988, 53.
27 Benoit 1961, 24.
28 Kapitän 1970, 3.
29 Marsden 1972 and 1976b; Price and Muckelroy 1974.
30 Owen 1970, 29.
31 Nieto 1988, 392; 1997.
32 Rougé 1966, 419.
33 Nieto 1988, 391–2.
34 Nieto 1988, 392; 1997, 153.
35 Nieto 1988, 391.
36 Sherratt and Sherratt 1998, 339.
37 Horden and Purcell 2000; Arnaud 2005. See also Horden (2020) for his clarification of "connectivity" in light of its widespread popularity.
38 Parker 1984.
39 Nieto 1997, 149–54.
40 Strauss 2007.
41 Parker 2008, 194–5.
42 Kingsley 2009, 32–3.
43 Bonifay and Tchernia 2012.
44 Boetto 2012, 156.
45 Russell 2013a, 356–7.
46 Leidwanger 2017, 2020; Greene 2018.
47 See also Vroom (2016), who constructs patterns of Byzantine-era activity on the pan-Mediterranean and regional scale using material from wreck assemblages.
48 See Binford (1987), Leone (1988), and Potter (1992), for similar approaches that also recognize separate, yet valid narratives arising from different corpora.
49 Westerdahl 1980, 312; pers. comm. Christer Westerdahl, 12/2015.
50 Westerdahl 1980, 322; 1992, 5.
51 Westerdahl 1980, 322–4.
52 Westerdahl 1980, 328.
53 Westerdahl 1992.
54 Westerdahl 1994.
55 Worsaae 1849, 149–50; Radcliffe-Brown 1922, 229, 233–4; Malinowski 1944, 36–42; Trigger 2007, 232–3. See also Renfrew (1972) who applied this systemic perspective to Aegean prehistory.

56 See Clark (1939, 152–8) and his illustration of this system, and Clark (1953, fig. 6) for a more complex model grounded on the *habitat* and the *biome*. See also Strang (2010, 51).
57 Darvill 2010, 61.
58 Westerdahl 1980, 321–2.
59 Westerdahl 1980, 312.
60 Westerdahl 1980, 322; 2011, 734.
61 Westerdahl 1992, 5–6; 2011, 734.
62 Malinowski 1936; 1941; Sahlins and Service 1960; Watson 1983.
63 Taylor 1971 (3rd printing), 96–9; Ford 1954, 47; White 1959, 8.
64 Binford 1965, 205. See also Geertz (1973, 311), agreeing with Max Weber, that culture is the collection of webs of significance created by people around themselves.
65 Barth 1969, 14.
66 Trigger 2007, 437.
67 Sahlins and Service 1960, 34–5; Malinowski 1944, 73–8.
68 Hodder 1988, 2–3, 6; Trigger 2007, 452–3; Stockhammer 2012a, 8.
69 Barth 1969, 13–5. See also Dunnell (1971, 121–7) who argues that culture is a concept and has no objective existence, Daniel (1975, 246, 318–9) who recognizes the ephemeral nature of perceptions of culture, and Hodder (1982, 6) who writes that distinct cultures may not exist in the archaeological record.
70 Anonymous 1864, 767.
71 For applications to particular groups, see Sapir (1911, 791); Kroeber (1923, 16); Anonymous (1954, 312); Cressman et al. (1960, 72); Befu and Chard (1964, 1); Vasilevskii and Powers (1969, 169, 170); Vasilevskii and Chard (1969, 152); McCartney (1974, 156); Gjessing (1975, 329); and Crabtree and Warren (1977, 119). For collective uses, see Field and Prostov (1942, 405); Chard (1955, 174); Smith (1956, 278–9); Chard (1958, 26); Befu and Chard (1964, 7); Vasilevskii and Chard (1969, 153, 154); Driver and Coffin (1975, 60); Arutyunov (1979, 27, 29); Clark (1980, 28); Workman et al. (1980, 388); and Yesner (1980). See also Daugherty (1957, 325); Andreev and Andreeva (1965, 129); and Clark (1980, 33, 34).
72 Daugherty 1957, 325; Andreev and Andreeva 1965, 129; Clark 1980, 33, 34.
73 Field and Prostov 1942, 399; Anonymous 1956, 342; Andreev and Andreeva 1965, 129, 131–2; Sleight 1965, 226.
74 Boas 1902, Kroeber 1923, Field and Prostov 1942, Chard 1955 and 1958, Ferdon 1963, Befu and Chard 1964, Andreev and Andreeva 1965, Clark 1966, Denniston 1966, Vasilevskii and Powers 1969, Vasilevskii and Chard 1969, Inglis 1970, Arutyunov 1979. For a more extreme diffusionist view built upon seagoing activity, see Smith (1917).
75 Boas 1902; Osborne et al. 1956, 117, 124–6.
76 Suttles 1957, 179.
77 Smith 1956, 278–80.
78 Cressman et al. 1960, 72.
79 McCartney 1974, 158–160.
80 Prins 1965, x, 3.
81 Driver and Coffin 1975, 5, Map 1, Figure 2.
82 Driver and Coffin 1975, Map 1, 7.
83 Muckelroy 1978, 226–47; Parker 1995, 92. See also Hunter (1994), who similarly critiques the ability to segregate or define a purely "maritime" culture.
84 Yesner 1980; for commentary, see Ayres (1980, 736); Davis (1980, 736–7); and Turner (1980, 742–3). Interestingly, Childe's "maritime civilization" in the first edition of *The Dawn of European Civilization* disappears by the third edition, although the updated content is relatively the same. Possibly Childe also recognized the difficulty of the label, particularly with his perceptions of monolithic units of culture.
85 Muckelroy 1978, 5–6.

86 Westerdahl 1980.
87 Westerdahl 1994, 265.
88 Westerdahl 1980, 312–4.
89 Muckelroy 1978, 5–6; Westerdahl 1980, 1992, 1994.
90 The works of Auguste Jal (1848) and J. Richard Steffy (2006, 6–7) demonstrate how
    the specialized vocabulary of ship construction and seafaring is a code that may also
    distinguish this group.
91 Westerdahl 2000; 2005.
92 See Latour and Woolgar (1979), and Knorr-Cetina (1981), who demonstrate how
    facts are social constructs.
93 A recent modification of this perception is that ships are heterogeneous – people
    from different cultures coming together to form an ideal *heterotopia*, as Foucault has
    described it; see Greene (2018, 136–7) for an example. While this is a more viable re-
    interpretation, it still relies on a normative or etic perspective of culture. So, culture
    is indelibly fixed to an individual (it accompanies them onto the ship) and is univer-
    sally acknowledged by the crew and passengers, but not something that can be con-
    textually particular or changed by the individual. For a contrast, see the similarities
    between the writer Amin Maalouf (2000) who describes himself as Lebanese, French,
    an Arabic speaker, a Melchite, and a Greek Catholic, and his 3rd-century AD prede-
    cessor from Tyre named Malkos, but nicknamed Porphyrios and subsequently known
    as Porphyry the Tyrian, the Phoenician, or the Sicilian, depending upon his location
    (Clark 1999). Equally, see Verne's description of the crew of *Nautilus*. Whereas the
    stowaway Arronax "recognized what were clearly Irish, French, a few Slavs, a Greek,
    and a Cretan" without speaking with them (2009, 118), the crew formed their own
    culture with a common uniform, landscape, and language (2009, 50–3, 100, 114–5,
    117–8, 166, 346–8).
94 Rozwadowski 1996.
95 Homer 1919, 23.265–80; Purves 2006.
96 Hall 1997, 34–5.
97 Hall 1997, 38, 47, 181.
98 Hall 1997, 181.
99 Hall 1997, 47; 2002, 226
100 Gruen 1992, 52–83.
101 Chilton 1988; Franklin 1995; Wood 1999.
102 For additional discussion on the distinction between space and place, see Casey
    (1997).
103 Darvill 2010, 61.
104 Casey 1997.
105 Connery 2006, 495.
106 Toussaint 1961; Chaudhuri 1985; Gilroy 1993; Steinberg 2001; Schottenhammer and
    Ptak 2006; Schottenhammer 2008.
107 Jackson 1995.
108 See, for example, Davis (1977); Newby (1984); Attenborough (1987); Pryor (1988);
    Arenson (1990); Theroux (1995); Braudel (1998); Matvejevic (1999); Horden and
    Purcell (2000); Cowan (2000); Grove and Rackham (2001); Abulafia (2003); Harris
    (2005); Norwich (2006); Husain and Fleming (2007); Tabak (2008); Cooke et al.
    (2008); Fusaro et al. (2010); Malkin (2011); Abulafia (2012); Broodbank (2013);
    and Horden and Kinoshita (2014). See also Alcock (2005, 315: Figure 13.1) who
    documents the rapid growth of academic journals from 1960 to 2000 that focus on
    the Mediterranean region and Cañete (2010) on early scientific representations of
    Mediterranean space. A related trend was the development of Mediterranean Social
    Anthropology, which apparently began in 1954 and matured by 1977; see Charles
    (1960) for a morphological approach, Davis (1977) for a synthesis, Boissevain (1979)
    for a review, and Pina-Cabral (1989) for a critique.

109 Lewis and Wigen 1997.
110 Gilroy 1993; Whelan 2004; Armitage 2001. See also Kiron (2006) for a "Jewish" Atlantic of letters, and Armitage (2002) and Lambert et al. (2006) for additional discussions of the various "Atlantics" created and studied.
111 Broodbank 2013, 22.
112 Bertelson 1999. See also Meløe (1988).
113 Van de Noort 2003, 2006; O'Sullivan and Van de Noort 2007; Van de Noort and O'Sullivan 2007.
114 Connery 2006, 495.
115 Parker 2001; 2006, 145; 2008, 192. See also Parker (1996, 100), who writes about "low-profile local traffic" along the southern French coastline.
116 Parker 1984, 101. See also Lenihan and Murphy (1981, 73) who propose similar ideas.
117 Parker 1992, 8.
118 See Tilley (2010, 27) for example, who distinguished places but not routes as elements constructing a landscape, and his claims that routes connect places.
119 See Ingold (1993, 162; 2017, 23), Tilley (2010, 26), and Harmanşah (2014, 1) who demonstrate how meaning and valorization of the same locus shift over time.
120 Hannam et al. 2006, 13.
121 Leary 2014, 4.
122 Lee and Ingold 2006. See also Ur (2009), Ingold (2011), Leary (2014), and Lucas (2014).
123 For a variety of post-modern (posthumanist, new materialist, and/or correlationist) perspectives on the power of water and the seas, see Bear and Bull (2011), Normark (2014), Cipolla and Allard (2019), and Campbell (2020).
124 Purcell 1996, 198–9; Wilson 2012, 1,3.
125 Scott 1910, Book VIII, Title IV, Parts XXVIII-XXXI; Buckland 1963, 183; Khalilieh 1998, 133, 141–2, 148; Lytle 2012, 21–2.
126 Goedike 1975, IV, VI, IX, XI, XVIII, XXXI; IG X, I² 3: 717.
127 Demosthenes 1930, *Alexander* 26–30; Plato 1926, *Laws* VI.758e, IX.871a, XII.952e. See also Plutarch (1916, *Nicias* 29.3) who writes how the harbour at Syracuse could protect ships from pirates but, in one case, a crew was admitted only after they demonstrated knowledge of Euripides' songs.
128 Fahmy 1966, 32, 53–5.
129 Buckland 1963, 182–3; Lytle 2012, 3, 4, 7–8, 39–42. See also the multitude of codes collated by the 6th century AD that attempted to regulate fishing in Scott (1932, XVII: Constitutions LVI, LVII, LXIV, CII, CIII, and CIV).
130 Fahmy 1966, 55–6; Brauer 1995, 33–6; Khalilieh 1998, 140.
131 Buckland 1963, 182–3; Khalilieh 1998, 133, 148; Lytle 2012, 1, 2, 13, 19, 20–1. See also Brauer (1995, 40), who mentions the claims by the 10th-century AD Muslim jurist al-Mawardi that the sea was the only element that could divide the *umma* into different political entities.
132 Wyatt 1996, 127; Connery 2006, 499.
133 Beaulieu 2016, 27.
134 Sindawi 2009, 458, 465.
135 Fitzgerald 1962, 165–6, 185; Horden and Purcell 2000, 438–40, 445; Gallou 2002, 22. See also the 4th-century BC painted fresco in Tomb 47 from Paestum, depicting a "winged devil" carrying the deceased to the afterlife on a boat.
136 Scott 1910, Book VI, Title II, Part I; Drogula 2011.
137 Demosthenes 1935, *Against Aristocrates* sections 77–8.
138 Lindenlauf 2003, 420–1.
139 Lindenlauf 2003, 418, 421.
140 Homer 1919, *Odyssey* IV.499; Garzya 1979, lines 17–20.
141 Purcell 1995, 132.

142 Robertson 1984, 378–80.
143 Goldziher 1971, 284.
144 Casson 1971, 181–2; 1994, 66; Horden and Purcell 2000, 440. See also Galili et al. (2010a, 95–8) for figurines found on two Roman-era sites off Israel.
145 Vergil 1916, *Aeneid*, V.225, 770; Livy 1919, *Rome* 29.27.1–6; Plutarch 1914, *Themistocles*, XIII; Appian 1913, *The Civil Wars*, V.96.
146 Ramsey 1989, 89–91. These constructed differences between those on land and those going to sea is not unique to the past. Basil Greenhill (1976, 19–20) wrote of the "closed" world of the seaman, how "the separate worlds of the seaman and the landsman . . . persist as separate entities to the present day," and how the ownership of land is regarded as a status symbol.
147 Helms 1988, 83–90. See also Westerdahl (2014) who discusses a variety of taboos and rituals among Norse sailors and fishermen.
148 Lincoln 1997, 466–70.
149 Helms 1988, 57, 81.
150 Helms 1988, 82.
151 Helms 1988, 73.
152 Helms 1988, 82, 163; Abulafia 2012, 644–6.
153 Márquez 2014, 101–2.
154 Blumenberg 1997, 35–41.
155 Connery 2006, 497.

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3 Data collection, interpretation, and visualization

For some readers, this chapter's content may seem overly pedantic as it explains how data were collected, analysed, portrayed, and interpreted. For other readers it may be useful – it may answer questions in relation to the models in Chapters 4 and 5 or provide the framework for similar analyses elsewhere. Nevertheless, its necessity relates to the alternative nature of this study's approach. If the submerged assemblages in the Mediterranean Sea are representative of a maritime culture that inhabited and structured that environment, then what methods transform that archaeological material into a body of data that represent that community?

Collecting data

Before discussing the models' methodology, however, it is best to discuss the maritime archaeological data embedded within them. First, not all of the available data will be used in this study. This study's corpus is limited chronologically because a component of the study's critique is that the potential accuracy of the identities applied to submerged sites decreases as the sites get older. For a 19th-century site like *Monitor*, it is possible to create an explicit and testable methodology to apply an identity because of the amount and variety of data available. For a 9th-century AD site, it is dramatically difficult. As a result, this study's first limitation is to choose a corpus of data older than the 15th century AD, when the number of detailed textual records of specific ships and voyages decreases significantly, and the results of applying a new interpretive approach will have a larger impact. A second consideration is the geographic scope of the study. To maintain simplicity, sites in the Mediterranean Sea from the Strait of Gibraltar to the Bosporus will be included. The Black Sea is not part of this investigation but, as this study may establish a new approach that can be applied in many locations, it may be applied in the Black Sea in the future. The third limitation of this study's dataset is the amount of information available. Most readers familiar with maritime archaeology or studies of maritime activity in the Mediterranean know that the amount of archaeological data from sites in the sea fluctuates over time. Whether using the graph created by A.J. Parker in 1992 or its modification by Andrew Wilson in 2011, the general chronological distribution of archaeological data is roughly a bell curve centred on the early Roman Imperial era. Whereas there are

approximately 300 sites on the seafloor dating to the 1st and 2nd centuries AD, there are less than 40 sites from the 6th century BC or approximately 60 sites from the 7th century AD. Moreover, the number of sites does not dramatically increase in the following centuries. Rather than using all the available data older than the 15th century AD, therefore, this study takes a significant and fairly symmetrical sample – sites dating from the 7th century BC to the 7th century AD. This particular chronological dispersal is also useful because the data in Parker's 1992 catalogue, *Ancient Shipwrecks of the Mediterranean and the Roman Provinces*, can act as a key component of this study's dataset.[1]

This reliance on Parker's catalogue, which is a compilation and amalgamation of information previously published, prompts questions of reliability: What if there are mistakes in the catalogue that are simply repeated? Does the catalogue relay the information accurately? After all, Parker's particularly comprehensive bibliography means that the original publications may be examined, eliminating the need for his catalogue and potentially eliminating some of these ambiguities. Similarly, as work on some of these submerged assemblages has continued since the catalogue's publication, it is equally possible to update the available information, improving upon both Parker's corpus and that central to this study.

Ultimately, however, Parker's catalogue was taken as a fixed and given set of data, and the catalogue's sources were investigated only to answer questions about particular typological styles mentioned in his text. The decision to take his catalogue as a fixed set of data was made for three reasons. First, double-checking or amending some of the catalogue's entries invites the recreation or emendation of all the entries, a prospect that was not the purpose of this study.[2] As a result, the data for some assemblages within the catalogue has not been updated. Information on the 11th-century AD wreck from Serçe Limanı, Turkey, for example, comes entirely from the catalogue, and not from the two volumes of the final report published in 2004 and 2009. The same is true for data from other sites, such as the wreck at Ma'agen Mikhael.

Nevertheless, this study accepts the potential unreliability of Parker's data and has attempted to accommodate its possible inaccuracies. As a means of updating the dataset for this study, information about new assemblages was gleaned from an additional 26 journals and publications, and from the exhibition of finds from the 2008 harbour rescue excavation in Naples, Italy.[3] This additional collative process represents an opportunity to include reports that use more recent typological and source analyses, while its continual expansion means that it will eventually surpass the number of sites gleaned from Parker's corpus. In 2010, this post-1990 dataset had 201 assemblages whereas almost 400 were used for this study's analyses. Additionally, this collation of post-1990 data is important because, unlike the data from Parker's catalogue, this information is in a continual state of refinement as new reports are published. For example, as the results from the excavation of Tantura F off the coast of Israel were released from 2000 to 2016, the gradually accumulating results were integrated into this study.

The third reason Parker's catalogue was included as a fixed set of information is that it is also a historical document representing the state of the practice in the

early 1990s. As maritime archaeology is now over 50 years old, 1990 represents a point approximately halfway to the discipline's present state; comparing the pre- and post-1990 corpora is a means of roughly measuring changes over this period. The combined dataset in this study, for example, contains the same variety of ship assembly methods that Parker summarized in 1992. As Patrice Pomey, Ya'acov Kahanov, and Eric Rieth have highlighted, however, there is now enough accumulated information to distinguish five discrete assembly types or styles.[4] In particular, there is more knowledge and understanding of using lacing to affix external planking together, and the recognition that pegs, and not only tenons, were also used to attach adjacent planks.[5] Parker's "gap" in the body of hull evidence between the 7th and 10th centuries AD has also been eliminated by material excavated from Bozburun and Yenikapı, Turkey, and Dor, Israel.[6]

In other ways, little has changed. The geographic concentrations of information are generally the same, with the highest amount of data emerging from the northern and western coastlines of the Mediterranean, as well as Cyprus and Israel. Dramatically fewer data arise along the southern coastline, Lebanon, and Syria. This disjunction may reflect varying levels of political and economic stability, as well as academic priorities and resources. Nature is likely a culprit as well. The coarser and steeper northern coastline may have more natural harbours but also more dangers, prompting more wrecks. The *sirocco* winds blowing out of the Sahara desert also deposit sand and dust along the northern coastline of Africa, burying any adjacent assemblages and making them more difficult to detect.

Nevertheless, as this study accepts the potential unreliability of Parker's dataset, other elements of his catalogue were similarly not sacrosanct. Within the bounds of this study, assigning a date to a site could have followed two different procedures. One was the approach applied by Parker, in which a site was assigned to a particular century. Among his entries, a site's age is represented by a range of values, indicating the dates between which the assemblage may have been deposited on the seafloor. For statistical purposes, however, Parker found the midrange of these values to assign a site to a specific century. Thus, a hypothetical site between AD 200 and 350 would be assigned to AD 275.[7] Once compiled in this manner, Parker portrayed the total number of sites in each century in a variety of ways and in coordination with a variety of historical events, such as the fall of Carthage or the reign of Emperor Diocletian.[8]

An alternative statistical approach is that proposed by Wilson, in an essay on the application and expansion of Parker's dataset within the Oxford Roman Economy Project (OXREP).[9] Wilson also used a range of values to represent when an assemblage was deposited on the seafloor, but, rather than reducing these values to a single number, he retained the values and instead spread the potential distribution of an assemblage across a range of dates. Within the 150-year period between AD 200 and 350, the same hypothetical assemblage had a 66 percent chance of deposition in the 3rd century AD, and a 33 percent chance of deposition in the first half of the 4th century. This means that unlike Parker, who assigned a site to a single century as a whole number, Wilson assigned a site to more than one century as a percentage. When compiling the number of assemblages in the

3rd century AD, this Roman-era site would have 66 percent of a presence within this period. Wilson, like Parker, applied his approach for statistical purposes, but it was Wilson's perspective that was used in this study when modelling activity. So, symbology representing an assemblage deposited between AD 200 and 350 is apparent in models for the 3rd and 4th centuries AD.

Parker's methodology was amended as well. As evident from the title of his catalogue, his later publications, and from numerous uses of his corpus since, the assemblages in his dataset are considered to be wrecks. Parker's text, however, uses this classification flexibly as he summarizes data that may be jettison, loss, or a very incoherent assemblage, such as the material from Capo Sidero A and B, Dragonera C, or Le Grand Radeau. This suggests that Parker may not have had a working definition of a "wreck," but he favoured the inclusion of data that likely represented such sites. Equally, he was disinclined to include material that was probably accidental loss or jettison, even if some slipped into the catalogue.[10] The compilation and collation of post-1990 data for this study were not similarly constrained, however. In many cases, reports of one or two amphorae on the seafloor or the occasional collection of roof tiles were included for completeness and because it is still useful information, as demonstrated in reports by Jean-Pierre Joncheray, Frédéric Carrazé, and Louis Lacoupelle.[11]

By including a wider variety of submerged sites in this study, it also means that the data came from a wider variety of contexts, causing minor classificatory problems. Approximately 11 percent of the post-1990 data is from small collections of items, or a single item, whereas a much larger percentage came from harbour sites, such as Samos, Xlendi, Caesarea Maritima, Naples, Yenikapı and, particularly, Pisa. Classifying this information was delicate because, in many cases, the nomenclature of *sites*, *wrecks*, and *assemblages* could not be applied definitively. Generally, sites are assumed to be larger than assemblages – as a single site like Yenikapı may integrate one or more assemblages or wrecks, although a single wreck may also be classified as a site. Moreover, there is no straightforward way to classify a single item on the seafloor without a value-laden label such as *jettison* or *loss*. This was a particular problem in the harbour sites that were marked by wreck assemblages as well as a scatter of isolated items in situ, or at sites such as Cape Greco, Cyprus. For the purposes of this study, a site may be a collection of assemblages but not vice versa, and an assemblage was defined both spatially and chronologically. Thus, presently lacking a better term, an assemblage on the seafloor may be a wreck, a few contemporaneous items grouped together on the sea floor, or a single item. Statistically, this means that there will be many more post-1990 assemblages than wrecks within this study.

Online datasets of sites in the Mediterranean Sea

Composed of material from Parker's catalogue and post-1990 data, this study's corpus of sites in the Mediterranean is not the only one of its kind. Similar compilations have been undertaken by Oxford University (OXREP), Harvard University (DARMC), and the University of North Carolina (Benthos), so why did this study collect additional post-1990 data from 12 journals and 14 recent volumes, when

Table 3.1 A list of some sites common to all three online wreck datasets and the differences in their content.

	DARMC	Benthos	OXREP
Site name	Bera	Bera	Bera
Bibliography	None	Parker	Parker and his sources
Site name	Bergeggi	Bergeggi	Bergeggi A
Bibliography	None	Parker	Parker
Site name	Cala Levante	Cala Levante	Cala Levante
Bibliography	None	Parker and his sources	Parker
Site name	Cape Magroua	Cap Kagroua	None
Bibliography	None	Parker and his sources	None
Site name	Cherchel 1 and 2	Cherchel A and B	Cherchel A and B
Bibliography	None	Parker and his sources	Parker
Site name	Freu d'en Valento	Freu d'en Valento	Freu d'en Valento
Bibliography	None	Parker	Parker
Site name	Pantelleria	Pantelleria	Pantelleria
Bibliography	None	None	Parker

valid resources are available online? One reason this study worked independently is that these online resources have different missions from this project. In general, these online datasets are seeking comprehensiveness, so each wants to create a dataset representative of all submerged sites in the Mediterranean Sea within certain chronological limits. This study, however, needed information only from sites that had certain data. Attempting to use these online resources to build this study's dataset would have necessitated a search process similar to a search through the journals themselves to find assemblages that met this study's needs. Moreover, as these datasets focus on comprehensiveness, they compile information from within and beyond professional outlets, whereas the peer-review process was one mechanism of control over the content of data collected for this project. A second reason for creating an independent dataset is that critiques applied to Parker's catalogue are equally applicable to these online datasets – they too may inadvertently present incorrect information as they collate and synthesize previously published reports. Similarly, as these online sources also use Parker's catalogue as a foundation, they may reiterate inaccuracies already present in his work. Lastly, all three online resources differ in their portrayal of the corpus in the Mediterranean Sea, even when they are presenting the same sites (Table 3.1).

Within this study, thus, it was more appropriate to search through publications and to collect and collate the relevant data, even if the final corpus resembled these online datasets. Doing so provided a means of controlling the quality of the result within a specific set of criteria.

Interpretive methodology

This study's corpus of data may be built upon Parker's collection and is similar to online resources, but the way it uses those data to generate models of movement is different from its predecessors. Unlike previous studies, this interpretive methodology does not attempt to construct routes or vectors of movement. Instead, like

Carrie Fulton's recent argument, this study interprets each assemblage as representative of movement within a certain area and then collates and superimposes those areas to generate models with higher and lower concentrations of activity.[12]

Four concepts are integral to using this methodology. First, this approach endeavours to use the published data about all items in an assemblage rather than only using one component. As a result, social constructs like *cargo* or *personal items* are not considered within this interpretive approach, meaning that the epistemological issues surrounding such labels can be avoided. Gibbins has argued, for example, that *cargo* and a *domestic assemblage* may be distinguished by volume and homogeneity, but it is unclear how much of either is required to make a justifiable distinction.[13] Also, if volume and homogeneity are the criteria necessary to distinguish the two categories archaeologically, then an extensive excavation of a well-preserved assemblage is necessary to discern these differences. Using data only from extensively excavated and well-preserved sites, in turn, would dramatically diminish the total number of assemblages available to include in this study.

Using only cargo to reconstruct activity, and thus modelling movement related to the exchange or distribution of goods, also prompts comparisons between activities in the past and present. For example, is the cargo representing part of a mercantile transaction similar to the exchange and distribution of goods today? For Michael Rostovtzeff or Peter Temin, who portrayed ancient Rome as a market-based economy with modern analogues, cargo would be *cargo* in a very modern sense, whereas the domestic assemblage is something with no mercantile characteristics.[14] For these two scholars, Gibbins' methodology becomes an appropriate means of distinguishing the two components of an assemblage archaeologically. As Moses Finley felt that Rome's markets could not be modelled in our present capitalist dynamics, however, *cargo* becomes an element within a more diverse system of exchange, possibly within the dynamics of reciprocity, redistribution, or householding proposed by Karl Polanyi.[15] Within this view, any distinction between the cargo and domestic items in an assemblage becomes much more subtle, as do efforts to distinguish them archaeologically.[16]

As this study's methodology attempts to integrate all the elements of an assemblage on the seafloor, it also considers the chronology of activity represented by the data slightly differently. This is the second concept integral to this methodology. Although scholars have moved away from explicit models of a ship's last route, like Fernand Benoit's proposal for Grand Congloué, a limited chronological perspective that only encompasses this final journey is still implicit in some recent studies. Other than examples of coastal tramping, such as the site Cavalière, cargoes found on the seafloor are generally assumed to have been loaded at the same time. Thus, Xavier Nieto's conclusion that his site at Cap de Creus began its final journey with a mixed cargo from Narbonne and not from a variety of ports, and Julia Strauss' application of a vessel's singular place of origin based upon an assemblage's contents.[17] Michel Bonifay and André Tchernia's models of direct, indirect, and proximal cabotage from North Africa to Italy do the same.[18]

Unclear, however, is how these models may accommodate the collection of some materials, including domestic items, ship's equipment, replacements

and repairs, or gifts, particularly if these items were not collected synchronously. Equally, without a reliable means of determining the order of their acquisition, fashioning a single, viable route that could accommodate the collection of these items would be exceptionally difficult. As this study attempts to use published information about all the items in the assemblage, rather than a selection, the potential movements the data portray also represent a broader chronological span of activity. If there are items in the assemblage that were made 2, 10, or 50 years apart, this study's methodology accommodates this chronological depth.

The third concept key to this alternative approach is the use of polygons to portray areas of activity, rather than routes or vectors. Polygons are useful because they can accommodate a variety of different possible movements, they can easily represent the area in which this activity was taking place, and they do not prioritize certain routes or a sequence of events. Understanding their representative ability, however, is related to two things: their creation, and the entanglement of human–thing relations.

Fundamentally, the creation of these polygons is an adaptation of site catchment analysis (SCA). SCA was proposed in 1970 by Claudio Vita-Finzi and Eric Higgs as a means of understanding the economic potential of the environment around different Epipaleolithic-era settlements in the Levant. By building catchment basins 10 km in radius around a series of cave sites and quantifying the encircled resources, Vita-Finzi and Higgs could compare sites and propose which were suited to transient, hunter-gatherer groups and which were likely exploited on a year-round basis.[19] Figure 3.1 is a schematic model of Vita-Finzi and Higgs' movement of people from their fixed settlement and their return with resources gathered from their origins. Moreover, by assessing this relationship between people and the environment, it was equally possible to model the valorization of a space and the efforts necessary either to relocate a settlement or to establish a new one.[20]

Perhaps because this initial application was critiqued for artificially fixing the boundaries of human activity in the surrounding environment, SCA is now applied in increasingly varied ways.[21] Some applications still use a circular catchment basin, whereas others establish a basin by following the contour of a certain elevation across terrain.[22] Equally, what the catchment basin can represent has shifted as well. For Vita-Finzi and Higgs, the catchment basin was a means of assessing the carrying capacity of the environment surrounding a settlement but, for Ian Hodder, the basin could also represent the area in which products were distributed. In 1974, Hodder published various analyses and interpretations of the distribution of Romano-British coarseware pottery throughout the Suffolk region in southern England. By plotting the concentrations of finds in the region around Mildenhall, where the coarsewares were likely made, Hodder was able to construct catchment basins he called "market areas" – the zone in which these items were distributed. Unlike the earlier use of SCA, which roughly estimated the radiation and return of people through their environment, Hodder's model estimated the distribution of items from a central source and the portion of the landscape dedicated to that movement (Figure 3.2). These initial models were refined by the
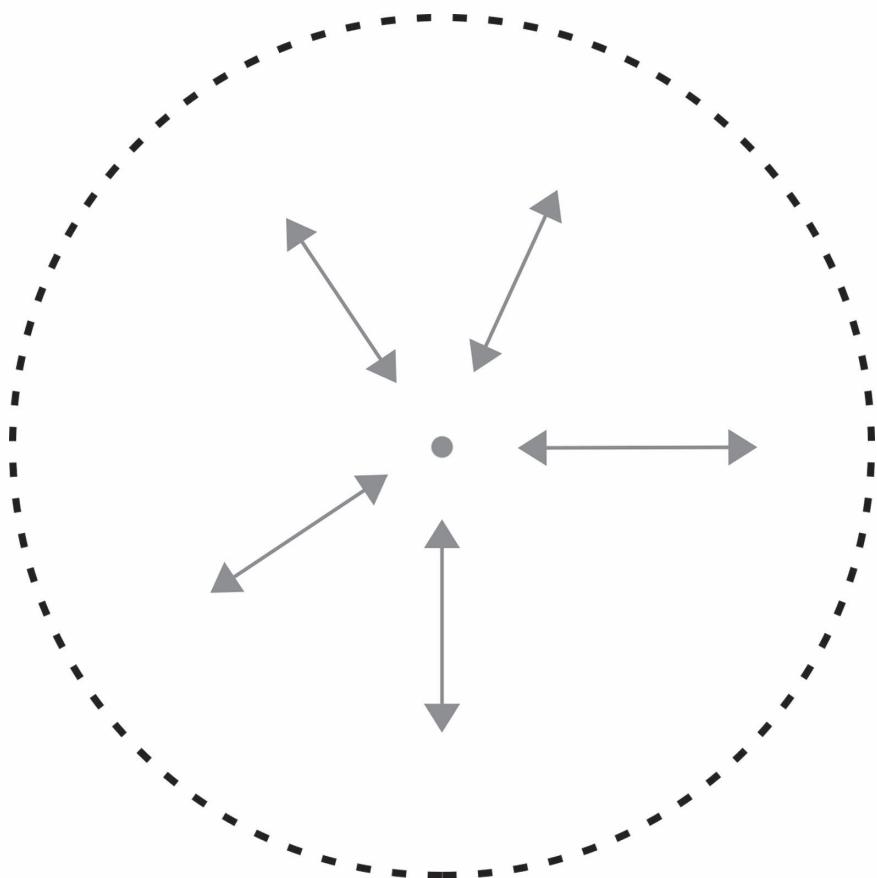
Figure 3.1 Schematic representation of human movement through the site-catchment
            basin established by Claudio Vita-Hinzi and Eric Higgs.

inclusion of transport costs, based upon the distance from a collection of sherds to
the nearest contemporaneous road.[23]

The spatial and representational flexibility of a catchment basin is key to its
adaptation within this study. Like most applications, the basins generated within
this study are representative of movement; like Hodder's work, they are likely
unrelated to subsistence practices. In addition, the basin is polygonal and not cir-
cular because of its relationship to the artefacts in the assemblage. This estab-
lishes a key distinction, however. Hodder's market area of the production centre at
Mildenhall is polygonal because each vertex of the polygon is the location where
the coarseware sherds were found following deposition. The area, thus, roughly
demonstrates the distribution of the wares around their source. As the submerged
assemblages in this study's dataset represent where this distribution process unex-
pectedly ceased, however, the polygons established by these assemblages reverse
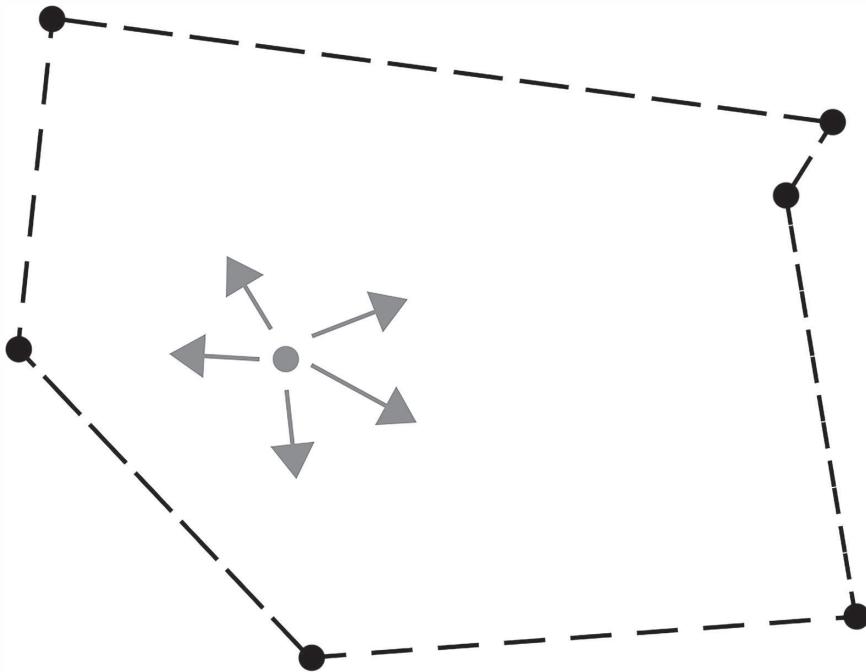
Figure 3.2 Schematic model of Hodder's "market areas," a variation on a catchment basin.

this orientation. The vertices of each polygon do not represent where movement stopped but where it began; the vertices are the sources of the amphorae, oil lamps, coins, ingots, or other items within the assemblage. Moreover, although the location of the assemblage on the seafloor is where this movement eventually ended, we cannot derive a predictable pattern of dispersal from each source to this location because, in the past, this assemblage was mobile. Thus, it may have been anywhere within the proposed polygon collecting and moving items before it sank. Rather than vectors or routes, then, it is easier to accommodate this uncertainty and to portray the entire area of the polygon as the space in which this movement was most likely happening (Figure 3.3).

Each polygon can incorporate numerous societal processes interacting with the sea: exchange, distribution, creation, destruction, sustenance, subsistence, and many others. As discussed in Chapter 2, however, society is more than a mechanistic or systemic process that deposits the archaeological record. Instead, postprocessual perspectives argue that people act upon material culture in complex and unpredictable ways, but their actions may also be impelled *by* the material culture as well. We drive cars, but maps tell us where to go. A blind person may use a cane, but the cane suggests where and how to step.[24] A chain of human actions created an Iron-Age mirror found at Portesham, England, but the mirror's
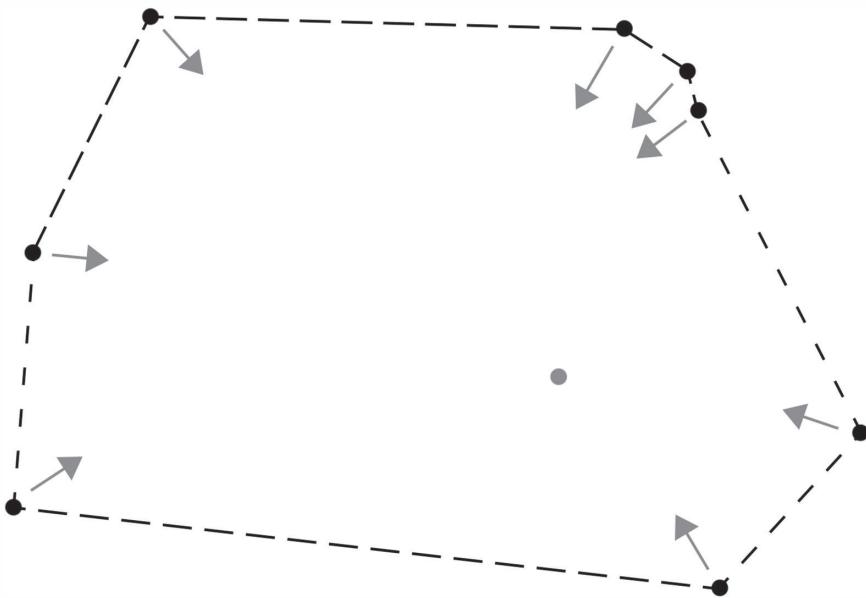
Figure 3.3 A schematic model of the polygons used to model maritime movement, repre-
senting the most likely area of a ship's movement based upon the contents of
the assemblage.

past uses changed personal appearance, gesture, posture, and expressed identity.[25]
These examples represent a larger effort within post-processual and post-modern
theory to re-interpolate the agency inherent in human–thing relations. Instead of
an asymmetrical system favouring people, new perspectives explore a level or
"smooth" relationship; agency is not solely a human trait.

A variety of scholars, many more than will be discussed here, have explored
this materiality. Among its many applications, Pierre Bourdieu's concept of *habi-
tus* also encompasses how physical structures can be appropriated for social con-
structs while reinforcing the spatial implications of those constructs on people.
Examples include the aura of the Left Bank in Paris, the spatial and ethnic impli-
cations of the Great Wall in China, or Istanbul's Hagia Sofia as a museum, a
mosque, or simultaneously both. Actor-Network Theory (ANT), championed by
Michel Callon, Bruno Latour, and John Law in the 1980s, and by others since,
similarly argues that people are not the only key to transporting or expressing
action or force.[26] "Actants" like kettles boiling water and baskets holding grocer-
ies may seem mundane, but their absence can impact society as dramatically as
the ships that carried the Portuguese to India and the navigational technology that
enabled the voyages.[27] Within ANT, things – which can also include immaterial
class hierarchies or valorizations of space – are crucial, active parts of society.[28]
Within Tim Ingold's interpretations, ANT can also be integral to creating the

places we experience in space. As he argues, "network" or *réseau* can refer to connectivity as an active, ongoing, and dependent relationship of elements. It can also be the gossamer web of possible interactions expressed by each actor.[29] As people and things exist and move through space, each radiating filaments of potential connections and purposes, the entanglement of those filaments can generate meaning and value. Weak knots between people and things can fluoresce as transitory places within a landscape; others deeply and densely tied can embed places in social memories that transcend lifetimes.[30]

The conception of these entangled filaments is integral to human–thing relations, but it includes more than the codification of the connection between independent actors. Instead, the entanglement is interactive as well, meaning that – just as a cane influences the user – the amphorae, oil lamps, cylinder seals, lead ingots, or coins on a ship impact human activities and decisions.[31] For example, if the sword in the assemblage at Cefalu, Sicily, was available as a weapon, perhaps it encouraged the crew to sail in waters where it may have been necessary.[32] Alternatively, the weight sets in the assemblages at Uluburun and Yassı Ada, Turkey, could have compelled the crews to exchange goods at a particular set of ports.[33] Whereas the set on board the Late Bronze Age Uluburun ship could accommodate four different metrological systems, the balance pan weights from the Byzantine-era site were calibrated to a provincial pound, not the Imperial standard common at Constantinople. Other examples include the amphorae that, as Simon Keay and Moses Finley argued, impacted crews' decisions to carry them to certain ports with ARS wares.[34] More generally, changes in a ship's contents may alter the details of a cyclical trading route, while coastal tramping – perhaps the most acute example of relational entanglement – is determined by the exchange of items at each port. If the polygon is a representation of movement, it is simultaneously a representation of the inherently complex entanglement of filaments that generates that movement.

The impact of this phenomenon on maritime activity will be explored more in Chapter 5, but additional examples are helpful. The first is the assemblage at Isla Pedrosa off the eastern coast of Spain, deposited in the 2nd century BC with material from Spain, France, Italy, and Sicily, in addition to Punic amphorae from North Africa.[35] Based upon the material preserved in the assemblage, it appears that it represents activity conducted primarily – if not exclusively – in the Western-Mediterranean Sea (Figure 3.4).

From an entangled perspective, this activity was a manifestation of the crew's interests and prerogatives, combined with the material culture's role compelling the crew to engage in certain patterns of distribution. This polygon is not an exact representation; it embodies a level of ambiguity by only demarcating the area in which this activity was most likely taking place. This imprecision is advantageous, however, as the ship lost at Cape Gelidonya in the 13th century BC demonstrates. If the entangled human–thing relations on board the ship prompted a journey from the Syro-Palestinian coast, a brief stop at Cyprus, and a route westwards along the southern Anatolian coastline, the projected polygon accommodates a majority of the ports potentially involved in this activity[36]

Figure 3.4 Movement polygon representing the area of likely activity, established by the contents of the 2nd-century BC assemblage investigated at Isla Pedrosa, Spain

Figure 3.5 Movement polygon representing the area of likely activity, established by the contents of the 13th-century BC assemblage investigated at Cape Gelidonya, Turkey

(Figure 3.5). Equally, the polygon embeds the chronological depth of the assemblage: the cylinder seal produced in Syria was approximately 500 years old when deposited on the seafloor.[37] It is impossible to determine when and how the seal, and the assemblage's other elements, came together prior to loss. Yet, the assemblage's polygon accommodates a variety of possible movements, distributions, entanglements, and exchanges.
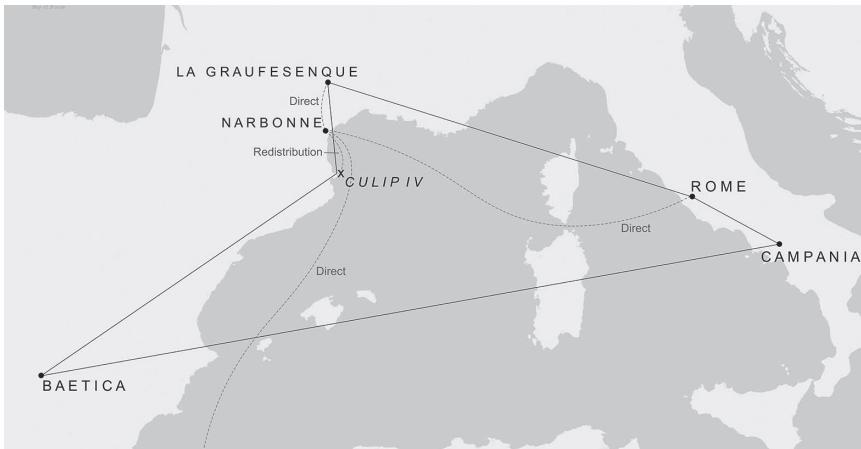
Figure 3.6 Movement polygon representing the area of likely activity, established by the contents of the 1st-century AD Culip IV assemblage at Cap de Creus, Spain. The dashed lines represent the routes of distribution and redistribution between primary and secondary ports, as proposed by Nieto.

The polygon derived from the 1st-century AD Culip IV assemblage demonstrates these characteristics as well as another (Figure 3.6). Like the Isla Pedrosa polygon, the Culip IV polygon also suggests that activity was most likely occurring within the Western-Mediterranean basin. The resulting polygon also accommodates Nieto's interpretation that the ship was moving southwards from Narbonne when it sank at Cap de Creus. As previously discussed (page 43), however, Nieto's interpretation is part of his larger theory of a hierarchical distribution structure with direct routes between primary ports and routes of redistribution between secondary ports.[38]

In contrast to a hypothesis that a single ship travelled between ports for Baetica, Campania, Rome, and La Graufesenque, Nieto proposed that at least three ships were involved. First, separate ships brought material from Italy and Spain to Narbonne. Second, the combined items were transferred to a third vessel for redistribution, and it was this third shipment that sank at Cap de Creus. The area of activity proposed by the polygon associated with the Culip IV assemblage thus integrates numerous elements. First, by accommodating a variety of past movements, it accommodates a similar variety of interpretations about those movements without favouring any. The same area is constituted by one vessel visiting numerous ports before sinking, or by three vessels limited by direct and redistributive routes. Second, the polygon also integrates the various entanglements of the items with the crews. The material culture's role in the direct shipments to Narbonne impacted the crews' decisions, whereas the combined shipment – and its role as a redistributed consignment – impacted additional decisions to sail southwards from Narbonne.

This study, however, is not attempting to derive patterns of activity from one or two assemblages on the seafloor. Instead, similar to projects by Keay, Fulford, Boetto, or Kingsley, this study assumes that the corpus of maritime archaeological data in the Mediterranean Sea – or even the 1203 assemblages used for this book – is large enough to establish its own narrative of activity. This is the final concept integral to this methodology, and for understanding the models that are discussed in the following chapters.

This large-scale collation of data is similar to recent efforts that use network modelling or network theory because both rely upon the accretion and analysis of a large dataset to yield results. The superimposition of the resulting polygons has a different nature, however.[39] Because network approaches explicitly assume a level of dependence within the network, network modelling operates within a relational space that gauges the interaction between data.[40] Essentially, links between nodes represent a common characteristic that also determines the nodes' interaction, as well as the overall nature of the network. Lacking these links and the assumed dependence, the interaction and the network unravel. The submerged assemblages within this study's dataset may contain their own human–thing entanglements, but there is no demonstrable interaction or dependence between the assemblages. The presence and contents of one assemblage are not contingent upon the presence and characteristics of a second, meaning that there are no active links between assemblages, and their polygons have no dependent relationship. Unlike networked data, these assemblages or their polygons cannot be assessed within the relational space gauging interaction and dependence. Instead, they are assessed within a relational space that gauges their similarities in movement.

Gauging these similarities is straightforward. As the polygons operate within geo-referenced relational space, an overlap between polygons equals an overlap in the portrayed area of movement on the sea. The greater this overlap between polygons, the greater the similarity between the portrayed activities and the stronger the relationship based upon this similarity. Equally, as more polygons are superimposed, the emerging variations in their density can gauge the commonality of the portrayed activities within the entire dataset, and at a particular location (Figure 3.7). Some locations may have a higher density of polygons and a greater similarity in superimposed activities, whereas other areas may have fewer polygons and less activity.

Yet, these polygons represent more than movement in space. Each also represents the human–thing entanglements that generated this movement. *Places* may emerge from a density of activity, as argued in Chapter 2, but they encompass more than a concentration of voyages between origins and destinations. They are also concentrations of human–thing interactions, and the many gossamer filaments seeking more entangled purposes and meanings.[41] Places, as a result, are an accretion of values, tasks, and expectations catalysed by this concentration of potential. Briefly, places create the viscous and kinetic texture of a maritime cultural landscape.
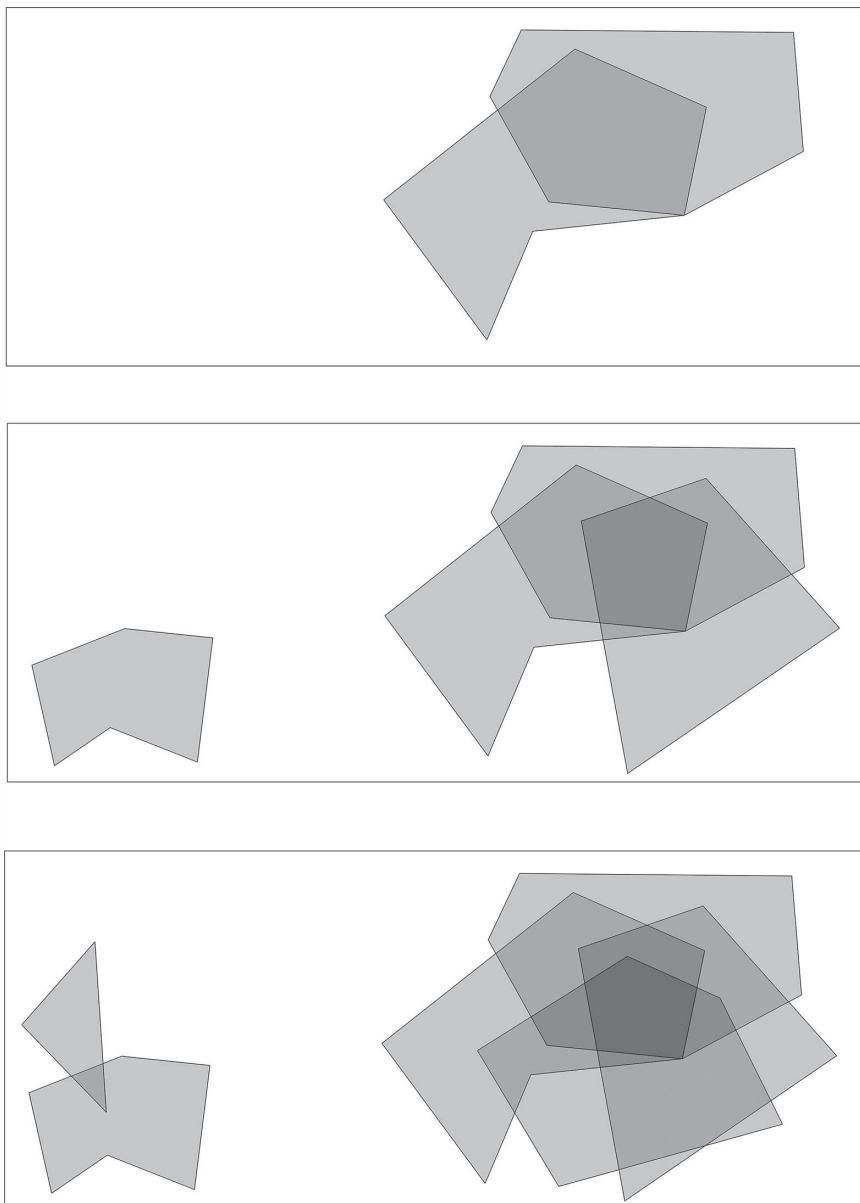
Figure 3.7 Illustrating how different distributions of movement polygons can establish densities and, theoretically, different concentrations of potential activity in space.

Building models

The construction of these places, as well as the maritime cultures that make them, will be explored more in Chapter 5. Before this, however, it is best to close this chapter by combining the four concepts integral to this methodology and explaining how they build models and narratives of past maritime activity. Geographic Information System (GIS) is integral to the application of this methodology because it enables the representation, synthesis, and analysis of spatial datasets.[42] In this study, three spatial datasets are necessary to apply this methodology (Figure 3.8). The first, which is represented as point data, collates the sources of items in each assemblage. This includes precise source data, such as Haifa, Carthage, Knossos, Scyros, or Corsica, or more general areas such as Tunisia or Campania. The second dataset, which is also point data, represents the locations of each assemblage on the seafloor. As mentioned previously, an assemblage may be a shipwreck, a collection of associated items, or a single object such as an oil lamp. As each of these is represented as a point in geo-referenced space, port sites such as Yenikapı or Pisa have a collection of these points at a single location. The last dataset is the collection of polygons extrapolated from the data within each assemblage.

Like the point data, these are shapefiles. Each polygon needs a separate shapefile, however, whereas the point data for all the sources can be contained in a single shapefile. By generating separate shapefiles for each polygon, they may be sorted by a variety of criteria such as date, location, contents, or other characteristics intrinsic to each assemblage. Nevertheless, once a suite of polygons has been assembled to model a particular phenomenon, they need to be grouped together into a single shapefile for additional analysis.

Generating the polygons requires both point datasets. So, the first vertex of the polygon can be the location of the assemblage on the seafloor, and the remaining vertices are the sources of the items within the assemblage, generating polygons of a variety of shapes. Some polygons, with items from sources around the Aegean, may be particularly open and encompassing. If an assemblage only has one item or one source, however, the polygon may be long and narrow. Nevertheless, once all the polygons are built, they may be investigated in a variety of ways. Past efforts have interpreted the raw polygons or combined the Inverse Distance Weighting (IDW) GIS tool with other GIS tools to interpolate results.[43] To generate the interpolated models in this study, the IDW tool will be combined with the Count Overlapping Polygons (COP) tool developed by Sadeck Technologies.

Broadly, the IDW tool starts with a given set of points in geo-referenced space characterized by a series of numerical values. These given points and their values may be regularly or irregularly distributed across the space to be analysed (Figure 3.9).

Starting with these data, IDW then interpolates values for additional points in the same space, based upon two criteria. First, the given point values determine the interpolated values of adjacent points. So, if one point has a given value of 5, IDW will interpolate a value of 5 to an adjacent point. Second, the interpolated point values are determined by proximity to the set of given point values. So, as

Figure 3.8 Illustration of the three corollary datasets in GIS. The sources (purple) are point data, as are the locations of the assemblages on the seafloor (green), whereas the polygonal data represent the individual areas of activity.
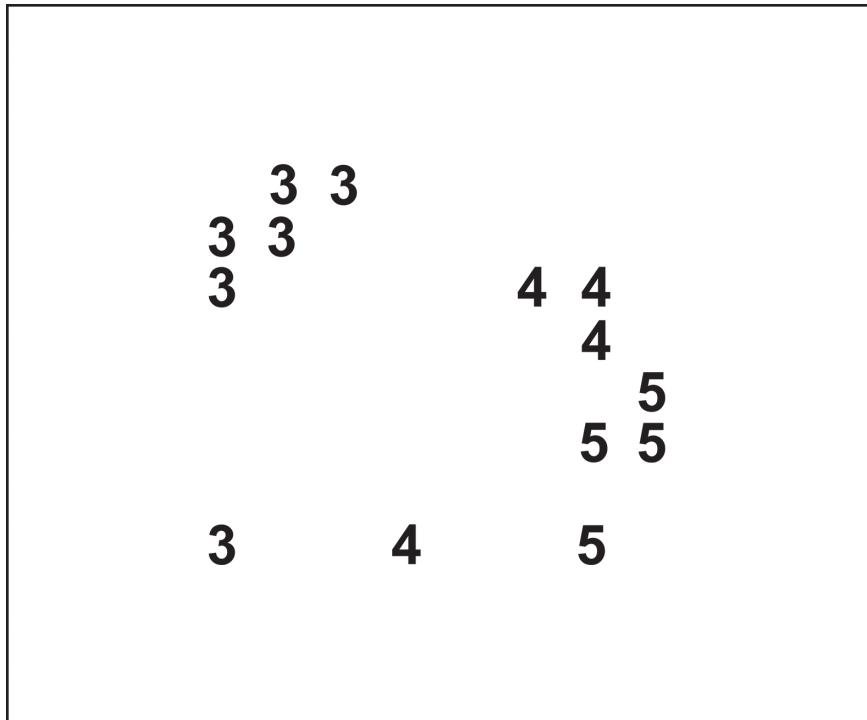
Figure 3.9 Generic set of point values distributed in space. These are the given values
necessary for IDW to interpolate additional values nearby.

the distance between a given point value and a point to be interpolated increases,
the value assigned by IDW will decrease (Figure 3.10).

The COP tool is key because it calculates the given point values necessary to
start this interpolative process. For this study, once a set of polygons portraying
activity is established from their assemblages and collated into a single shapefile,
the COP tool generates a series of density values for those polygons (Figure 3.11).

Then, the IDW tool interpolates additional density values for other points
within the same space, and the resulting model can illustrate the given and pro-
jected density values within a colour-coded gradient (Figure 3.12). Although a
colour spectrum can be used to illustrate these density values, this study will use
one colour in varying levels of transparency to illustrate differences in density.

Model testing

Some readers will have realized that one key component of this study's methodol-
ogy has yet to be discussed. Despite the novelty of some of this work's interpretive
elements, it still relies on an assumption that it is possible to distinguish mean-
ingful patterns within a haphazard collection of archaeological data. Effectively,

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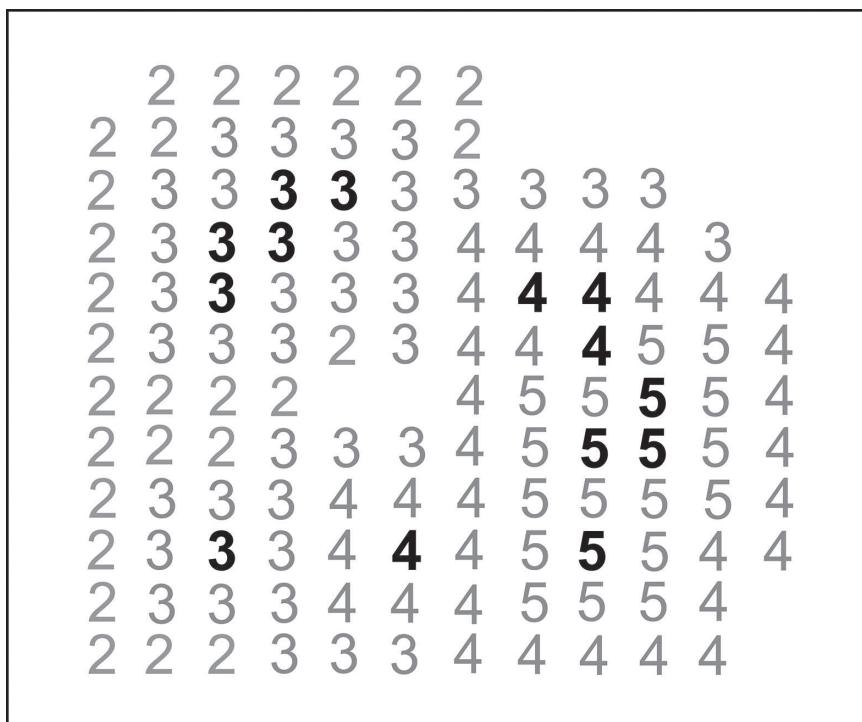
Figure 3.10 With the application of IDW to the given values in Figure 3.9, subsequent values are interpolated and applied to the space around those values. Note how the value of the interpolated points decreases in relation to distance from the original value.
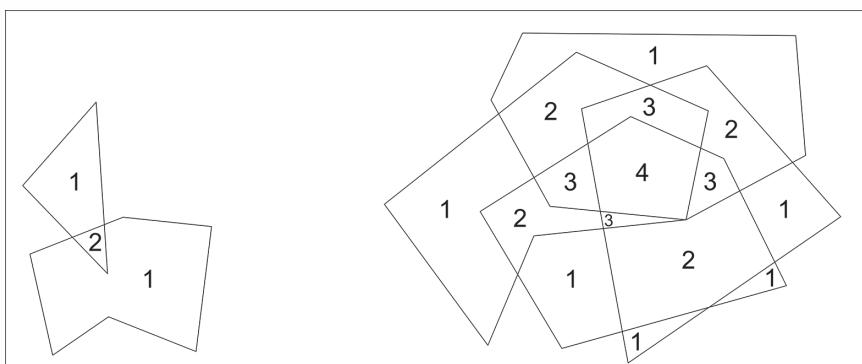
Figure 3.11 The point values calculated by the COP tool for the set of generic polygons from Figure 3.7.
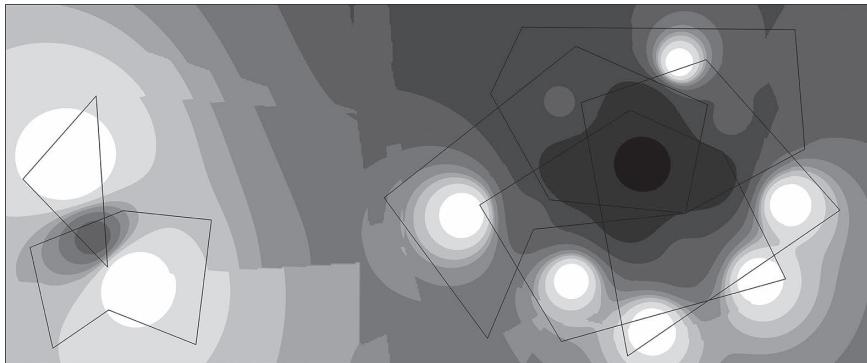
Figure 3.12 A raster generated by the IDW tool, using the given values in Figure 3.11, and the values interpolated by the IDW tool. Higher density values equal darker colours.

there is a signal to be found within this archaeological noise. This signal could emerge from many things, but, in this study, it is the varying density of the superimposed polygons that are assessed. Density is key because it is the variable upon which the subsequent interpretations rest. If a high density of activity represents the construction of *place* at sea, as mentioned previously, it also becomes the texture of a socially constructed landscape.

Determining when this measured density becomes meaningful, or when this signal arises, may be assessed using statistical significance testing. Statistical significance testing determines the probability – or *p*-value – that a relationship between two variables generates results distinguishable from chance. For example, the model of pan-Mediterranean activity in the second century BC has 275 archaeological assemblages generating a maximum density of 77.51. A set of 275 randomized assemblages, however, generates a maximum density of 38.61.[44] The large difference in maximum densities generated by the archaeological and randomized datasets suggests that the patterns in the archaeological model are likely distinguishable from coincidence. The calculated *p*-value, however, quantifies this likelihood. In this comparison, the *p*-value is less than .01, proposing that there is a 99 percent probability that the results within the archaeological model are not resulting from a chance arrangement of the data.[45]

As evident in Table 3.2, the archaeological models are tested against four iterations of the randomized data. Within those four tests, the distribution of the assemblages in tests 3 and 4 is limited spatially; due to geographic constraints, they are also limited slightly differently. Among the tests applied to the pan-Mediterranean, Western-Mediterranean, and Eastern-Mediterranean datasets, the randomized data in tests 3 and 4 are confined within areas 500 and 250 km². Tests 3 and 4 in the Aegean and the Adriatic, in contrast, are restricted within two areas of 250 km². These spatial limits reduce the randomness of the assemblages' distribution within a controlled and predictable fashion and impose an artificial order on the random models' activity. As a result, the archaeological models are tested against models that present activity within a spectrum of possibilities. Tests 1 and
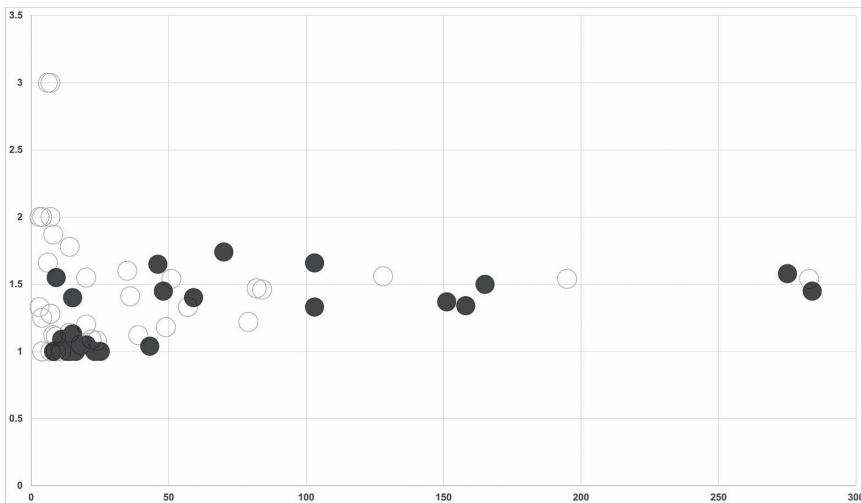
Figure 3.13 Distribution of viable (dark circles) and unused (open circles) models of archaeological data, from Table 3.2. The X-axis represents the number of assemblages in each model, and the Y-axis represents the average number of vertices of the polygons in the models.

2 present randomized data in randomized activity, whereas tests 3 and 4 constrain the activity within smaller and more predictable structures of movement.

The interpretations of the resulting models will be discussed in detail in the following chapters, but, in general, it is evident that not all results emerging from the archaeological data may be distinguished from coincidence. Some results, such as the pan-Mediterranean model of activity in the 2nd century BC, are clearly distinguishable from chance, but the archaeological model of Eastern-Mediterranean activity in the 3rd century AD is not. Indeed, the resulting *p*-values for the 3rd-century AD data suggest that there is an equal probability that the patterns from the archaeological data are only coincidence. Unfortunately, there does not appear to be a clear characteristic that can predict a positive outcome. Among all the testing results, there is only a weak correlation (0.24) between the number of archaeological assemblages and a positive result, but, as evident in Figure 3.13, positive and negative results emerge from models with high and low numbers of assemblages and with different average numbers of polygonal vertices.

Other variations of archaeological data also did not produce viable outcomes. As part of this study's effort to distinguish between pan-Mediterranean and regional patterns of activity, the archaeological assemblages were distinguished by the sources of their contents. This effort is tied to this study's interest in Eastern-Mediterranean or Aegean activity, or the colour-coding distinguishing different polygons and different centennial patterns. Predictably, not all assemblages within the dataset were homogeneous at this regional scale. Instead, these heterogeneous assemblages contained combinations of material; from the Eastern- and Western-Mediterranean

Table 3.2 The maximum densities of all of the models tested in this study, as well as the maximum densities of comparable randomized data and the associated *p*-values. All models and associated values in boldface correspond to models used in the following chapters.

Date	Modelled Max. Density	Tested Max. Density							
		1	P-*Value*	2	P-*Value*	3	P-*Value*	4	P-*Value*
7th BC	**5.99**	**2.99**	**0.09**	**2.98**	**0.09**	**2.99**	**0.09**	**2.99**	**0.09**
6th BC	6.85	6.96	0.50	7.98	0.62	9.86	0.81	11.84	0.92
5th BC	9.06	7.98	0.29	8.97	0.39	10.88	0.60	12.05	0.76
4th BC	11.23	12.99	0.58	14.92	0.74	16.94	0.85	16.26	0.85
3rd BC	28.95	20.24	0.09	21.63	0.13	21.27	0.13	22.86	0.17
2nd BC	**77.51**	**38.61**	**0.00**	**38.16**	**0.00**	**43.16**	**0.00**	**48.86**	**0.00**
1st BC	**59.94**	**29.29**	**0.00**	**32.87**	**0.00**	**34.70**	**0.00**	**33.79**	**0.00**
1st AD	40.58	39.58	0.45	40.62	0.50	44.75	0.68	45.82	0.72
2nd AD	**28.07**	**15.51**	**0.01**	**17.69**	**0.03**	**19.63**	**0.07**	**18.31**	**0.05**
3rd AD	**39.15**	**18.48**	**0.00**	**14.92**	**0.00**	**23.07**	**0.00**	**19.42**	**0.00**
4th AD	**31.63**	**13.80**	**0.00**	**12.49**	**0.00**	**18.45**	**0.00**	**19.96**	**0.01**
5th AD	14.48	8.97	0.07	7.98	0.04	8.93	0.07	9.98	0.11
6th AD	11.66	7.42	0.15	5.98	0.05	7.96	0.15	6.87	0.09
7th AD	9.65	7.6	0.29	7.90	0.29	9.90	0.50	8.97	0.39
WMed 7th BC	1.99	1.99	0.50	2.99	0.80	2.99	0.80	1.99	0.50
WMed 6th BC	2.99	4.99	0.85	3.99	0.70	2.99	0.50	3.23	0.70
WMed 5th BC	1.99	2.98	0.74	2.98	0.74	1.99	0.50	2.99	0.74
WMed 4th BC	7.83	6.99	0.37	6.92	0.37	5.14	0.26	7.77	0.50
WMed 3rd BC	18.89	14.04	0.21	11.73	0.07	13.70	0.15	11.08	0.07
WMed 2nd BC	**45.41**	**28.98**	**0.01**	**26.95**	**0.00**	**22.80**	**0.00**	**27.04**	**0.00**
WMed 1st BC	**33.05**	**16.67**	**0.00**	**16.54**	**0.00**	**19.75**	**0.01**	**16.06**	**0.00**
WMed 1st AD	36.42	25.13	0.06	30.78	0.20	28.13	0.13	28.17	0.13

WMed 2nd AD	**25.57**	**10.77**	**0.00**	**13.20**	**0.01**	**11.76**	**0.00**	**11.47**	**0.00**
WMed 3rd AD	**33.97**	**9.94**	**0.00**	**8.98**	**0.00**	**10.43**	**0.00**	**9.66**	**0.00**
WMed 4th AD	**30.76**	**9.99**	**0.00**	**10.94**	**0.00**	**10.98**	**0.00**	**10.92**	**0.00**
WMed 5th AD	**11.88**	**5.98**	**0.02**	**5.99**	**0.02**	**5.84**	**0.02**	**6.55**	**0.04**
WMed 6th AD	8.99	6.99	0.22	4.99	0.05	6.85	0.22	4.99	0.05
WMed 7th AD	4.99	2.99	0.11	2.99	0.11	2.99	0.11	3.45	0.27
EMed 7th BC	**5.99**	**2.99**	**0.07**	**2.99**	**0.07**	**2.96**	**0.07**	**2.99**	**0.07**
EMed 6th BC	**5.99**	**1.99**	**0.02**	**1.99**	**0.02**	**1.99**	**0.02**	**1.99**	**0.02**
EMed 5th BC	**6.89**	**1.99**	**0.00**	**2.79**	**0.03**	**1.99**	**0.00**	**1.99**	**0.00**
EMed 4th BC	2.99	2.69	0.5	1.99	0.25	2.86	0.50	2.98	0.50
EMed 3rd BC	**6.99**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**
EMed 2nd BC	**8.99**	**2.99**	**0.00**	**2.99**	**0.00**	**2.90**	**0.00**	**2.94**	**0.00**
EMed 1st BC	2.99	1.99	0.22	2.99	0.50	1.99	0.22	2.14	0.50
EMed 1st AD	**6.77**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**
EMed 2nd AD	**5.90**	**1.99**	**0.02**	**1.99**	**0.02**	**1.99**	**0.02**	**1.99**	**0.02**
EMed 3rd AD	1.98	1.99	0.50	1.99	0.50	1.99	0.50	1.99	0.50
EMed 4th AD	3.67	1.99	0.11	2.99	0.29	2.91	0.29	1.99	0.11
EMed 5th AD	4.98	2.99	0.18	2.99	0.18	3.37	0.33	2.99	0.18
EMed 6th AD	9.89	7.43	0.29	5.99	0.12	5.96	0.12	5.99	0.12
EMed 7th AD	7.91	4.98	0.16	4.98	0.16	4.99	0.16	4.99	0.16
Aegean 7th BC	0	0	0	0	0	0	0	0	0
Aegean 6th BC	2.97	1.99	0.25	1.99	0.25	3.81	0.71	1.99	0.25
Aegean 5th BC	4.89	2.99	0.18	3.98	0.33	3.97	0.33	2.96	0.18
Aegean 4th BC	3.33	3.99	0.50	3.95	0.50	2.99	0.31	3.66	0.50
Aegean 3rd BC	4.32	2.96	0.18	2.98	0.18	2.98	0.18	2.99	0.18
Aegean 2nd BC	5.06	2.99	0.10	1.99	0.03	2.98	0.10	2.88	0.10

Table 3.2 (Continued)

Date	Modelled Max. Density	Tested Max. Density							
		1	P-*Value*	2	P-*Value*	3	P-*Value*	4	P-*Value*
Aegean 1st BC	**4.73**	**1.99**	**0.07**	**1.99**	**0.07**	**1.99**	**0.07**	**1.99**	**0.07**
Aegean 1st AD	2.57	1.99	0.26	2.98	0.50	3.43	0.68	3.92	0.68
Aegean 2nd AD	2.99	1.99	0.26	1.99	0.26	1.99	0.26	1.99	0.26
Aegean 3rd AD	6.23	3.93	0.06	2.99	0.01	4.95	0.16	3.95	0.06
Aegean 4th AD	2.99	1.99	0.19	1.99	0.19	1.00	0.19	1.99	0.19
Aegean 5th AD	0	0	0	0	0	0	0	0	0
Aegean 6th AD	3.23	1.99	0.11	1.99	0.11	1.99	0.11	1.99	0.11
Aegean 7th AD	1.99	1.99	0.50	1.99	0.50	1.97	0.50	1.99	0.50
Adriatic 7th BC	0	0	0	0	0	0	0	0	0
Adriatic 6th BC	0	0	0	0	0	0	0	0	0
Adriatic 5th BC	0	0	0	0	0	0	0	0	0
Adriatic 4th BC	0	0	0	0	0	0	0	0	0
Adriatic 3rd BC	0	0	0	0	0	0	0	0	0
Adriatic 2nd BC	**15.95**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**	**1.99**	**0.00**
Adriatic 1st BC	**29.94**	**3.09**	**0.00**	**2.95**	**0.00**	**2.99**	**0.00**	**3.77**	**0.00**
Adriatic 1st AD	**8.97**	**2.14**	**0.00**	**1.99**	**0.00**	**2.99**	**0.00**	**1.99**	**0.00**
Adriatic 2nd AD	2.99	1	0.22	1	0.22	1.99	0.22	1.99	0.22
Adriatic 3rd AD	0	0	0	0	0	0	0	0	0
Adriatic 4th AD	0	0	0	0	0	0	0	0	0
Adriatic 5th AD	0	0	0	0	0	0	0	0	0
Adriatic 6th AD	0	0	0	0	0	0	0	0	0
Adriatic 7th AD	0	0	0	0	0	0	0	0	0

Type I 2nd BC	6.99	5.99	0.25	6.99	0.50	6.98	0.50	6.99	0.50
Type I 1st BC	5.99	4.99	0.24	4.99	0.24	4.97	0.24	4.98	0.24
Type II 2nd BC	2.99	1.99	0.22	3.99	0.77	3.99	0.77	3.99	0.77
Type III 1st BC	5.99	3.99	0.12	4.99	0.28	5.94	0.5	4.95	0.28
France 7th BC	0	0	0	0	0	0	0	0	0
France 6th BC	0	0	0	0	0	0	0	0	0
France 5th BC	0	0	0	0	0	0	0	0	0
France 4th BC	0	0	0	0	0	0	0	0	0
France 3rd BC	0	0	0	0	0	0	0	0	0
France 2nd BC	0	0	0	0	0	0	0	0	0
France 1st BC	0	0	0	0	0	0	0	0	0
France 1st AD	3.83	2.99	0.29	3.78	0.50	2.51	0.29	2.99	0.29
France 2nd AD	**8.33**	**3.28**	**0.02**	**2.99**	**0.00**	**3.92**	**0.02**	**3.99**	**0.02**
France 3rd AD	2.99	2.99	0.50	2.95	0.50	1.99	0.23	2.99	0.50
France 4th AD	0	0	0	0	0	0	0	0	0
France 5th AD	0	0	0	0	0	0	0	0	0
France 6th AD	0	0	0	0	0	0	0	0	0
France 7th AD	0	0	0	0	0	0	0	0	0
Spain 7th BC	0	0	0	0	0	0	0	0	0
Spain 6th BC	0	0	0	0	0	0	0	0	0
Spain 5th BC	0	0	0	0	0	0	0	0	0
Spain 4th BC	0	0	0	0	0	0	0	0	0
Spain 3rd BC	0	0	0	0	0	0	0	0	0
Spain 2nd BC	1.99	1.99	0.50	1.99	0.50	1.99	0.50	1.99	0.50

Table 3.2 (Continued)

Date	Modelled Max. Density	Tested Max. Density							
		1	P-*Value*	2	P-*Value*	3	P-*Value*	4	P-*Value*
Spain 1st BC	7.20	5.95	0.25	6.64	0.37	7.64	0.50	7.98	0.50
Spain 1st AD	**28.95**	**14.98**	**0.00**	**14.99**	**0.00**	**19.88**	**0.06**	**16.75**	**0.01**
Spain 2nd AD	**24.08**	**8.96**	**0.00**	**8.99**	**0.00**	**10.51**	**0.00**	**7.99**	**0.00**
Spain 3rd AD	**7.00**	**2.24**	**0.01**	**1.99**	**0.00**	**2.01**	**0.01**	**2.11**	**0.01**
Spain 4th AD	4.90	3.96	0.29	2.99	0.12	3.97	0.29	3.97	0.29
Spain 5th AD	0	0	0	0	0	0	0	0	0
Spain 6th AD	0	0	0	0	0	0	0	0	0
Spain 7th AD	0	0	0	0	0	0	0	0	0
NAfrica 7th BC	0	0	0	0	0	0	0	0	0
NAfrica 6th BC	0	0	0	0	0	0	0	0	0
NAfrica 5th BC	0	0	0	0	0	0	0	0	0
NAfrica 4th BC	2.99	1.99	0.23	2.99	0.50	3.89	0.74	2.99	0.50
NAfrica 3rd BC	2.99	1.81	0.24	2.98	0.50	2.96	0.50	2.99	0.50
NAfrica 2nd BC	3.99	3.98	0.50	3.96	0.50	3.97	0.50	3.96	0.50
NAfrica 1st BC	2.99	2.99	0.50	2.99	0.50	3.99	0.74	3.99	0.74
NAfrica 1st AD	3.99	4.96	0.68	3.99	0.50	3.92	0.50	2.99	0.30
NAfrica 2nd AD	6.99	6.94	0.50	5.58	0.35	7.93	0.64	7.99	0.64
NAfrica 3rd AD	**26.97**	**14.82**	**0.00**	**14.93**	**0.00**	**19.89**	**0.01**	**19.72**	**0.01**
NAfrica 4th AD	**20.92**	**9.89**	**0.00**	**10.63**	**0.00**	**13.98**	**0.01**	**13.98**	**0.01**
NAfrica 5th AD	8.98	6.99	0.22	5.89	0.12	7.98	0.35	8.86	0.50
NAfrica 6th AD	8.97	5.89	0.08	4.59	0.03	5.92	0.08	7.82	0.32
NAfrica 7th AD	3.99	2.53	0.22	1.99	0.05	2.83	0.22	1.99	0.05

Italy 7th BC	0	0	0	0	0	0	0	0	0
Italy 6th BC	2.87	1.99	0.22	1.00	0.20	1.99	0.22	1.99	0.22
Italy 5th BC	0	0	0	0	0	0	0	0	0
Italy 4th BC	6.84	3.83	0.12	2.97	0.05	3.96	0.12	3.98	0.12
Italy 3rd BC	**11.97**	**4.53**	**0.02**	**5.88**	**0.05**	**5.46**	**0.05**	**4.99**	**0.02**
Italy 2nd BC	**35.85**	**11.51**	**0.00**	**13.68**	**0.00**	**16.18**	**0.00**	**16.76**	**0.00**
Italy 1st BC	**26.97**	**7.25**	**0.00**	**8.27**	**0.00**	**10.91**	**0.00**	**10.52**	**0.00**
Italy 1st AD	**26.64**	**2.89**	**0.00**	**2.99**	**0.00**	**2.99**	**0.00**	**3.23**	**0.00**
Italy 2nd AD	**7.98**	**2.98**	**0.01**	**2.96**	**0.01**	**2.96**	**0.01**	**2.91**	**0.01**
Italy 3rd AD	0	0	0	0	0	0	0	0	0
Italy 4th AD	0	0	0	0	0	0	0	0	0
Italy 5th AD	0	0	0	0	0	0	0	0	0
Italy 6th AD	0	0	0	0	0	0	0	0	0
Italy 7th AD	0	0	0	0	0	0	0	0	0

basins, for example, or from the Aegean and the Eastern Mediterranean. One hundred and forty-three assemblages within the dataset had this heterogeneous characteristic, but only three types of these heterogeneous assemblages were represented more than three times in a single century. The dataset contains seven assemblages from the 2nd century BC with a 2:1 ratio between Western Mediterranean and Adriatic material, and six examples of the same combination in the following century. Also in the 2nd century BC, four assemblages contained data from the Western Mediterranean and the Aegean in an equal ratio, and in the 1st century BC seven assemblages had Western Mediterranean and Adriatic material in the same ratio. As only these three types were present more than three times in a single century, then, only these three could be tested against randomized data and assessed statistically with the same centennial protocol. Unfortunately, none of these types produced results that were distinguishable from chance. As a result, these heterogeneous assemblages are incorporated into the pan-Mediterranean modelling, but no individual density models of these heterogeneous polygons will be presented.

Broadly, then, the results in Table 3.2 determine which models and centuries will be the focus of this study's analyses in subsequent chapters, but it is important to emphasize what the results of this statistical testing mean. In this study, the *p*-value represents the likelihood that the archaeological data are accurately representing the spatial distribution and patterns of past activity when maximum density is the key metric. These results also illustrate where there are higher and lower probabilities of maritime activity, but the absence of a density model in Chapters 4 and 5 does not imply there is an absence of activity in a particular century. Instead, ships, people, and things were always moving around the sea. Only for certain centuries, however, are the remaining archaeological data representing the patterns and structures of activity clearly distinguishable from random chance.

Notes

1 Within Parker's (1992) catalogue, there are only 14 sites in the Black Sea, so the statistical impact of eliminating these assemblages from the overall analysis is negligible. A total of 70 sites in his catalogue were not used because they were in the Black Sea, beyond the Strait of Gibraltar, or in lakes and rivers.

2 Colleagues have discussed how Parker's catalogue needs to be updated to accommodate new typological analyses and studies, citing an indeterminate number of its entries as incorrect. These critiques are valuable and should prompt a massive, multi-scholar effort to produce a new edition of his work. Rather than undertaking this revision alone, however, this study instead attempted to accommodate the potential inaccuracies in his catalogue by collecting additional data from sites published after 1990, as described.

3 A list of the sources used to update this dataset is available online at: kudar.ku.edu.tr/research-amd.

4 Pomey et al. 2012.

5 Harpster 2005; Polzer 2010; Kocabaş 2015, 11; Pulak et al. 2015, 43.

6 Parker 1992, 25; Raveh and Kingsley 1992; Wachsmann 1995, 1996; Sibella 1995; Wachsmann and Kahanov 1997; Kahanov and Royal 2001; Kahanov 2003; Mor 2003; Kahanov et al. 2004; Harpster 2009b; Kocabaş 2015; Pulak et al. 2015.

7 Parker 1992, 10.

8 Parker 1992, figures 3, 4, 5, and 7.

9 Wilson 2011.

10 Parker 1992, 4.

11 Joncheray 1975; Carrazé 1976; Lacoupelle 1994. See Demesticha (2015) for a recent assessment of scattered finds in shallow water.

12 Fulton 2016, 9.

13 Gibbins 1989, 5–6.

14 Rostovtzeff 1960, 248–65; Temin 2013.

15 Polanyi 1944; Finley 1973. See also Garnsey et al. (1983). Works by Bang (2007), Terpstra (2013), and Leidwanger (2013) have also investigated other semi-formal social and economic structures that aid exchange, such as familial ties, trading communities, opportunistic ports, and temporary markets.

16 Where might the archaeological distinction between a heterogeneous gift-cargo and the domestic assemblage on board lie? See Bachhuber (2006, 349–51).

17 See volume II of Strauss' Ph.D. (2007) for the fields in her dataset. Also see Bass and van Doorninck (1982, 295) for an example including the domestic material in this final voyage, and Boetto (2012, 156) who concludes that the cargoes of Madrague de Giens, Cabrera III, Culip IV, and Barthélemy B were each loaded at the same time.

18 Bonifay and Tchernia 2012.

19 Vita-Finzi and Higgs 1970.

20 Roper 1979, 119–21.

21 Roper 1979; Doorn 1985, 280; Hunt 1992; Wilkinson 2000, 252; Pauknerová et al 2013, 134.

22 Hunt 1992, 288; Kvamme 1999, 175–6; Hill 2004; Howey 2007, 1835–6; Hanks and Doonan 2009; Barton et al. 2010, 5281.

23 Hodder 1974a, 1974b; see also Halpern (1998) for another re-interpretation of a catchment basin.

24 Merleau-Ponty 2002, 165–66.

25 Joy 2009, 546–550.

26 Callon 1986; Latour 1988; Law 1986; Latour 2012, 10, 70.

27 Law 1986; Latour 2012, 71. It should be noted that ANT, like other human–thing perspectives, is not technologically deterministic by suggesting that the technology guides human progress. Instead, it emphasizes the equality of the relationship between people and things within the creation and promulgation of social constructs.

28 See also recent applications of Graham Harman's object-oriented ontology (OOO) to wreck assemblages by Sarah Rich (2021).

29 Ingold 2011, 85.

30 Ingold 2011, 148–9.

31 See Stockhammer (2012a, 16; 2012b, 50) for the difference between relational and material entanglement.

32 Purpura 1986, 140.

33 For Uluburun, see Pulak (2008, 369–70); for Yassı Ada, see Sams (1982, 207).

34 Keay 1984, 399; Finley 1985, 23.

35 See Parker (1992, 216 entry 520) and associated bibliography.

36 Bass 1967, 164.

37 Buchholz 1967, 150.

38 Nieto 1997, 153.

39 See, for example, Broodbank (2002, 180–96); Malkin (2011); Leidwanger (2011, 2014); Knappett and Hilditch (2015); Leidwanger (2020); and the various examples in Leidwanger and Knappett (2018).

40 Brandes et al. 2013, 6–10; Brughmans 2018, 186.

41 Ingold 2011, 148–9.

42 ArcGIS ArcMap 10.4 and ArcGIS Pro were used to generate the models in this study.

43 See Harpster and Chapman (2019) for explanations of these other methods, Harpster (2019a) for the use of the Fishnet and Join Count tools, and Harpster (2019b) for an application of the Count Overlapping Polygons tool.

44 For details on this randomization and testing process, see Harpster and Chapman (2019).
45 The *p*-value has an inverse relationship to probability, so as the value decreases, the probability increases that the results are not chance. A *p*-value of 0.05 represents a 95 percent likelihood that the results are not chance, and a value of 0.23 represents a 77 percent likelihood.

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4   Modelling maritime cultures and landscapes

Chapter 1 finished with two related questions. First, what happens if we decouple the assemblages on the Mediterranean seafloor from geo-ethnic labels and, more broadly, text-driven narratives? Second, what can we learn if we re-interpret this body of archaeological data within a different interpretive context? Chapter 2 engaged these questions by discussing the philosophical and theoretical foundations necessary to find answers. Rather than assuming that maritime archaeological data should be contextualized within fixed constructs of "Phoenician" or "Venetian" identities, it suggested that maritime material data are representative of a maritime culture's activities within a landscape of their own making. Chapter 3, in turn, explained a methodology that collates, portrays, and synthesizes raw data on the seafloor to build models of this human utilization of the sea and their construction of maritime places and landscapes.

This chapter and the next are a culmination of the previous arguments. They present the models arising from the methodology in Chapter 3 as well as the interpretations of those models, based upon the foundations discussed in Chapter 2. The models themselves represent a variety of spatial and chronological perspectives. Figure 4.29 is a pan-Mediterranean synthesis of information, whereas Figure 4.7 has only 1st-century AD data from Spain. Other models in Chapter 5 will superimpose data from different regions to portray levels of interaction and isolation. These multiple representations may seem tedious. They are necessary, however, because the patterns of maritime enculturation and inhabitation they represent are multi-scalar, complex, and – as will be examined in Chapter 6 – potentially applicable to a variety of studies.

The enculturation portrayed in these chapters should not be equated with the fixed characterizations from early 20th-century anthropologists and archaeologists. For scholars such as Edward Sapir, Richard Daugherty, Henry Field, and Eugene Prostov, their cultures had an almost wholly sea-going means of subsistence and were a relatively homogeneous group distinct from others around them. The *maritime culture* in this study's images is a distinctly flexible depiction driven by the ideas of Walter Taylor, Leslie White, Lewis Binford, Ian Hodder, Christer Westerdahl, and others. As something larger than the ship's crew, "culture" is a fluid, communal expression of individual interests, and "maritime" is a trait that cuts across ethnic, religious, linguistic, environmental, and spatial

boundaries. Different scales only depict the fractionalization of this maritime culture's movements at different levels, at particular places and times.

This scalar fractionalization is the subject of this chapter, and it begins by modelling sub-regional or coastal activity in the Western Mediterranean, and finishes with a "global" view at the pan-Mediterranean scale.[1] Methodologically, this is a process of addition and synthesis at each scalar leap, so disparate coastal data are synthesized to form a regional perspective, and the segregated regional data are combined to form a pan-Mediterranean model. These divisions and isolated interpretations are nevertheless artificial: Despite the practical differences, an individual making daily journeys with a community shaping a coastal cultural landscape may later identify with an inter-regional community and their extensive landscape with journeys to distant ports. Segregating the models is an efficient means of understanding them although, for an individual at sea, these constructed landscapes commingled every day and could be experienced almost simultaneously.

Nevertheless, these movements and experiences are parcelled between this chapter and the next. One reason is simply practical – one chapter almost 100 pages long is unwieldy. But, this segregation also embodies the dual characteristics of the polygons themselves. This chapter focuses on the narrative emerging from the movements they represent and, as it closes, what they tell us about the maritime culture conducting this activity. But this culture and its landscape are marked by more than actions, connections, deliveries, and acquisitions. Instead, this community built and experienced this social landscape too, and these results – coming from the human–thing entanglements embedded in each polygon – are the subject of Chapter 5.

Coastal-scale movements in the Western-Mediterranean Sea

Perhaps the easiest way to interpret the different scalar leaps portrayed in the following models is to understand that they represent successively larger perceptions of the maritime culture an individual is engaging with. At the coastal level, the densities and patterns of movement in these initial models portray the maritime landscape that an individual may construct, based upon the movements of items only from the adjacent coastline. Almost axiomatically, this was a landscape that was fairly homogeneous, if almost parochial. It was a maritime culture that favoured local concentrations of activity, coupled with a communal familiarity in the content and purposes of the movements. At this level, some of the maritime cultural landscapes had transient links to distant destinations, but, in general, these communities' perspectives were provincial in scale, connectivity, and mobility.

Italy

For the maritime community moving Italian items in the 3rd century BC, the western coastline of the peninsula between the Ligurian Sea and the Tyrrhenian Sea was their preferred locus of activity (Figure 4.1). Ships and people travelling through this area, and through the Strait of Bonifacio to circle Corsica, likely encountered a relatively level thrum of movement. Voyages farther south and east, into and

Figure 4.1 Model of only Italian movements in the 3rd century BC. The rectangle in this image, and all subsequent images, represents the spatial extent of the polygons that generated the density model.

through the Ionian Sea, were uncommon, whereas the arrival of ships in Palestine, Asia Minor, or Spain with purely Italian items was quite rare. In fact, in the following 200 years, this uneven dispersal of activity intensified. In the 2nd and 1st centuries BC, the community concentrated its movements into a relatively compact band between southern France and the coastline of Latium, equally decreasing their activities elsewhere (Figures 4.2 and 4.3). Although the geographic dispersal of potential activity remained steady, the apparent likelihood of that activity diminished dramatically. Patterns of activity after the turn of the millennium, however, marked a shift in this community's habits (Figure 4.4). The first is a re-orientation of activity to the north in the 1st century AD, as the Ligurian Sea and the northern Adriatic are now preferred. The second is the general diffusion of this activity – southern France is still a priority, but activity along the Spanish and North African coasts is increasing in popularity, and activity in the Aegean appears more prevalent as well. This dispersal continued in the 2nd century AD, coinciding with relatively level densities of probable activity from the Balearics eastwards to Italy, and the continued popularity of the northern Adriatic and the Aegean (Figure 4.5). Even the Palestinian and Egyptian coasts, if still uncommon, were now frequented.

France

With only one viable model of the movement of material from France, continuity or change is impossible to project (Figure 4.6). What is evident, however, is that the
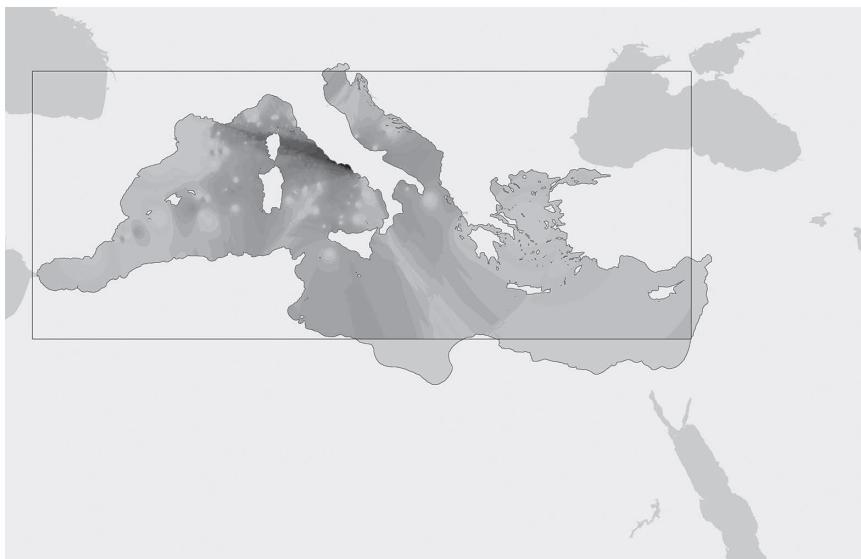
Figure 4.2 Model of only Italian movements in the 2nd century BC.

*Figure 4.3* Model of only Italian movements in the 1st century BC.

Figure 4.4 Model of only Italian movements in the 1st century AD.

Figure 4.5 Model of only Italian movements in the 2nd century AD.

Figure 4.6 Model of only French movements in the 2nd century AD.

community carrying these items in the 2nd century AD appears to manifest habits quite similar to the contemporaneous movements of Italian items. The sailing community prefers the Gulf of Lyon and the Ligurian Sea, while the potential dispersal of their activity from the Balearics to Palestine is the same as the dispersal of Italian items. Particularly different is the likelihood of these extended movements – unlike their colleagues moving Italian items, this community appears much less likely to frequent Aegean or Palestinian coastlines.

Spain

Unlike the maritime activity with Italian items in the 1st century AD, which was fairly diffuse within and beyond the borders of the Western-Mediterranean basin, the community moving Spanish items was not as peripatetic. First, their range of activity seems tightly limited to the western basin, a boundary that remained for the following 200 years (Figure 4.7). Second, this community was particularly focused on a broad band of movements from the Spanish coastline eastwards to Corsica and Sardinia. Parts of the North African and French coastlines had an infrequent involvement in this activity, but it appears rare that these sailors ventured as far west as Italy. This changed slightly in the next century, as this community's voyages encompassed a broader scope of the Western Mediterranean, incorporating more connections with the North African and Sicilian coastlines (Figure 4.8). Nevertheless, the waters west of Corsica and Sardinia remained their preferred locus of movement. In the 3rd century AD, and the
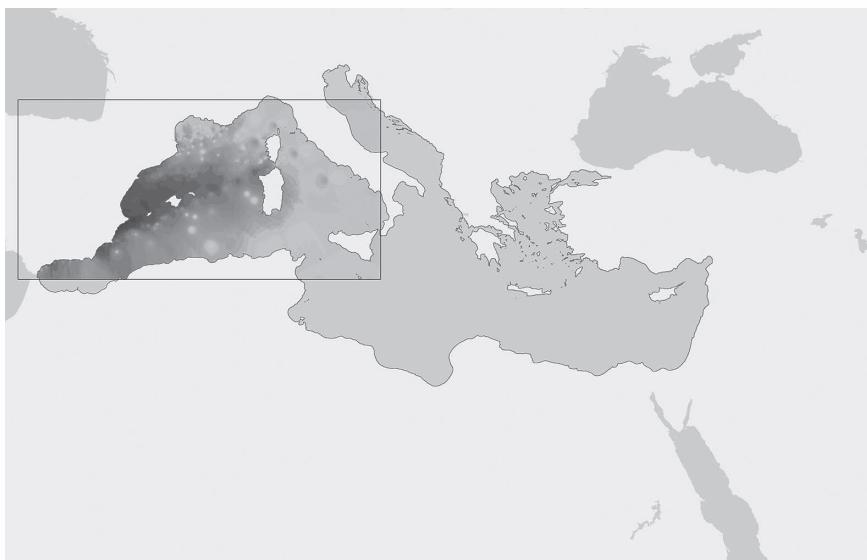
Figure 4.7 Model of only Spanish movements in the 1st century AD.

Figure 4.8 Model of only Spanish movements in the 2nd century AD.

Figure 4.9 Model of only Spanish movements in the 3rd century AD.

last to be modelled, the diffusion evident in the previous century has continued (Figure 4.9). This community not only appears to have a relatively level density of movements through the western basin, but the frequency of their activities also seems to have diminished as well.

North Africa

Unlike the community moving Italian or Spanish items, North African movements do not appear to be directed towards a goal but instead radiate broadly from the coast. In the 3rd century AD, Spain, the Balearics, and Sardinia demarcated the limits of this community's preferred band of movement (Figure 4.10). France and Italy were infrequent destinations, and movements to the eastern half of the sea were rare. Over the following century, the general pattern of activity was stable – again, the North African coastline defined a broad zone of steady and dense movements (Figure 4.11). Spain and France were still commonly within this zone of activity, but Italy was less so. Equally, movements through and beyond the Adriatic were increasingly rare, as if the increasing concentration of activity in the western basin diminished movements beyond Sicily.

Regional-scale movements in the Western-Mediterranean Sea

A coastal perspective may reiterate very local and familiar elements of a life at sea, but in the Western-Mediterranean basin, it is simultaneously difficult to maintain. The general thrum of movements between the Spanish, North African, Italian,

Figure 4.10 Model of only North African movements in the 3rd century AD.

Figure 4.11 Model of only North African movements in the 4th century AD.

and French coastlines is intensely dense, as items and movements from each coast repeatedly interact with one other, use the same routes, and often occupy the same spaces. By slipping to a larger Western-Mediterranean perspective of a maritime culture, individuals will encounter vessels with items from many different sources although, as will be demonstrated, the probabilities of those encounters vary from one location to another. There is a concomitant dispersal within the maritime culture conducting the activities too. This is now a landscape with a broader social and geographic footprint, touching all corners of the Western-Mediterranean basin.

Western-Mediterranean regional patterns

Although the dispersal of Western-Mediterranean activity remains constant over time, stretching from Gibraltar to the Palestinian coast, the seafarers' activities that produced this dispersal shifted from one century to the next. In the 2nd century BC, for example, the carriage of Western-Mediterranean material has a natural concentration in the western basin between Marseille, the coast of Latium, and portions of Algeria and Tunisia (Figure 4.12). Voyages south of Sicily towards Libya are uncommon, and this community has a presence – albeit minimal – in a small zone in the southern Aegean. This Aegean presence decreased in the following century but was countered by an increased presence throughout the Ionian and Adriatic seas (Figure 4.13). Equally, while the frequency of activity between Marseille and Latium seems steady, there is a slight shift northwards; the Balearics and Spain now seem more popular than Tunisian ports.

Figure 4.12 Model of Western-Mediterranean movements in the 2nd century BC.
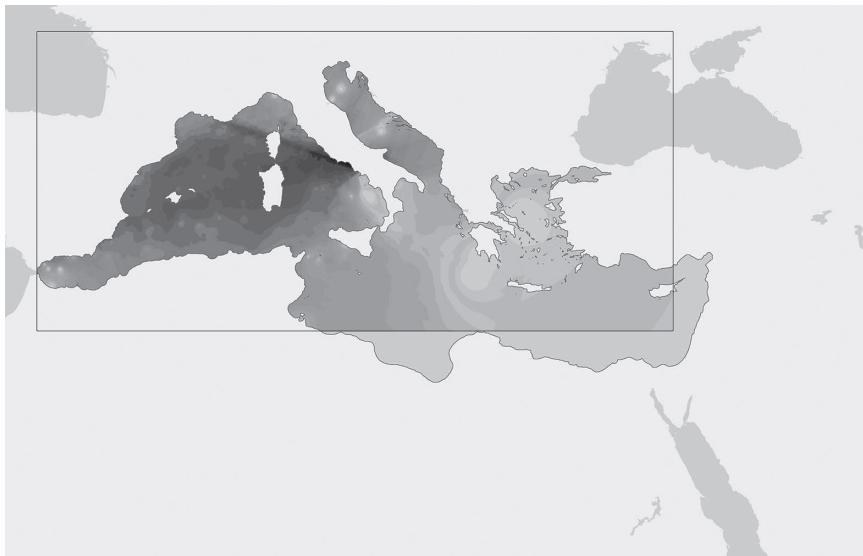
Figure 4.13 Model of Western-Mediterranean movements in the 1st century BC.

A distinct change in habits is evident by the 2nd century AD. Having dispersed from the Latium coast, the bay of Marseille now appears to draw more sailors and ships, as do the waters between Spain and the Balearics (Figure 4.14). Seafarers have returned to the north Tunisian coast as well, while the rest of the Mediterranean Sea contains a greater dispersal of Western-Mediterranean movement. The density of their activities in the Aegean is similar to that in the Adriatic, as well as portions of the Ionian Sea. Within 100 years, however, mariners appear to have abandoned this broad dispersal of activity for a concentrated zone of movement radiating from the north-African coast towards Corsica and Sardinia (Figure 4.15). They have not left Ionian waters, but voyages west of Berenice are particularly rare. Their patterns of movement changed little in the 4th century AD – there is a slight increase in activities in the Aegean – although the amount of activity in the Western Mediterranean appears to have increased (Figure 4.16). Lastly, their gradual increases in activity peak in the 5th century AD, as movement in the Ionian Sea equals that in the Ligurian Sea and the Adriatic (Figure 4.17).

Inter-regional-scale movements across the Mediterranean Sea

For members of the maritime culture in the Western-Mediterranean basin, the scalar leap from a regional to an inter-regional perspective involved a dramatic perceptual step. By encompassing life and localities east of the island of Sicily, individuals significantly increased their personal cartography of maritime space.
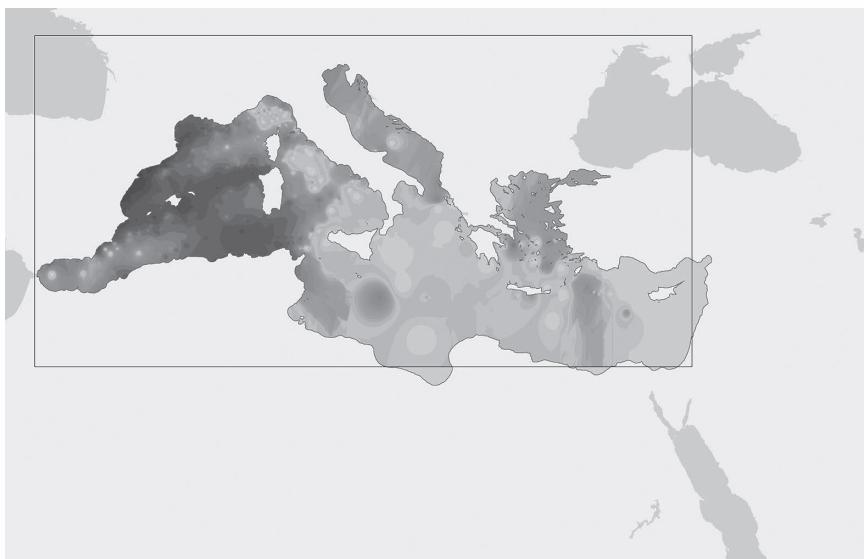
Figure 4.14 Model of Western-Mediterranean movements in the 2nd century AD.
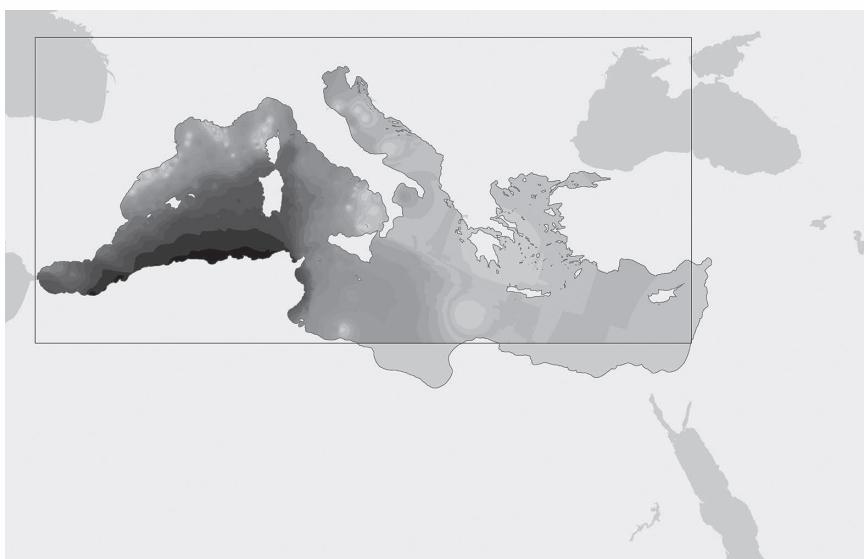

Figure 4.15 Model of Western-Mediterranean movements in the 3rd century AD.

Figure 4.16 Model of Western-Mediterranean movements in the 4th century AD.
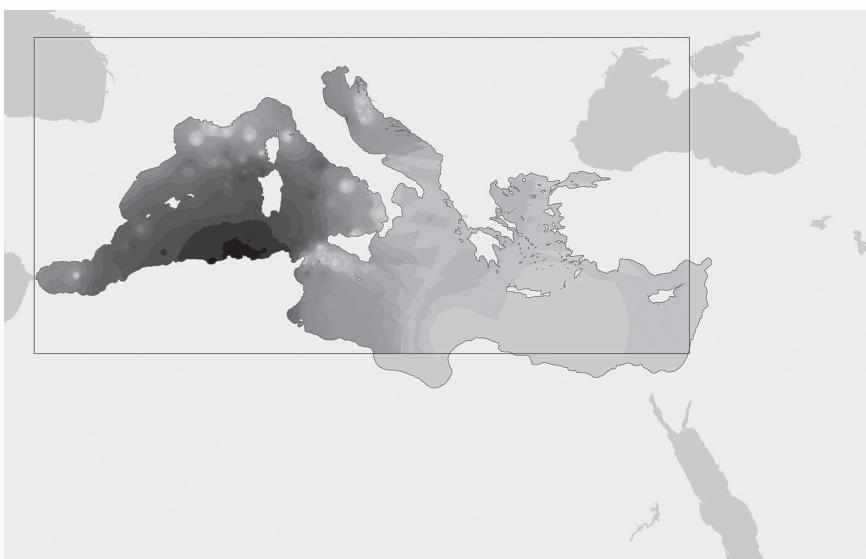
Figure 4.17 Model of Western-Mediterranean movements in the 5th century AD.

Yet, this was not particular to this western community. Instead, groups from each of the Mediterranean basins incorporated similar perceptual shifts. Whereas *us* and *them* was a spatial and societal distinction that could have been encompassed in a relatively short voyage from Rome to Marseille or Athens to Crete, it was now demarcated on a much larger scale. Trips between the sea's basins were seasonal reminders that the Mediterranean operated with a stew of maritime cultures, and the community in the western basin was not isolated from their impact.

Adriatic patterns

Within the models of Adriatic activity, there is a clear trend evident that begins in the 2nd century BC. Although the polygons suggest that sailors carried Adriatic material as far as Marseille or Alexandria during this century, their activities focused on the eastern and western Italian coastlines (Figure 4.18). They may have had limited activities in the Aegean, and seemingly less around Sicily, but their movements in the Western Mediterranean roughly parallel the Western-Mediterranean preference for sailing between Italy and Sardinia in this century. This interest and activity expanded in the 1st century BC, comfortably reaching Spain and southwards around Tunisia, but the Aegean was of minimal interest. This pull westwards and avoidance of the Aegean continued over the following century when a smaller dataset continues to portray a clear preference for activity in Tyrrhenian and Corsican waters (Figures 4.19 and 4.20).

Figure 4.18 Model of Adriatic movements in the 2nd century BC.

Figure 4.19 Model of Adriatic movements in the 1st century BC.

Figure 4.20 Model of Adriatic movements in the 1st century AD.

Figure 4.21 Model of Aegean movements in the 1st century BC.

Aegean patterns

Unfortunately, although there is Aegean maritime archaeological data for 12 centuries, only the arrangement of data from the 1st century BC is distinguishable from coincidence (Figure 4.21). During this century, the maritime community carrying Aegean material sailed as far west as Carthage and eastwards to Cilicia, with clear preferences for the southern coastline of Anatolia. A fairly even level of Aegean activity could be found in the Adriatic, and less in the Tyrrhenian and Ionian Seas, with higher concentrations of potential movement around the Greek peninsula, and Naxos and Rhodes.

Eastern-Mediterranean patterns

The maritime community moving Eastern-Mediterranean items seems to build their maritime landscape in two phases. The first phase begins in the 7th century BC and is characterized by a community's activity limited by Rhodes to the west, and preferring movement only between Cyprus and the southern Palestinian coast (Figure 4.22). This preference for the waters between the island and the coastline continued in the following century, and in the 5th century BC as well, even as their overall scope of activity diminished dramatically (Figures 4.23 and 4.24). In the subsequent 200 years, however, new interests and a new phase of movement emerged. In the 3rd century BC, people and ships bringing Eastern-Mediterranean items arrived off the coasts of Italy and Greece, more than doubling the

Figure 4.22 Model of Eastern-Mediterranean movements in the 7th century BC.

Figure 4.23 Model of Eastern-Mediterranean movements in the 6th century BC.

Figure 4.24 Model of Eastern-Mediterranean movements in the 5th century BC.

Figure 4.25 Model of Eastern-Mediterranean movements in the 3rd century BC.
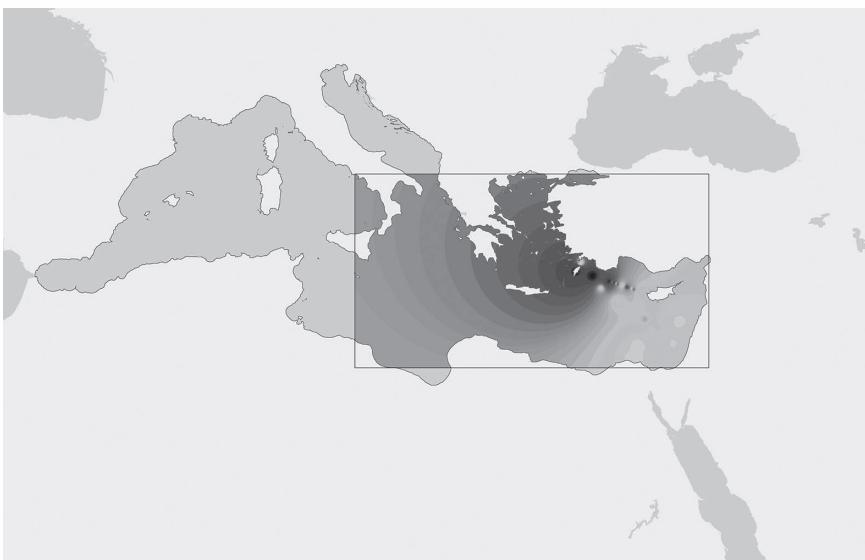
*Figure 4.26* Model of Eastern-Mediterranean movements in the 2nd century BC.

Figure 4.27 Model of Eastern-Mediterranean movements in the 1st century AD.
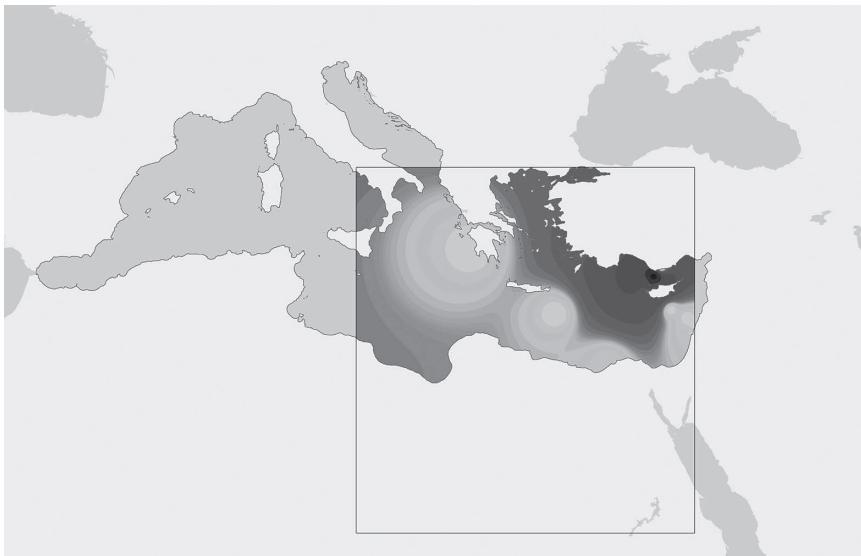
Figure 4.28 Model of Eastern-Mediterranean movements in the 2nd century AD.

scale of their previous dispersal, and this community now seems to prefer activities around Rhodes and Antalya (Figure 4.25). This preference for the southern coast of Anatolia continued. In the 2nd century BC, sailors and ships from the Eastern Mediterranean were more likely to be found in the southern Aegean than along the Palestinian coast, and this pull westwards continued (Figure 4.26). Only in the 1st century AD did high levels of activity along the Palestinian coastline revive and seemingly in coordination with more activity farther eastwards along Anatolia (Figure 4.27). The Italian peninsula is still within the orbit of Eastern-Mediterranean activity, but it is not a priority; the Syrian and Lebanese coasts are marginal. In the last modelled century, this community's movements extended from Antalya to the Gulf of Issus, incorporating parts of Syria and Lebanon, but seem to have minimized activity in Palestinian waters (Figure 4.28).

Pan-Mediterranean models

Each scalar leap that gradually adds to this final perspective requires two important conceptualizations for us and those in the past. The first is the recognition that culture – as a fluid construct – exists and interacts at different scales simultaneously. Although they have been presented as isolated phenomena, the maritime landscapes and the cultures that created them were shifting murmurations of elements that continually interacted within the same space. The second conceptualization is the constantly shifting perception of self. Each scalar re-orientation

Figure 4.29 Model of all pan-Mediterranean movements from all centuries.

requires an equal reassessment of the individual and their presence within the culture they perceive.

This final perceptual stage, which amalgamates the regional-scale maritime cultures and their landscapes into a pan-Mediterranean system, engages these conceptualizations on a grand scale. The individual is now part of a massive community spanning different environmental and climactic zones, and singular needs are immaterial at this global scale. The maritime landscape is equally extensive, as concentrations of activity transcend the traditional basins of the sea and encompass archipelagoes, peninsulas, and long stretches of the Italian, Greek, and African coastlines. There is a broad arc of movement stretching westwards from Tel Aviv, through the southern Aegean, and onwards to Rome and Marseille, roughly following the ancient trunk route and its appendages proposed by Michael McCormick (Figure 4.29). Moreover, the Strait of Bonifacio, Sicily, Messina, or the Hellespont may have compressed people's movements, but they did not necessarily hinder them. Instead of distinct gradients, the density of potential activity to either side of these passages appears to be relatively equal. At this scale, a Mediterranean maritime culture and its landscape sit in opposition to equally large constructs – systems of activity in the Black Sea and the North Sea, or the Atlantic.

Like other human landscapes, however, these elements were not static and, by segregating the pan-Mediterranean dataset centennially, the fluidity of these structures is clear. In the 7th century BC, with a particularly small dataset, the heavy density of movement in the west is absent, replaced by a small halo around Carthage, and instead activity along the Palestinian coastline dominated (Figure 4.30). After four centuries, however, the Mediterranean Sea in the 2nd century BC appears more familiar (Figure 4.31). Elements of this arc between east and west were in place, particularly in the southern Aegean, and members of the
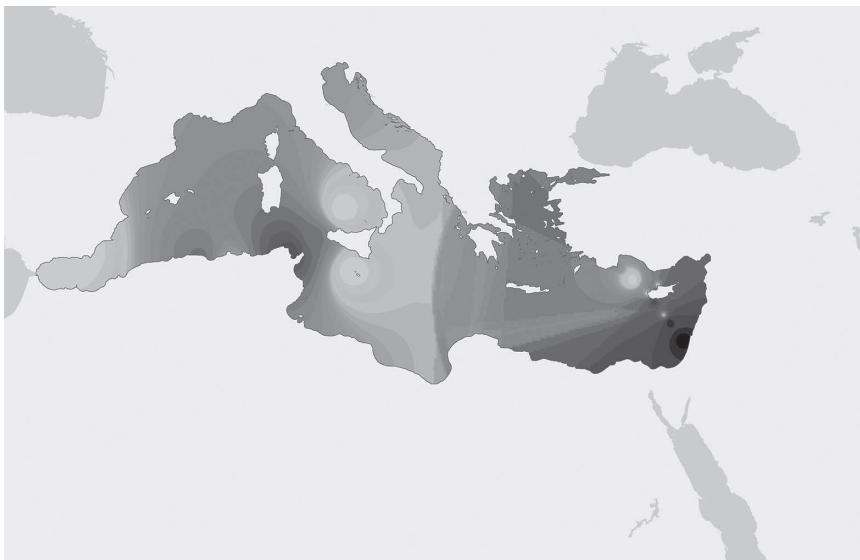
Figure 4.30 Model of pan-Mediterranean movements in the 7th century BC.

Figure 4.31 Model of pan-Mediterranean movements in the 2nd century BC.

maritime community in the Western Mediterranean focused their efforts on a wide swath of movement between North Africa and Italy. In the following century, this community has shifted slightly northwards and favoured Spain (Figure 4.32), but the potential for activity in the Aegean and Adriatic has increased. Although the modelled density is not a quantification of activity, it nevertheless estimates the likelihood of activity: the general thrum of movement between Euboea, Athens, and the Dodecanese islands appears to be the same as that near North Africa and Spain. Although the coastline west of Alexandria was still avoided, the waters around Cyprus and the Palestinian coast have become more popular. Within the following 200 years, however, widespread changes had occurred (Figure 4.33). Whereas the coastline of Latium was particularly popular before the turn of the millennium, activity is now less likely. Seafarers instead frequent the coastlines of Spain, eastern Algeria, and Tunisia, apparently as much as seafarers in the Aegean continued to congregate in the west-central half of the sea. Particularly notable is how activity has levelled across the space. Although people congregated in small, dense pockets, the apparent density of these areas was not significantly different from the areas between them, unlike the more radical gradients of the previous centuries. Over the following years, however, people and their movements coalesced again (Figure 4.34). Even as ships continued to avoid the Libyan and western Egyptian coasts, they were drawn to the waters between Spain, Sardinia, and North Africa, as much as they populated the western Aegean. Finally, in the 4th century AD, seafarers' preferences for the zone of activity off the North African coast continued as did their concentrated movements in the Aegean, but the relative density of movement in the Aegean has waned (Figure 4.35). Rather than

Figure 4.32 Model of pan-Mediterranean movements in the 1st century BC.

Figure 4.33 Model of pan-Mediterranean movements in the 2nd century AD.

Figure 4.34 Model of pan-Mediterranean movements in the 3rd century AD.

Figure 4.35 Model of pan-Mediterranean movements in the 4th century AD.

a high density of people in part of the sea, they have dispersed more uniformly across the area and are interacting with all coastlines at similar levels.

Conclusions

More discussion, synthesis, and application of these models will appear in the following two chapters but, presently, it is worth summarizing what these 35 portrayals suggest. The scope of the maritime activity is one consideration. The thorough inhabitation of the Mediterranean Sea is expected in many models, but even patterns and landscapes formed by "local" activities can range far afield. Movements with solely Italian items are naturally concentrated along the peninsula, but they appear to have a presence as far as Cyprus or Egypt. Certain steady limits to this dispersal nevertheless appear, particularly in the longitudes of the Tyrrhenian Sea. From the west, localized Spanish activity appears to be limited by Sicily and, from the east, Aegean and Eastern-Mediterranean movements progress no farther than the Strait of Bonifacio. Sailing west of Sicily or east of Rhodes in any period carried individuals into zones of activity thick with local voyages, goods, interests, and habits. Voyaging through the Ionian Sea, in contrast, was a journey through a tumult of inter-regional exchange and transshipment from all sectors of the Mediterranean. Nicholas Purcell wrote of congeries of fragmented localities representing Rome's "cultural specialty" of connectivity, and some of these models may be manifesting these concepts.[2]

The models also portray other characteristics. A conventional aversion to risk is predominant among these models, as the preferred zones of movement cluster near coastlines and far from existential threats. There is also a lack of regimentation; rates and scales of change seem more personal than mechanistic. Most centennial alterations are minimal, although this relative stasis is punctuated by dramatic shifts. One example is in the Western Mediterranean, where relative stability along the Italian and North African coasts brackets at least one disruptive century near the turn of the millennium. The shifting swaths of high densities of potential movement that mark the sea are similarly irregular, seemingly reiterating social preferences maintained over long periods. Also, with few exceptions, the gradients between zones of high and low potential activity are gradual, indicating that these communal patterns were not strictly demarcated, but amenable to alteration. People seemingly had their preferences and habits, but experimentation – inadvertent or otherwise – was still possible. All of these seem to be innately human characteristics, the same ways that space on land is transformed into places populating a landscape. This inhabitation of the sea will be explained more in Chapter 5, but, as will be argued, people are not the only forces changing these spaces.

Notes

1 See, however, Horden (2020) and his portrayal of the Mediterranean as the "mesoglobal."
2 Purcell 2005, 14.

References

Horden, P. 2020. "'Knitting Together the Unconjoined': Mediterranean Connectivity Revisited" *Zeitschrift für Ethnologie* 145, pp. 1–22.
Purcell, N. 2005. "The Boundless Sea of Unlikeness? On Defining the Mediterranean" in I. Malkin (ed), *Mediterranean Paradigms and Classical Antiquity*, pp. 9–29. London: Routledge.

5 Variation and places

The human experience and construction of this maritime landscape are important to remember because a thrum of movement does not constitute the entirety of this landscape's meaning. Movement may foster the process of embossing a human construct onto an environment, but movement is not an unconscious transect through space. Instead, each voyage is intimately engaged in the creation of this kinetic social texture, establishing purposes, values, and meaning.[1] By partially focusing on the experience of this maritime landscape, this chapter focuses on the experiential element of these polygons too; how their potential entanglements can generate rich and vibrant places at sea. In particular, it will discuss two phenomena. The first is *variation*, which encompasses a number of elements briefly introduced at the end of the previous chapter. Broadly, this will discuss where the cultural structuration of the sea is more or less likely to be encountered. However, because the superimposed local, regional, and pan-Mediterranean landscapes could be experienced almost simultaneously, variation will be examined in two ways. One way is chronologically, proceeding through time to follow changes in the landscape from one century to the next, whereas the second is spatially, proceeding from the very local to the very large. The second phenomenon to be examined is *place*. As socially constructed and valorized places may emerge through a density of movements and tasks, these models of activity presumably embody maritime places as well. This theme will not only consider the character of these maritime places to make comparisons between the *local*, *liminal*, *inter-regional*, or *risky* but also explore these places as post-modern constructs – as actants with routines and expectations that compel human actions within them, or highlight aberrations.

Variation at sea

Immediately evident in this collection of models is that the Mediterranean Sea was not a *tabula rasa* for terrestrial entities to impress their sovereignty upon nor "open up," "mediate" within, or "conquer," as Pliny, Patrice Pomey, and Alain Bresson have written.[2] Instead, it contained longstanding human oscillations between terrestrial boundaries. As Horden and Purcell described it, this is the Brownian motion of everyday movement, a convection of the local, regional, and pan-Mediterranean activity emblematic of a maritime life.[3]

In the previous chapter's models at the coastal scale, the shifting murmuration of inhabitation along the Italian, French, Spanish, and North African coastlines demonstrate that the creation and use of this maritime cultural landscape are inherently dynamic. Chronologically, some variability in activity is dramatic, such as the reorientation northwards of localized Italian interests at the turn of the millennium (Figures 4.3 and 4.4). The changes in North African activity, however, are more subtle, with a slightly greater density of activity and interests northwards. But there is spatial variability too. Activity with Italian, French, or North African items can extend well into the Eastern Mediterranean; the community moving items from Spain, however, appear to stop at Sicily (Figures 4.6–4.9). But this insular boundary belies where Spanish-based activity was most popular. Instead of a smooth distribution, items from Spain are much more likely to be encountered west of Sardinia and Corsica and less in the Ligurian Sea. North African activity has a greater density of movements in the same area, as well as the southern coast of France, but distinctly less around Sicily.

These variations in use, evident at this broad temporal scale, are nevertheless emblematic of the deep time inherent to archaeological data. Among sailors or fishermen, however, these shifts were immaterial if not invisible in their everyday lives. None seem to have occurred in a single lifetime and, to those operating the ships, the centuries-long use of North African or Italian coastal waters likely seemed immutable. If change was inevitable, though, it was gradual too. Even the most dramatic shifts, such as the abandonment of Latium's coastline for the Ligurian Sea, seemingly required a century – and generations of people – to complete. There is a similarly striking difference between our perspectives of spatial variability and that encountered while at sea. Ships in this cultural landscape could pass through degrees of local activity while sailing from port to port, yet the difference from one kilometer to the next was relatively minimal. This coloured voyagers' experiences while at sea – the number of ships they might meet while en route, and the likelihood of finding space in a port or near a beach when stopping for the night. An individual could travel for two or three days along the west Italian coastline in the 3rd century BC without detecting dramatic changes in the frequency of the local activity around them (Figure 4.1). A similar phenomenon prevailed along the North African coastline for two centuries (Figures 4.10 and 4.11). Indeed, for a 2nd-century AD sailor conventionally operating with only goods from Spain, an extended voyage to the Ligurian Sea was necessary to find a majority of vessels carrying only French or Italian items (Figure 4.8). If the "low commerce" of short voyages was the common modality of movement, it is not surprising that larger and slower oscillations of activity across the western basin were likely opaque in everyday life.[4]

As much as variability is an inherent characteristic of maritime movements at all scales, the gradual synthesis of data at each scalar leap is a reminder of the comprehensive human utilization of the Mediterranean Sea. As will be evident by the end of this chapter, almost every corner of the sea was impacted by human activity. Even at this second stage, moving from the coastal to the western regional perspective, only minor elements of the sea are still immune – the Gulfs of Sidra

and Issus, and portions of the west Egyptian coastline (Figures 4.12–4.18). Also, this inhabitation is uneven, with dramatic differences between the highest and lowest densities of potential activity. The Ionian Sea and the eastern basin are very rarely used by people accompanying only Western-Mediterranean items, whereas such activity in the western basin is predictably regular and frequent. Similarly rare are steep gradients between these extremes at this scale; the most compressed is near the Bays of Salerno and Naples. In the 2nd and 1st centuries BC, and the 2nd century AD, these may be one of the few areas in the western basin, where sailors and passengers could detect a dramatic change in the surrounding activity during a short voyage (Figures 4.12–4.14). Otherwise, the everyday stability of these patterns at the coastal level is reiterated in this larger perspective.

   This conventional stability may suggest equally slow changes within the western regional maritime culture itself. This may be a communal characteristic, a reluctance for change manifesting as an adherence to long-standing practices and well-trod places. But the inertia of human activity at this scale may be dictating the pace of change instead. This study's present methodology precludes delineations finer than the centennial level, but even the coarse perspective in Figures 4.12–4.18 appears to reveal that the cultural creation and recreation of this landscape was not a steady process. From the 2nd to the 1st centuries BC, the evident changes in potential activity were minor yet, following a lacuna in the 1st century AD, a dramatic shift has occurred. In relation to the rest of the western basin, the utilization of the western coast of Italy is markedly lower. France, Spain, and North Africa are more preferred. Within a century, a second change has occurred, and for the next 300 years, the North African coastline will draw the majority of activity from the western basin. Rather than a measured and even rate of transformation, a cycle of punctuated disruption is instead bounded by extended periods of stability.

   The addition of cultural patterns from landscapes in other maritime regions multiplies this complexity. Prescribed routes or strictly delimited edges continue to be rare. Instead, the regional cultures are structuring the basins with broad swaths of movement – some over 500 km wide – that easily encompass human experimentation and exploration. Moreover, commonly gentle gradations do not suggest strict or regulated boundaries, but a flexibility and comfort with the maritime environment. These are concentrations of human activity that seem to have emerged from a gradual accretion of the culture's movements, not a discrete effort limited to one generation of seafaring. Indeed, experiencing dramatic shifts in movement density requires finding the exceptional within these landscapes, such as voyages past the Bays of Naples, Salerno, or Bari in the 2nd and 1st centuries BC, or southwards from Naxos in the 1st century AD (Figures 4.12, 4.13, 4.19, 4.20, and 4.22). Embarking on a longer voyage would do the same. A journey from Rhodes to Alexandria in the 2nd century BC, Sicily to Pisa in the 2nd century AD, or from Marseille to Carthage 100 years later (Figures 4.14, 4.15, and 4.27).

   Longer journeys through this inter-regional environment also expose those on the ships to a greater variation in the content of human landscapes. Some variation would be evident as they pass over these cultural gradients. Sailors

Figure 5.1 Models of movements from the Western Mediterranean (red), Adriatic (black), and Eastern Mediterranean (green) during the 2nd century BC are superimposed to illustrate the gradients between one zone of activity and another.

and passengers following the currents between Carthage and Rome in the 2nd-century BC encountered similar levels of ship traffic but may have passed through waters muddled with Eastern-Mediterranean items between Naples and Sicily (Figure 5.1).

Contemporaneous voyagers from Corinth to the Adriatic port of Ariminum encountered the opposite. Adriatic, Eastern-, and Western-Mediterranean items constituted the maritime landscape of the Ionian Sea although, by their arrival, sailors and passengers were surrounded by vessels laden with almost only Adriatic materials (Figure 5.1). During the five-day voyage from Rhodes to Antioch in the 1st century BC, travellers passed through consecutive gradients.[5] After passing the port of Anemurium, Adriatic items were increasingly rare and, a day later, Aegean items were the same (Figure 5.2).

The anisotropic inhabitation of the entire Mediterranean is evident between these inter-regional gradients too. Individually, the activities of the Adriatic community vary from a proclivity for the western coastline of the basin, and the regular avoidance of the Greek peninsula. Social preferences in the Eastern-Mediterranean maritime landscape fluctuate from movements between Cyprus and Palestine, and the southern Anatolian coastline in later centuries. The glimpse of Aegean activities suggests that a voyage from Athens to Rhodes may pass through a landscape pockmarked with waters commonly avoided. Yet notably, some of these stark variations are levelled as these separate cultural landscapes

Figure 5.2 Models of movements from the Western Mediterranean (red), Adriatic (black), and Aegean (blue) during the 1st century BC are superimposed to illustrate the gradients between one zone of activity and another.

are superimposed. The 2nd-century BC disinterest of the Ionian and Aegean Seas by the Adriatic and Western-Mediterranean cultures is compensated by individuals' activities in the Eastern-Mediterranean culture (Figure 5.1). Habits similarly coordinate in the 1st century BC with the presence of Aegean-based movements. Broadly, they occupy the vacuum left by Adriatic and Western-Mediterranean preferences in the southern Aegean (Figure 5.2).

The nature of change in the cultural construction of the sea is continuing to reinforce a pattern as well. Instead of a smooth pace of transformation, periods of stasis with clear patterns of movement are disrupted; patterns are lost as a community re-orients its activities around new priorities, and a new system is established within a century or two. Already evident in the cyclical inhabitation of the western basin, the maritime culture in the Eastern Mediterranean experienced the same (pages 123-127). From the 7th to the 5th centuries BC, the community consistently preferred using the waters between Cyprus and the Palestinian coast. After a lacuna in the following century and disequilibrium, the community focused their activities along the southern Anatolian coastline in the 3rd century BC. And, like the western interest in North Africa, the community fostered this interest for at least the following 300 years.

At the final perceptual and scalar leap to a pan-Mediterranean perspective, individuals recognize the thorough human inhabitation of the sea but find variability only in particularly exceptional circumstances. The extremities of the sea

near Venice or west of Alexandria before the turn of the millennium stand out, as do particularly long voyages: an adventurous expedition between Carthage and Gibraltar in the 7th century BC, or a trans-section between Rome and Alexandria in the 1st century BC (Figures 4.30 and 4.32). Otherwise, the glacial scale and scope of the entire sea's cultural structuration mute individual expression and experience. At this scale, change and variation were characteristic of the sea beneath a uniform mass of people and things, and not the community people were a part of. As a single Mediterranean maritime culture, these were people at ease with their environment, familiar with the material culture encountered around them, comfortable with their technology, and confident in the accumulated knowledge of the landscape they created.

Places at sea

Yet another outcome of this inhabitation, however, is the human valorization of the sea – the process of fashioning *places* within this cultural landscape. At the most abstract level, the sea's uneven utilization suggests places with more activity and, thus, regions with a sense of predictability within a hostile environment. Equally, the superimposition of cultural landscapes adds layers of meaning as well. Places can become value laden with *exchange, transshipment, amalgamation,* or *fractionalization* as coastal or regional patterns overlap different communities' needs. A locus can become a *multilingual* environment or perhaps *liminal* between origins and destinations. Other places may be perceptually monothetic in content, becoming *local* or *foreign* waters, *convenient* or *dangerous*, a *destination*, and *our* or *their* sea. The rarity of waters untouched by potential human activity shapes equally important results, as places that may be *unknown*, *empty*, or *concealing* may be hard to find.

   Isolating these places within the noise of the surrounding activity can clarify the cultural cartography of the sea. Yet, until this point in the study, *places* at sea have been described in relatively vague terms – as an element of a landscape and an area with a high density of potential activity. Moreover, tangible guides from antiquity are lacking. Places may be culturally meaningful localities dependent upon human practices and interactions with the material world, but they need material stability too.[6] The pathways, rock reliefs, or temples that commonly mark places elsewhere maintain their utility through their permanence.[7] They are, however, inconsequential at sea. These features may be adjacent to a maritime place, but the sea's dynamism and intransigence to modification dramatically limit physical markers within such a place. Lacking tangible human-made guides from the past, distinguishing maritime places requires an arbitrary threshold from the present. In this study, it is a density of probable maritime activity that is 50 percent or greater.

   This is a coarse criterion, and certainly not the only way of forming or codifying *places*, but the results can be interpreted in a phenomenological framework.[8] For individuals experiencing the sea, this threshold of activity highlights potential loci that coalesce through half or more of a maritime culture's preferred movements.

Figure 5.3 The local zones isolated along the Spanish coast are areas with a density of probable activity in the 1st century AD equal to or greater than 50 percent.

As such, they emanate *community* or *familiarity*. For sailors, stowaways, or passengers, these places may become *preferred* or *favoured* too, and coastal-scale places arise between the Balearics and the mainland in the 1st century AD or along the coastlines of Tunisia and Algeria in the 3rd century AD (Figures 5.3 and 5.4).

Among the places clarified within the coastal-scale modelling, those coalescing along the Italian and Spanish coasts are particularly compact. Movements were dense and *local*, suggesting practices of coastal, daily cabotage between nearby ports. The visceral corollaries of *safety* and *protection* may be embedded in these places as well. This may be not only a corporeal comfort, suggesting a minimum of physical threats, but also a communal one because they contain a higher than average probability of activity and are built by a majority of the associated maritime community. While conveying *safety* or *familiarity* to those within them, however, their impact was tempered by their size; individuals in these Italian and Spanish coastal places were regularly close to the alternative. Waters that were *peculiar*, *exceptional*, *uncommon*, or *dangerous* could be less than a day's journey away for those close to the periphery. For individuals sailing from Spain, in particular, the Balearics may signal that places *strange* or *foreign* were just over the horizon (Figure 5.3). After all, the rich and extensive inhabitation of the sea did not eliminate risk, and places embodying *threats* or the *unknown* were still present within this landscape. *Perilous* places may be characterized as the antithesis of those presumed to be *safe* or *familiar*, but a more objective classification – as

Figure 5.4 The local zone isolated along the North African coast with a density of probable activity in the 3rd century AD equal to or greater than 50 percent.

areas in which the land is beyond the horizon – may be more useful. It cuts through socio-economic changes, technical abilities, and personal preferences, and concentrates the physical and spiritual threats of seafaring discussed in Chapter 2. Bishop Synesius' fear of drowning and eternal limbo was universal, but salvation was always harder to find farther from shore.

Embodying the *safe* and *known*, the coastal-scale places along the Italian and Spanish coasts are also provincial; at the most, these activities stretch 90 km off the coast of Spain and 80 km off the coast of Italy (Figures 5.3 and 5.5). Their provinciality suggests a social aversion to risks far from shore as well, as these concentrations of potential activity manifest far from areas out of sight of land (Figures 5.5–5.7).

The movements of the culture along the North African coast were markedly different. Whereas the content was similarly local, the preferred area of activity was not (Figures 5.4 and 5.8). Much more of the sea was appropriated by this community, as well as other coastlines. Southern Spain and most of Sardinia were included within their conventional patterns, activities they apparently preferred for at least two centuries. Unlike the concentrated cartographies of the favoured maritime places along the Italian and Spanish coasts, this was a much more expansive and exploratory maritime community. This increased scale likely fashioned different interpretations of this place as well, so *safety* and *familiarity* likely commingled with *dominion* too – both near and far from shore (Figures 5.9 and 5.10). While leaving any port along the coast, the surrounding activity and

Figure 5.5 The local zone isolated along the Italian coast with a density of probable activity in the 1st century BC equal to or greater than 50 percent.
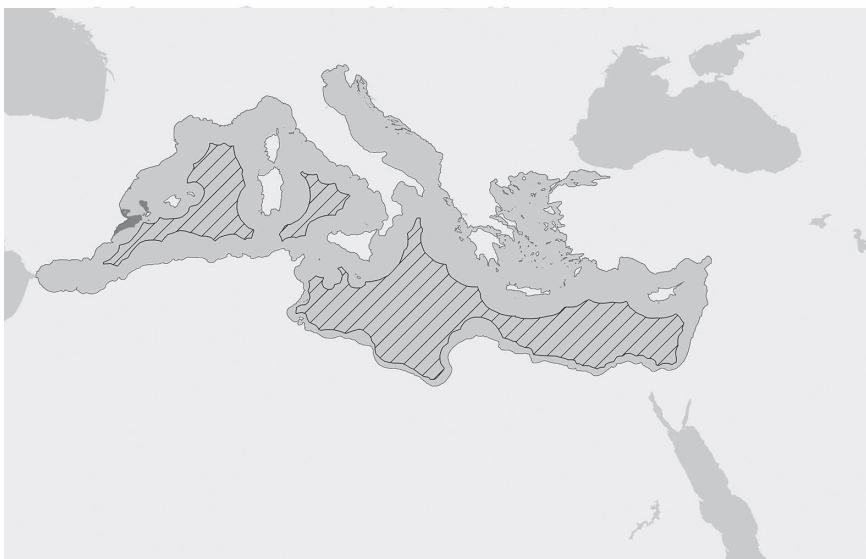
Figure 5.6 Comparison of the high-density area in Figure 5.3 to open, blue water where land is not visible.
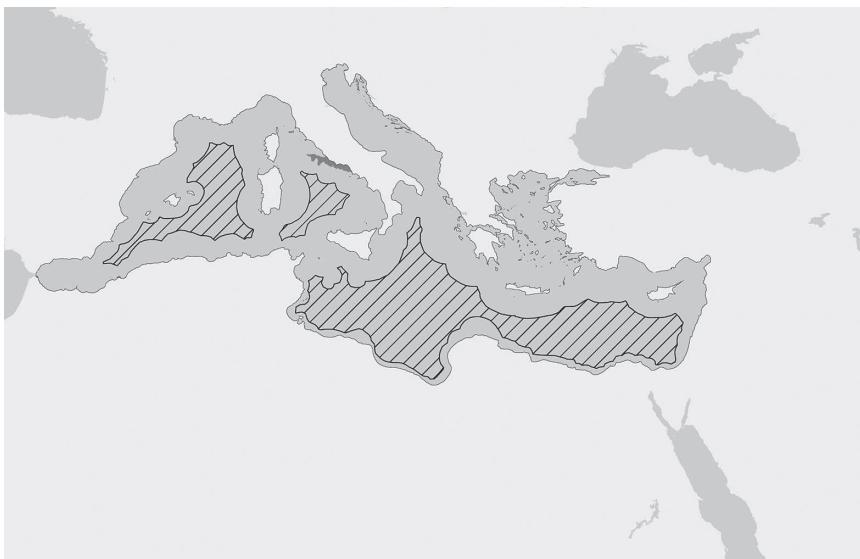
Figure 5.7 Comparison of the high-density area in Figure 5.5 to open, blue water where land is not visible.

Figure 5.8 The local zone isolated along the North African coast with a density of probable activity in the 4th century AD equal to or greater than 50 percent.
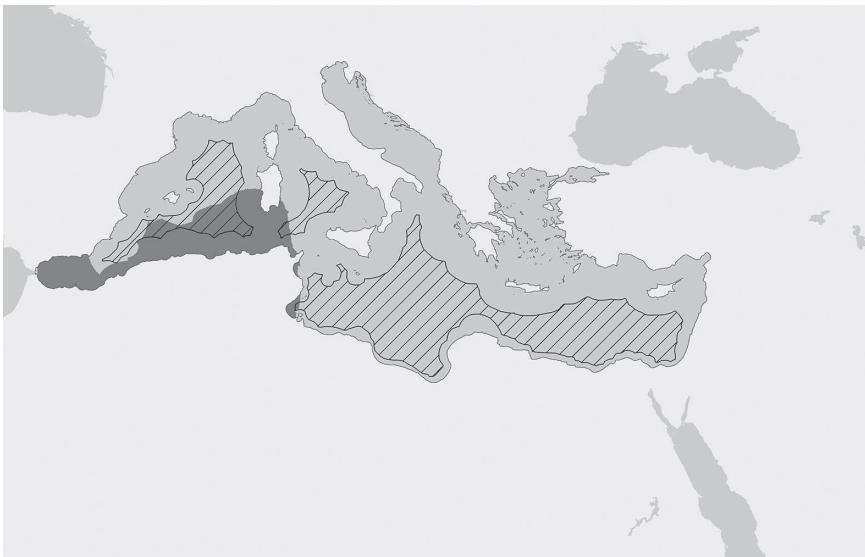
Figure 5.9 Comparison of the high-density area in Figure 5.4 to open, blue water where land is not visible.
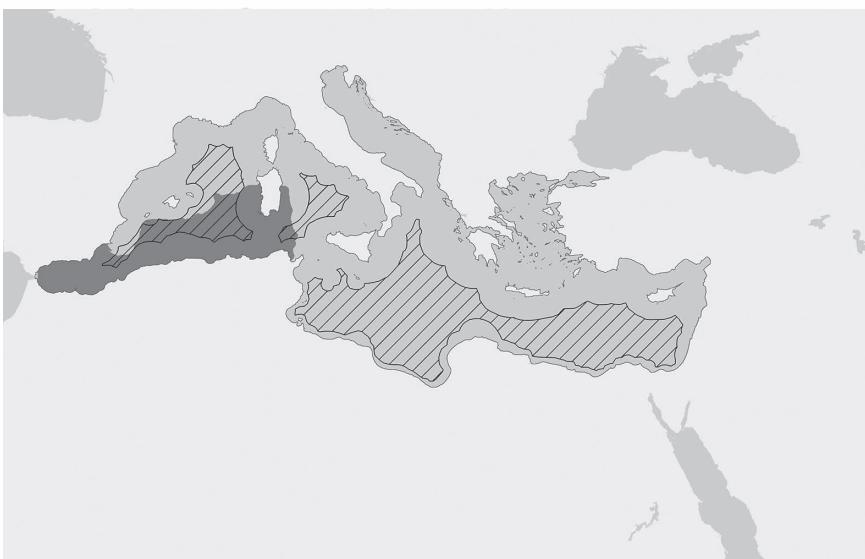

Figure 5.10 Comparison of the high-density area in Figure 5.8 to open, blue water where land is not visible.

Figure 5.11 The regional zone isolated along the Italian coast with a density of probable activity in the 2nd century BC equal to or greater than 50 percent.

frequency were, seemingly, universal as there was little change in either after days of voyages. A captain could sail regularly between Carthage and Sardinia, or Carthage and Baetica, and never be a stranger. In turn, waters *threatening* or *unknown* were remote.

The amalgamation of these coastal landscapes into a regional-scale perspective reiterates these places and, particularly, the cycle of stability and disruption mentioned previously (page 138). Chronologically, stability is evident in the two centuries prior to the turn of the millennium, when the waters between Latium and Corsica were the most frequented – and likely most well-known – among people across the entire western basin (Figures 5.11 and 5.12). These places were like their coastal counterparts experientially and spatially. Like those predecessors, they were dense, localized, and easily traversed. They occupied a similar space as well, so open blue-water risks were minimal (Figures 5.13 and 5.14), yet their social valorization was complicated; simultaneously *local* and *regional* to those within, it was a place of *exchange* and *distribution* with identities and purposes intermingling at different levels.

Disruption at the turn of the millennium, however, is characterized by disjunction. The coastal-scale place near Spain, where the culture built the *familiar* and *routine*, was singular because, at the regional scale, no particular locus of activity arises (Figure 5.3). The noise of the relatively random dispersal of regional-scale activity from coast to coast apparently subsumed this and any other general

Figure 5.12 The regional zone isolated along the Italian coast with a density of probable activity in the 1st century BC equal to or greater than 50 percent.

Figure 5.13 Comparison of the high-density area in Figure 5.11 to open, blue water where land is not visible.
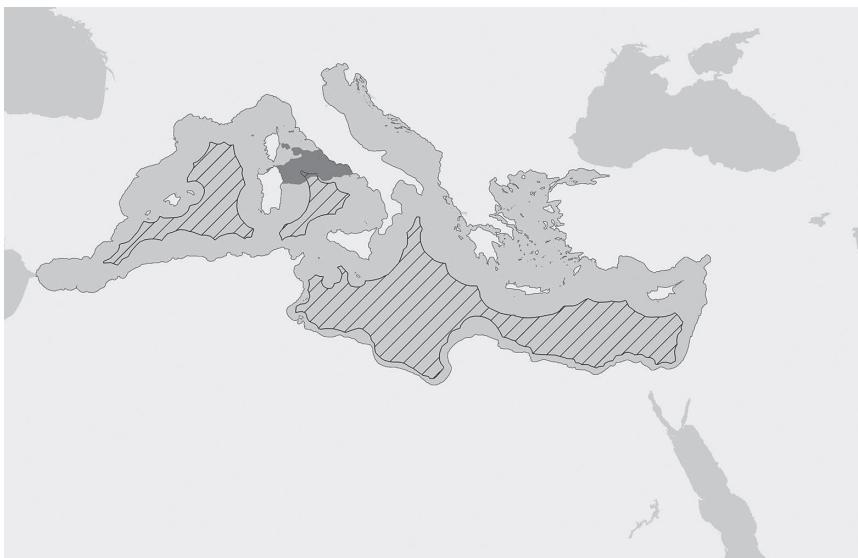
Figure 5.14 Comparison of the high-density area in Figure 5.12 to open, blue water where land is not visible.

pattern of activity. To the collective Western-Mediterranean maritime culture, then, their activity in the western basin in the 1st century AD may have felt disorderly. Communal patterns resume at both scales in the 2nd century AD, yet disjunction continues. There is structural disparity: The only place arising at the coastal scale is off the coast of Italy (Figure 5.15), but the regional preference is found off the coast of Spain (Figure 5.16).

This represents systemic disparity too, as the preferred place for intra-regional *exchange*, *interaction*, or *communion* is segregated from the coastal preference for the same activities. Constructed places are reoriented and stabilized in the 3rd and 4th centuries AD, along the North African coastline (Figures 5.17 and 5.18). Spatially and experientially synchronous, this place is not only *favoured* within these two cultural systems, but it is particularly multi-variate and *dominant* again. Mixing *local* and *regional* purposes within a comparatively larger place that transgresses coastal and open waters, the North African coastline was a particularly vibrant stew of movements and people (Figures 5.19 and 5.20).

Similarly complex dynamics of emplacement arise at the scalar leap to an interregional perspective. Initially evident in the Eastern Mediterranean, these concentrations of human activity distinguish the places *known* and *preferred* within the community's landscape. Like coastal-scale places off Italy or Spain, however, the social comfort they express was mitigated by their size and content. Constructed around purely local movements for centuries, the edges of these *familiar*

Figure 5.15 The local zone isolated along the Italian coast with a density of probable activity in the 2nd century AD equal to or greater than 50 percent.

Figure 5.16 The regional zone isolated along the Spanish coast with a density of probable activity in the 2nd century AD equal to or greater than 50 percent.

Figure 5.17 The regional zone isolated along the North African coast with a density of probable activity in the 3rd century AD equal to or greater than 50 percent.

Figure 5.18 The regional zone isolated along the North African coast with a density of probable activity in the 4th century AD equal to or greater than 50 percent.
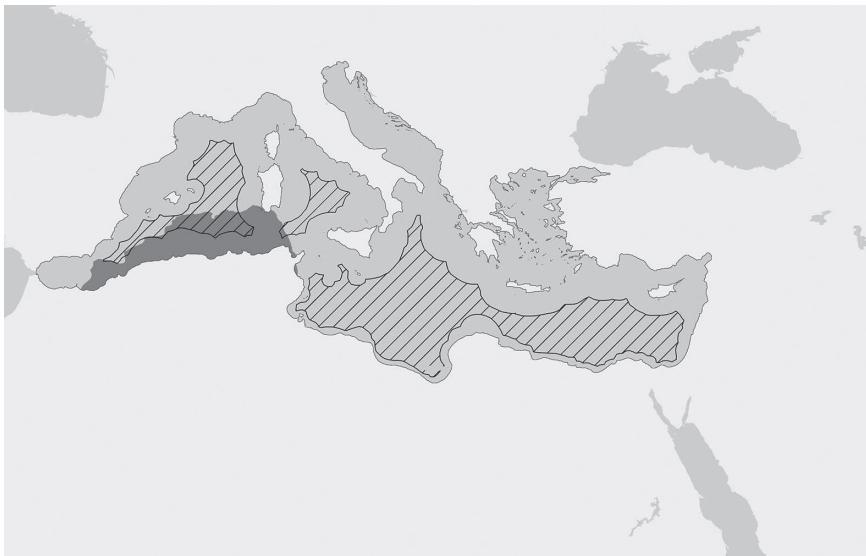
Figure 5.19 Comparison of the high-density area in Figure 5.17 to open, blue water where land is not visible.
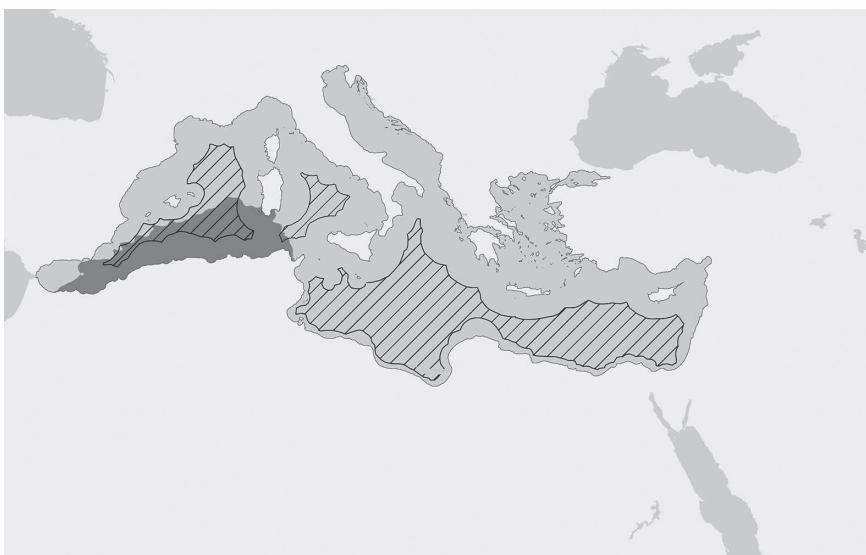
Figure 5.20 Comparison of the high-density area in Figure 5.18 to open, blue water where land is not visible.

Figure 5.21 The regional zone of Eastern-Mediterranean movements in the 7th century BC with a density of probable activity equal to or greater than 50 percent.

places were reminders of the culturally *unfamiliar* or *unwanted* just out of sight (Figures 5.21–5.23). Their compaction from one century to the next also suggests a communal cartography of discomfort or distrust with the sea in each century, as they retreated towards the coasts and safety.

The change in the following 100 years, however, is a dramatic re-orientation and re-evaluation of the sea by the maritime culture in the Eastern Mediterranean. Much like the *dominion* expressed along the North African coast, this new expansion also followed a disruptive period; people and their actions pushed places *foreign* or *unexamined* much farther away. Risk at sea appears to be an afterthought (Figure 5.24). Equally, a new preference within this community appears, signalling a second era of stability. Rather than the waters south of Cyprus, this community begins favouring the southern Anatolian coastline for at least four more centuries.

What this 3rd-century BC dominion by the culture in the Eastern-Mediterranean signals is unclear. *Comfort* and *control* are certainly widespread, and *exchange* or *exploration* may be appropriate as well. These circumnavigations of the open waters of the central Mediterranean may be filling a placemaking absence in other regions, for they gradually diminish in the 2nd century BC as places in the Western Mediterranean and Adriatic appear (Figure 5.25). These latter examples, more contained by coastal interests, express the *preferred* loci in more conventional ways. Again, places of *safety*, *community*, and *exchange*

Figure 5.22 The regional zone of Eastern-Mediterranean movements in the 6th century BC with a density of probable activity equal to or greater than 50 percent.

Figure 5.23 The regional zone of Eastern-Mediterranean movements in the 5th century BC with a density of probable activity equal to or greater than 50 percent.
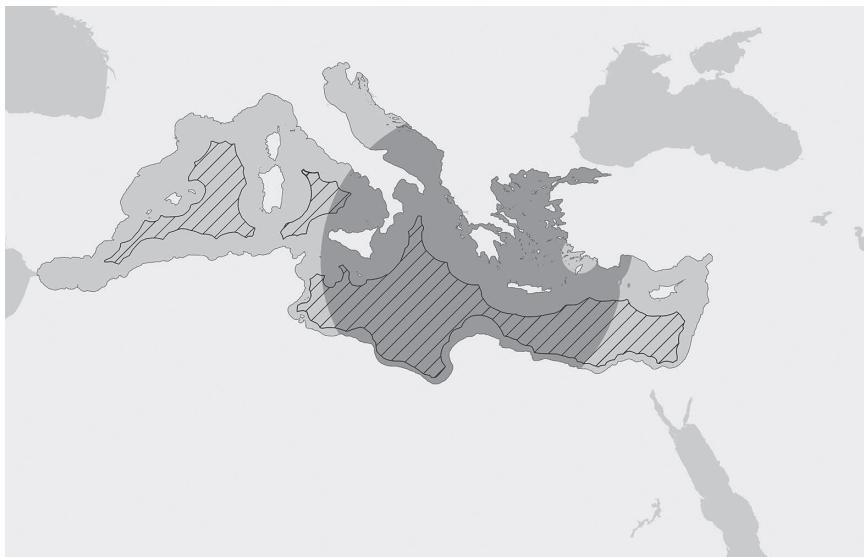
Figure 5.24 The regional zone of Eastern-Mediterranean movements in the 3rd century BC with a density of probable activity equal to or greater than 50 percent. This zone is superimposed over open, blue water where land is not visible.

Figure 5.25 The regional zones of activity in the 2nd century BC with a density of probable activity equal to or greater than 50 percent.

Figure 5.26 The regional zones of activity in the 1st century BC with a density of probable
            activity equal to or greater than 50 percent.

are distinguished within the thrum of surrounding activity and in opposition to
areas *unpopular* or *avoided*.

   There is a little alteration in the preferred uses of the sea in the following
100 years, reiterating a clear preference for the waters around Rhodes. In the
previous two centuries, this was a portion of the sea conspicuously used by the
Eastern-Mediterranean community and, just prior to the turn of the millennium,
the Aegean community continues to do so (Figure 5.26). Yet, punctuated dis-
ruption in the 1st-century AD western basin parallels sudden change elsewhere
(Figure 5.27). The interests of the Eastern-Mediterranean culture have diminished
slightly and shifted eastwards, while the Adriatic culture's place of *comfort*, *con-
trol*, and *communal purpose* is now expansive, incorporating the same *dominion*
once expressed by the Eastern-Mediterranean culture, and soon to arise along the
North African coast. It was as if a slow wave of cultural animation rolled east to
west from one basin to another, encouraging expansion and exploration of the sea:
in the Eastern Mediterranean in the 3rd century BC, followed by the Adriatic in
the 1st century AD, and concluding in North Africa in the 3rd century AD.

   One outcome of these grand movements over these centuries was the vibrant
places of inter-regional *transshipment*, *liminality*, and *engagement*, either east of
Rhodes, surrounding Sicily, or in the Central Adriatic. Indeed, trans-regional con-
nectivity is not only common, but it also appears to be a key characteristic in these
centuries around the turn of the millennium. The greatest number of heterogene-
ous assemblages in the corpus arises in the 2nd and 1st centuries BC, combining

Figure 5.27 The regional zones of activity in the 1st century AD with a density of probable activity equal to or greater than 50 percent.

items from the western basin with the Adriatic or the Aegean and, less commonly, amalgamations of all three. Eastern-Mediterranean items intermingle too, almost exclusively with the Aegean. Indeed, this pairing with the Aegean seems to be mandatory – all related combinations start with this mixture. Decentralization in this period appears to be an outcome of these grand movements too. The greatest extent of the Adriatic community's preferences was simultaneous with the dispersal of people's movements in the west that eliminated a regional locus within that basin (Figure 5.27). These decentralizing tendencies may have accelerated in the 2nd century AD. Distinct regional-scale places in the Adriatic and Aegean, large or small, have apparently unravelled, leaving only the compact loci near Spain and Anatolia (Figure 5.28). These, in turn, are parochial. Although movements elsewhere in each basin may be passing into other regions, this activity is not particularly distinguishable. The maritime cultures in each region prefer to remain near their own coastlines.

Many of the placemaking dynamics arising at previous levels and perspectives are reiterated in a pan-Mediterranean context. In the 7th century BC, the same pocket of water near Egypt and Palestine is the most prioritized and well known within the Mediterranean maritime culture. This, too, generates equally complex social phenomena. As a place *known*, *valued*, and *owned* simultaneously by the Eastern-Mediterranean and pan-Mediterranean communities, it was an environment commingling very regional and very expansive notions of the world (Figure 5.29). It was likely a place of social *exchange*, *distribution*, and

Figure 5.28 The regional zones of activity in the 2nd century AD with a density of prob-able activity equal to or greater than 50 percent.

Figure 5.29 The pan-Mediterranean zones of activity in the 7th century BC with a density of probable activity equal to or greater than 50 percent.

Figure 5.30 The pan-Mediterranean zones of activity in the 2nd century BC with a density
of probable activity equal to or greater than 50 percent.

transformation between these two levels. To the west, the community's other pri-
ority near Carthage was singular and more *cosmopolitan*. This was a place other-
wise unrecognized at the local and regional levels.

Five hundred years later, greater social diversity arises along the coast of Latium.
Already a focal point of the maritime cultures operating at the coastal and regional
scales, a third valorization is applied by the pan-Mediterranean community as well.
In the 2nd century BC and the next, the locus between Corsica, Sardinia, and Italy
was the nexus of maritime life in the Mediterranean Sea (Figures 5.30 and 5.31).
It was a complexity of people, items, and ideas interacting within local, regional,
and pan-Mediterranean systems, and a place of *fractionalization*, *integration*, *con-
flict*, *dialogue*, and movements physical and social. It seems to be a place of *safety*
and *protection* as well, far from open blue waters to the south and west. The mil-
lennial disjunction within the coastal and regional maritime cultures arises at this
scale too, as movements in the 1st century AD are again decentralized. Across the
Mediterranean basin, no place arises as a singular priority of this broad maritime
culture although local and regional interests are present. Maritime places within a
pan-Mediterranean perspective do appear in the following century, yet they con-
tinue to manifest the disparate nature of movement at this time (Figure 5.32). The
local priorities in the western basin focused on the Ligurian Sea. Regional inter-
ests coalesced south of Tarraconensis, whereas the pan-Mediterranean culture was
more dispersed. Five distinct loci emerge in this century. One overlays the regional

Figure 5.31 The pan-Mediterranean zones of activity in the 1st century BC with a density of probable activity equal to or greater than 50 percent.

Figure 5.32 The pan-Mediterranean zones of activity in the 2nd century AD with a density of probable activity equal to or greater than 50 percent.

Figure 5.33 The pan-Mediterranean zone of activity in the 3rd century AD with a density
of probable activity equal to or greater than 50 percent.

priority along the Spanish coast, creating another place of multivariate social and
material interaction. The other four, however, manifest places of *interest* and *impor-
tance* that were otherwise unseen by maritime cultures with different perspectives.
For a relatively brief moment, this was a unique view of the sea – regions near
the coast and in open water were apparently recognized as places of cultural value
among the Mediterranean maritime community.

The remaining centuries were less adventuresome (Figures 5.33 and 5.34).
Abandoning the coasts of Spain and Greece, the Mediterranean maritime culture
shifted their perspective to the coastline of North Africa, reiterating the interests
of their regional cohort. This alteration may have amalgamated their diffuse loci
in the western basin, but it continued to complicate people's understanding and
perception of their life at sea. For the 3rd and 4th centuries, individuals sailing
between Baetica, Sardinia, Carthage, and the Balearics were immersed in a place
that was *cosmopolitan, expansive*, *inter-regional*, *local*, and *valued* by people per-
ceiving themselves and their environment at multiple scales.

Entanglement at sea

As much as these places enrich a cultural landscape, however, it was not entirely a
human-centred world. The values assigned to these places – *known*, *familiar*, *limi-
nal*, *far*, *close*, or *ours* and *theirs* – are human attributions. Yet, as amalgamations

Figure 5.34 The pan-Mediterranean zone of activity in the 4th century AD with a density of probable activity equal to or greater than 50 percent.

of movement, the places themselves coalesced within the complex engagement of people and things. Some things may be tools that aid the social inhabitation of the sea, such as anchors, brailing rings, knees, and nails, but other things compel this inhabitation too. Multiple weight sets encourage exchange at a wider variety of ports, and amphorae may prompt voyages to certain destinations.[9] Legal mechanisms may encourage extended exchange systems, and exchange systems may establish itineraries, but changes in a ship's contents can alter a voyage. Perhaps more than activity on land, the intimate relationship between people and things at sea generates intense examples of human–thing entanglement. The places at sea, in turn, are dense manifestations of these entangled relations.

This idea can be clarified by starting with a re-examination of the coastal and regional-scale maritime places near Italy in the 2nd century BC (Figure 5.35). The place preferred by the coastal-scale maritime culture was particularly compact, reiterating the solely Italian content of the movements that it generated from. The similarity of the regional-scale maritime place is notable and certainly a result of the movements of items from Italy that populated this locus too. Yet, it was not the same. Arising from a combination of movements throughout the basin in the 2nd century BC, this slightly larger cultural valorization embodied a greater variety of entangled relationships. In addition to Italy, movements with items from Spain were particularly popular, whereas entanglements with France were very rare.

The greater volume of this regional place in the 2nd century BC is only one result of the diversity of entanglements at its foundation. Intriguingly, the change

Figure 5.35 Comparison between coastal and regional loci in the 2nd century BC with a density of probable activity equal to or greater than 50 percent.

in size suggests the presence of subtle spatial gradations where people transition between greater and lesser levels of "local" activity. However, as things compel human actions, these may be gradations between areas of communal purpose as well – where the frequency, repetition, and nature of the entangled movements and actors become emblematic of the place itself. The *familiarity* of a preferred place, then, is bound to not only its location and its density of movements but also the communal recognition and incorporation of the human–thing actions that shape those movements.[10] This is the *familiarity* fostered by cyclical voyages between places of production and consumption, the annual carriage of raw goods to be processed elsewhere, seasonal fishing practices, or daily visits to an informal port. The constructed maritime place emerges as an actant through an implicit communal understanding and recognition of the purposes of the actions within it; the place and its system become an agent compelling human actions.[11] The *unfamiliar* is the anomaly – the movements with items out of season, a different purpose, or the wrong direction.

The second, and more complex, result of the superimposition of these coastal and regional places is the commingling of the communal purposes inherent to each place as an actant. Unadulterated by the presence of the other, each place is known and understood to those within its associated culture. Yet, the combination of these actants complicates their purposes, movements, items, and people in ways that challenge this uniformity and recognition. Unexpected or asynchronous movements intertwine with the predictable and comfortable, creating a dynamic social environment surrounding passengers, captains, stowaways, and things.

The change in volume of these places along the coast of Italy is a direct out-come of the increasingly complex suite of things that entangle with the human movements generating each place. Moreover, while the superimposition of these loci builds multivariate interactions between them, their spatial similarities still suggest relatively similar entanglements at their foundations. Again, the majority of the regional-scale maritime movements in the 2nd century BC incorporated things from Italy, much like the monothetic coastal-scale place preceding it. The correlations between the coastal and regional-scale places in the 1st century BC reiterate these phenomena, as does the addition of the pan-Mediterranean place along the Italian coastline in the same century (Figure 5.36). Generated either wholly or predominantly with movements entangling people and things from Italy, the result was a layering of actants and meaning that delicately combined their dynamics within a shared space.

Similar conjunctions arose elsewhere prior to the turn of the millennium and centuries later along the coast of North Africa. In the 3rd and 4th centuries AD, coastal, regional, and pan-Mediterranean preferences overlaid one another; once again, sharing a foundation of similar entangled movements and establishing heightened social complexity (Figures 5.37 and 5.38). Between Alexandria and Ashkelon in the 6th century BC, Carthage and Baetica in the 3rd century AD, or near Ancona in the 2nd century BC, communal purposes of one place at one scale became muddled with others. Movements *unexpected* or *strange* slipped into the common and everyday characteristics of these constructed places, generating

Figure 5.36 Comparison between local, regional, and pan-Mediterranean loci in the 1st century BC with a density of probable activity equal to or greater than 50 percent.

Figure 5.37 Comparison between local, regional, and pan-Mediterranean loci in the 3rd century AD with a density of probable activity equal to or greater than 50 percent.

Figure 5.38 Comparison between local, regional, and pan-Mediterranean loci in the 4th century AD with a density of probable activity equal to or greater than 50 percent.

subtly different cultural signatures and perceptions. Distinctions between the sca-lar systems of movement are occluded too, as the single, grand, place becomes characterized as a nexus for coastal, regional, and pan-Mediterranean movements, and transitions between all three.

As implied previously, the turn of the millennium brought spatial disparity to the commingling of these actants and systems. Changes in the entangled move-ments are surely one cause of this disparity but are also a proxy for changes within the scalar systems of movement that were aligned just a century earlier. Each scalar leap from the coastal to the regional or pan-Mediterranean may be an artificial heuristic device, but each nevertheless encompasses very real and distinctly different activities. Coastal, regional, and pan-Mediterranean voyages require dramatically different preparations, infrastructure, personnel, and per-spectives. Equally, each encompasses different communal purposes and differ-ent understandings of the movements they undertake, so a sailor engaging in local cabotage may be a literal foreigner among the people and items in a pan-Mediterranean voyage. As a result, the spatial disparities of emplacement emerg-ing in the 1st and 2nd centuries AD may emphasize three corollary phenomena. The first is the increased disparity of entangled movements and the places they generate; the incongruous places in these centuries arose from a heightened vari-ety of entanglements of people and things. The coastal place off the coast of Spain in the 1st century AD has no equivalent at the regional scale, suggest-ing that the combination of regional movements was too diverse to conjure one (Figure 5.3). The amalgam of pan-Mediterranean entangled movements in this century was apparently equally disparate and establishes no place in comparison to any regional movements within it. More recognizable places appear in the 2nd century AD, but they are still asynchronous. The only coastal-scale place is in the Ligurian Sea, built entirely of entangled movements from Italy, whereas the regional-scale place off the coast of Spain combines connections with all four coastlines. With no entangled movements outside the basin, much like its equivalent in the Eastern Mediterranean, these two regional constructs are yet again different from the pan-Mediterranean priorities and their movements and connections throughout the sea (Figure 5.39).

The second phenomenon emphasizes these places as actants. These preferred areas of movement during this disruptive period were not entirely isolated – they always operated within a background noise of movement at varying scales. In these two centuries, however, their inherent rhythms and agency had increased clarity from this noise and – curiously – from each other as well. This was a step change from the multiplicity of meanings and values intermingling at a single locus in other centuries (Figures 5.36 and 5.37). The coastal place near Spain in the 1st century AD is a good example. The entire western basin contained local and regional movements, even activity compelled by things from the Adriatic, yet only a murmuration of human–thing relations near Spain coalesced into a distinct place of shared purposes and compelled actions. Despite the increased number of these maritime places in the 2nd century AD, only this example near Spain

Figure 5.39 Comparison between local, regional, and pan-Mediterranean loci in the 2nd century AD with a density of probable activity equal to or greater than 50 percent.

became complicated by the concentration of pan-Mediterranean patterns upon it. Otherwise, these preferred places retained their individual *familiarity* and purposes within the surrounding noise, perpetuating the *comfort* of the people within them too.

The third is the corollary isolation of the systems of movement embedded in these places during this period of disruption. Certainly, these scalar systems at the coastal, regional, and pan-Mediterranean scales intermingled for centuries. The compositional changes in the entangled movements and compelled actions, and their partitioning during this disruptive period, nevertheless meant the increased coherence, expression, and isolation of these scalar movements within the surrounding maritime cultural landscape. Perhaps unlike previous centuries, the different scales of movement during this era were more distinct from one another, as if they began to oscillate at different frequencies. Equally important is the increased ease of finding a locus particular to these movements. Although regional and pan-Mediterranean journeys continually engaged with coastal-scale places, the frequency of this engagement seemingly decreased during these two centuries. Instead, it was as if the actions compelled by the suites of things on board emphasized the movements' relative isolation, not integration. During this period, a locus of coastal-scale movements is no longer the best place for passengers or shippers to find a pan-Mediterranean expedition.

Conclusions

The three phenomena associated with this millennial disruption, the places as actants compelling and perpetuating human actions, and the spatial and chronological variation of these maritime activities, are all components of the inhabited Mediterranean Sea in antiquity. Other components include the Brownian motion of local, short-range movements, the cycle of stasis and disruption, and the glacial scale and scope of preferred loci at the pan-Mediterranean scale. In sum, these characteristics represent a textured, vibrant, and kinetic human construction of the sea.

This is certainly not the first study to make this broad proposition. Either explicitly or implicitly, the multi-scalar nature of the ancient Mediterranean Sea's structure is found in the rich body of scholarship summarized in Chapter 2 that inspired this study. Nevertheless, what is new is the illustration, resolution, and detail of this culture's activities in these models of the maritime landscape. The varying scales of movement and entanglement can be superimposed, portraying their interactions and oppositions. The varying probabilities of maritime activity can be traced spatially and chronologically too, illustrating the sea's changing social texture from one kilometer, and one century, to the next. Simultaneously, these models are not necessarily illustrating the conventional social narrative. By isolating the submerged archaeological record, the result is an expression of a muted maritime community that is commonly under-represented in other portrayals. Rather than a manifestation of political interests and administrative constructs, or creations by poets and biographers, these models instead fashion the sea as the everyday sailors, captains, passengers, stowaways, and things – the underclass or unrepresented – may have once shaped it. Chapters 1 and 2 asked what might happen if the submerged archaeological corpus is re-interpreted within a different context, and these models represent a result.

As Chapter 6 will demonstrate, they also represent a new investigative opportunity. Because these assemblages are no longer a necessary part of a constellation of media forming a single narrative, it means these media – and their separate histories of maritime life – can be compared instead. Through four case studies, Chapter 6 juxtaposes textual and archaeological portrayals and examines different corpora of archaeological data, to find analogues, gaps, answers, and new questions.

Notes

1 Ingold 1993, 155; Torres and Ramos 2008, 15; Thomas 2017, 269.
2 Pliny 1938, *Natural History* II.45.118; Pomey 1997, 20; Bresson 2005, 101–2.
3 Horden and Purcell 2000, 142.
4 Horden and Purcell 2000, 140–142, 150, 365–366, 376.
5 See Leidwanger (2020, fig. 4.19) for travel times between Rhodes and Seleucia.
6 Harmanşah 2015, 1.
7 Mack 2004; Snead et al. 2009; Harmanşah 2015.
8 For extensive discussions on placemaking processes, see Ingold (1993, 2011), Hannam et al. (2006), Tilley (2010), Lee and Ingold (2006), Harmanşah (2014, 2015), Snead et al. (2009), Mack (2004), Ur (2009), Leary (2014), and Lucas (2014).

9 Pulak 1989; 2008, 289–310, 369–73; Bass and Van Doorninck Jr. 1982; Sams 1982, 207; Keay 1984, 399; Finley 1985, 23.
10 See Ingold's description of *place* (1993, 155), "A place owes its character to the experiences it affords to those who spend time there – to the sights, sounds and indeed smells that constitute its specific ambience. And these, in turn, depend on the kinds of activities in which its inhabitants engage."
11 For actants, see Callon (1986), Latour (1988, 2012), and Law (1986). See also Ingold, regarding people's actions in a landscape or "taskscape" (2017, 23), "Thus a task is not something you do completely of your own free will, as if you had alighted upon the world from some place beyond and owed nothing to it for your existence. It is rather what *falls* to you to do, an act to which you submit as in indeed to must submit to the world in which whose form-giving processes you partake, and from which you draw your very being."

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6 Case studies

In the opening of his *Maritime Archaeology*, Keith Muckelroy wrote what his book will not do.[1] It is important to do the same here. First, as mentioned in Chapter 2, the following pages focus on comparisons, not corrections. The narrative inherent to the archaeological models in the previous chapters is a tempting target, as if a close correlation with that story is also a better representation of the past. Such qualitative judgements will be avoided here, however, because these case studies are only preliminary examples of what research may be pursued in the future. It will also avoid these weighted arguments because they reiterate past efforts to prioritize the evidentiary value of texts or the archaeological record, such as Ivor Noël Hume's contention that archaeology was "a handmaiden to history."[2] Instead, this chapter's comparative element echoes studies that use archaeological media to understand the undocumented or the underclass, such as immigrant communities, the colonized or conquered, or those adjacent to people in power. By presuming that textual and archaeological data come from different epistemological contexts, the latter can reveal social patterns otherwise invisible in textual material. Moreover, the gaps or ambiguities between the two corpora, so valued by Lewis Binford and Mark Leone, can lead to new insights and ideas.[3]

This chapter's preliminary nature, however, is representative of a second element that some readers, particularly hedgehogs like me, may find frustrating: These four case studies are not comprehensive examinations. The passages creating a textual cartography of the Mediterranean Sea may be representative of the available information, but they are nevertheless a sample. Equally, the results should be investigated further with deconstructions of the administrative and social contexts of the authors and the toponyms they use. Additional material data from other large and small harbour sites around the Mediterranean basin would also compound the preliminary results emerging in these pages. Time and resources are factors limiting the scope of these case studies, but these examples also represent a different research agenda, if not new prompts, for further studies. If this book's effort demonstrates that a new interpretive methodology generates viable results, then these case studies represent the first applications of these results to a variety of new questions.

In general, these four case studies fall into two groups. The first two studies not only rely on textual data, but they each also use that data to fashion cartographies

of the Mediterranean Sea. Itineraries of voyages, containing the approximate time and distance travelled, represent discrete measures between one coast and another, as well as routes possibly preferred by the maritime community. More broadly, authors' maritime toponyms are their own valorization of *place* at sea, as well as their manifestation of the maritime landscape. The latter two studies, using material data from port cities, establish patterns of movement. The contrast they create may also be slightly unconventional. Whereas an epistemological dichotomy between textual and archaeological media is fairly common, a similar comparison between material data on land and under water is fairly rare; Nicole Constantine's examination of the suites of data onshore and offshore at Akko may be the most well known.[4] A contrast is still present, however, and these case studies will begin to test the scale of this perceptual gap.

As all of these datasets are fairly extensive compilations of information, each relies strongly – but not exclusively – on secondary publications. Pascal Arnaud's *Le routes de la navigation antique* is crucial to the first, whereas translations and commentaries, such as Frank Romer's investigation of Pomponius Mela's *Chorography*, are vital to the second. The remaining two studies rely on corpora of archaeological data. One uses information from inscriptions of *navicularii* and *negotiatores*, the merchants and agents moving goods throughout the Mediterranean Sea, whereas the second examines the archaeological signature of the port cities of Tarraconensis, Ostia, Sabratha, and others. These also rely on secondary literature and compilations, not only because the *Corpus Inscriptionum Latinarum* or the *Inscriptionum Graecarum* are standard resources, but also because many of the statistical analyses in the site reports cannot be replicated.

Textual cartographies of the Mediterranean Sea

There has been a long history of using documented journeys to understand past uses of the Mediterranean Sea and to establish general parameters of activity within this environment. James Smith's *The Voyage and Shipwreck of St Paul* in 1848 is an early attempt, as is H. Stuart Jones' *Companion to Roman History* from 1912.[5] As these studies use the origin and destination of a journey at sea, the approximate time travelled could provide a rough estimate of speed as well; its impact on everyday life could be portrayed in terms familiar to a modern reader. And, as maritime data began to accumulate near the turn of the 20th century – studies of harbours at Rome or Carthage, remains of ships on land and under water in England, Egypt, and France – interest in understanding and contextualizing these data accumulated too.

Maritime-themed studies of Homeric poetry, such as Maury's 1918 essay, gleaned rough estimates of day-long voyages and inadvertently compiled the routes used.[6] Henry Omerod followed with similar data related to ancient piracy in 1924.[7] By 1941, enough new information had been collated for Eugène de Saint-Denis to review and update estimates of sailing speeds in antiquity with 48 examples of voyages drawn from Homer, Xenophon, Pliny, Plutarch, and others.[8] Overall, ancient vessels seemed to travel at three to eight knots and were

recorded as voyaging from Palestine to Ostia, Pisa to Marseille, crossing the Strait of Otranto overnight, and sailing from Carthage to Sicily.[9] Ten years later, Lionel Casson had more information and a further refinement. Building upon Smith's earlier distinction between favourable and unfavourable winds, Casson estimated sailing speeds with time, distance, and wind direction as well. The result was not only average sailing speeds against or with the wind but also the ability to extrapolate rough estimates of sailing times between principal ports around the Mediterranean.[10] A journey from Cyprus to Alexandria could be two to three days, but the opposite could be longer than six days.[11] Casson maintained this approach, devoting 29 pages to these topics in his 1971 *Ships and Seamanship in the Ancient World*, whereas more recent books by Pascal Arnaud or Jean-Marie Kowalski are built almost entirely upon textual data.[12]

Whereas Kowalski's work can be more phenomenological as it explores the terrestrial construction of maritime space, Arnaud's study is more practical – an inventory of itineraries, and an exploration of the necessities of short-, medium-, and long-distance travel over these routes. Arnaud's study and his recording of the individual itineraries also represent a valuable counterpoint to the archaeological modelling in previous chapters. Schematically, his work and these models both represent patterns of past maritime movement. Yet, they emerge from very different epistemological contexts. If the muted maritime culture in the ancient Mediterranean was almost wholly adjacent to the experiences recorded by Agrippa, Arrian, Isidore of Seville, Strabo, Pliny, and others, then one outcome could be distinctly different cartographies of the sea. Whereas the writers from one end of the socio-economic spectrum perceived and transmitted one social structure of the sea, the sailors that operated the ships retained and used another. Alternatively, perhaps the relationship between these communities and their perceptions was much closer. After all, these authors experienced a maritime landscape and became intermittent members of the Mediterranean maritime culture inhabiting and altering this space as they travelled through it. Rather than a disjunction, these textual records might codify the vernacular practices of this maritime culture with knowledge that has transcended different social classes.

The results of a comparison between these itineraries and the archaeological models are particularly ambiguous, however. In some cases, such as the models of the local Italian maritime culture's movements in the 3rd century BC and 2nd century AD, the documented itineraries appear to record the antithesis of the archaeological *places*. Rather than itineraries leading into these densities of movement, they instead seem to purposefully document activity in lesser-frequented or avoided areas (Figures 6.1 and 6.2). Other juxtapositions produce slightly more analogous correlations. In the 3rd and 4th centuries AD, itineraries in the western basin overlapped with the higher densities of movement along the North African coast and, in the 2nd century BC, the preferred *place* generated by the Western-Mediterranean maritime culture along the Italian coastline (Figures 6.3–6.5). Other documented routes in the 2nd-century BC Aegean, and between Libya and Greece, appear to correspond with the Western-Mediterranean culture's preferences as well. For the Eastern-Mediterranean community, there are intriguing

Figure 6.1 Comparison between the local Italian maritime culture's activity in the 3rd century BC and contemporaneous itineraries from Arnaud (2005).

Figure 6.2 Comparison between the local Italian maritime culture's activity in the 2nd century AD and contemporaneous itineraries from Arnaud (2005).

Figure 6.3 Comparison between the local North African maritime culture's activity in the 3rd century AD and contemporaneous itineraries from Arnaud (2005).
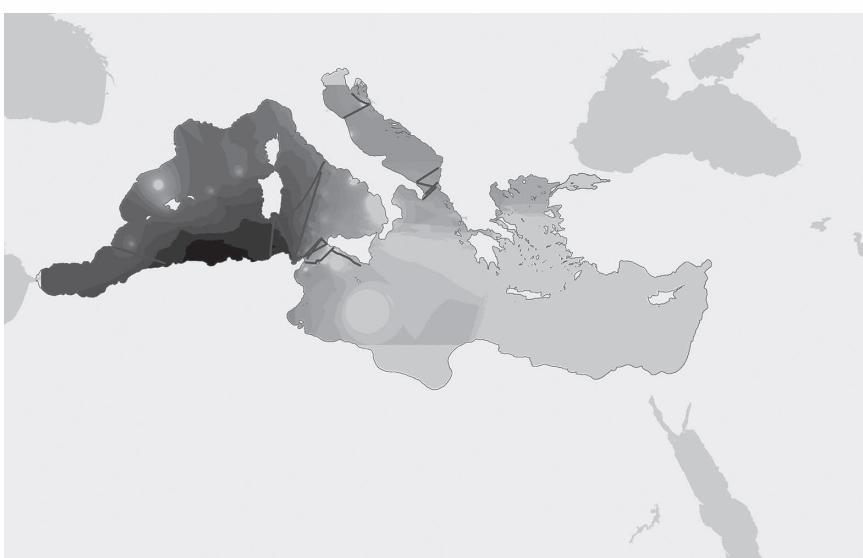
Figure 6.4 Comparison between the local North African maritime culture's activity in the 4th century AD and contemporaneous itineraries from Arnaud (2005).

Figure 6.5 Comparison between the regional Western-Mediterranean maritime culture's activity in the 2nd century BC and contemporaneous itineraries from Arnaud (2005).

analogues between nearby itineraries and the density of activity between Cyprus and Cilicia in the 1st and 2nd centuries AD (Figures 6.6 and 6.7).

There is a greater frequency of possible correspondence between pan-Mediterranean modelling and the contemporaneous itineraries. In the 2nd century BC, the results in the Western Mediterranean, the Strait of Otranto, and the Aegean are notable; in the 1st century BC, the parallels in the Aegean seem stronger, and the results in the Adriatic can be added as well (Figures 6.8 and 6.9). The 3rd and 4th centuries AD are equally curious. Is the journey between Sicily and Crete following the edge of a concentration of activity radiating from the Greek peninsula? What of the density of itineraries linking Carthage to nearby ports, and the equivalent density of movement between North Africa, Sardinia, Italy, and Sicily? These are all possibilities, but not only are exceptions still persistent, these correlations may not be causal but merely arising from larger amalgamations and superimpositions of data (Figures 6.10 and 6.11).

Many of these itineraries did not solely add minor detail to a narrative, however. In addition to their discrete value – as they describe distances and times between locations – they were also part of a broader effort to record the shape and geography of the world. In particular, the size and shape of the coasts and waters that formed the heart of the everyday landscape. Such cartographies of the Mediterranean Sea may be found in texts by Eratosthenes, Polybius, Strabo, Pomponius Mela, Pliny the Elder, Appian, Saint Orosius, and Isidore of Seville. Moreover, similar to antiquarian efforts correlating Pausanias' *Description of*
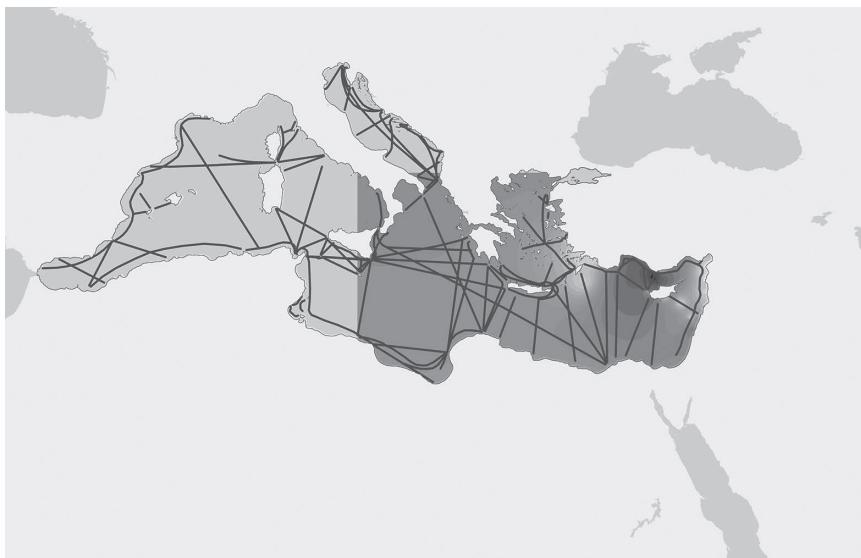
Figure 6.6 Comparison between the regional Eastern-Mediterranean maritime culture's activity in the 1st century AD and contemporaneous itineraries from Arnaud (2005).
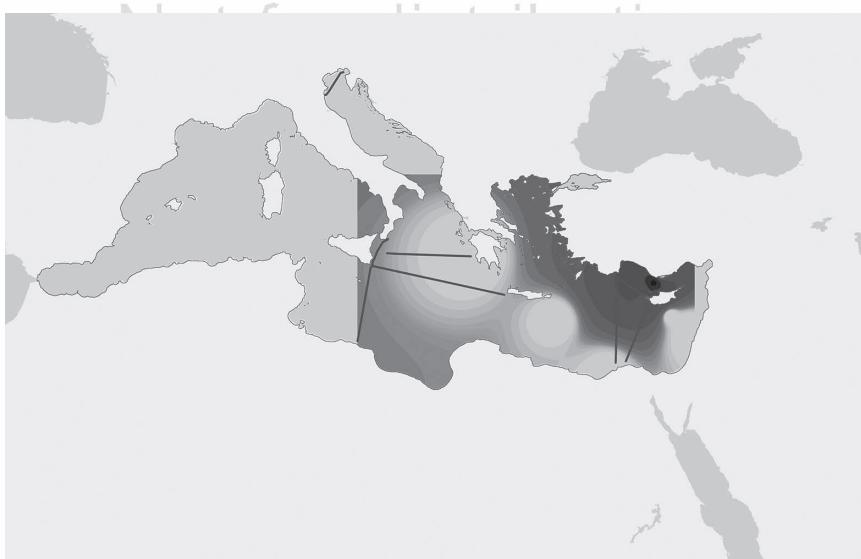
Figure 6.7 Comparison between the regional Eastern-Mediterranean maritime culture's activity in the 2nd century AD and contemporaneous itineraries from Arnaud (2005).

Figure 6.8 Comparison between the pan-Mediterranean maritime culture's activity in the
2nd century BC and contemporaneous itineraries from Arnaud (2005).

Figure 6.9 Comparison between the pan-Mediterranean maritime culture's activity in the
1st century BC and contemporaneous itineraries from Arnaud (2005).

Figure 6.10 Comparison between the pan-Mediterranean maritime culture's activity in the 3rd century AD and contemporaneous itineraries from Arnaud (2005).

Figure 6.11 Comparison between the pan-Mediterranean maritime culture's activity in the 4th century AD and contemporaneous itineraries from Arnaud (2005).

Greece with contemporary landscapes, there has been an equal interest in emboss-ing these maritime cartographies onto the present space.[13] Carl Müller and Johann Dübner's 1853 edition of Strabo's *Geography*, for example, included a series of excellent maps placing Strabo's Sicilian, Adriatic, Icarian, and Pamphylian Seas, among many others, in a modern environment.[14] Wolfgang Aly's 1968 edition of the *Geography* did the same.[15] Using information from a collection of ancient authors, Viktor Burr argued for the longevity and relative stability of the sea's spa-tial demarcations despite their shifting nomenclature.[16] In addition, Jean Rougé's 1966 study appended Burr's conclusions with a generalized map of 21 ancient *pelagoi* and *maria* distributed across the waters we know today.[17]

This toponymy of the sea is ancient but not antiquated. Instead, the place names codified in these Greek and Latin texts are broadly embedded in maritime com-munities and memory today through atlases, encyclopedias, coastal pilots, marine charts, experience, and oral histories. The Tyrrhenian Sea, Corinthian Gulf, and the Hellespont remain where Strabo last saw them, and this continuity encapsu-lates an important implication. Just as previous interpreters of Pausanias presumed the accuracy and authority of his descriptions, works by Müller and Dübner, and others have done the same for the social geography of the Mediterranean Sea.[18] If the Balearic and Libyan Seas from Pliny's and Saint Orosius' texts can define our modern landscape, then they likely defined the past landscape as well. Presuma-bly, these were the places integral to Mediterranean maritime activity in antiquity.

Completing comparisons between the archaeological places modelled in the previous chapter and the authors' toponyms, however, suggests that a disjunc-tion between these maritime cartographies seems to be the norm. This contrast is best illustrated with examples at the regional and pan-Mediterranean scales. In Figures 6.12–6.15, the toponyms from Eratosthenes, Polybius, Strabo, and Appian are superimposed over the places coalescing at a pan-Mediterranean perspective. Some alignments are very close: Appian's Myrtoan and Aegean Seas and the density of activity surrounding Euboea, or Strabo's Adriatic Sea and the Gulf of Salona.

Similarly strong correlations are evident at the regional scale in the individual basins. The large locus of activity in the 5th century AD western basin correlates well with the Mauretanian, Sardinian, and African Seas, and the Gulf of Numidia, in descriptions by Saint Orosius (Figure 6.16). Other archaeological places in the eastern basin also orient well. The density of 1st-century AD activity stretching southwards from Asia Minor towards Egypt coordinates with the Pamphylian Sea, and possibly the Egyptian Sea, proposed by Strabo. The same model has equally strong correlations with Pliny's Pamphylian, Cilician, Egyptian, and Phoenician Seas (Figures 6.17 and 6.18). In the following century, Appian's Pamphylian Sea fits very well over the concentrated density of activity between Cilicia and Cyprus (Figure 6.19).

But, these examples – while compelling – neglect their multiple discontinui-ties. Although the authors are mapping the entire Mediterranean Sea, the criterion characterizing an archaeological place commonly generates singular results. The archaeological modelling creates a binary contrast between an isolated place and

Figure 6.12 Comparison between Eratosthenes' maritime toponyms and the maritime *places* generated at the pan-Mediterranean scale in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2) Cuman Gulf, 3) Poseidonian Gulf, 4) Adriatic Gulf, and 5) Issus Gulf.

Figure 6.13 Comparison between Polybius' maritime toponyms and the maritime *places* generated at the pan-Mediterranean scale in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2) Strait at Gades, and 3) Adriatic Gulf.
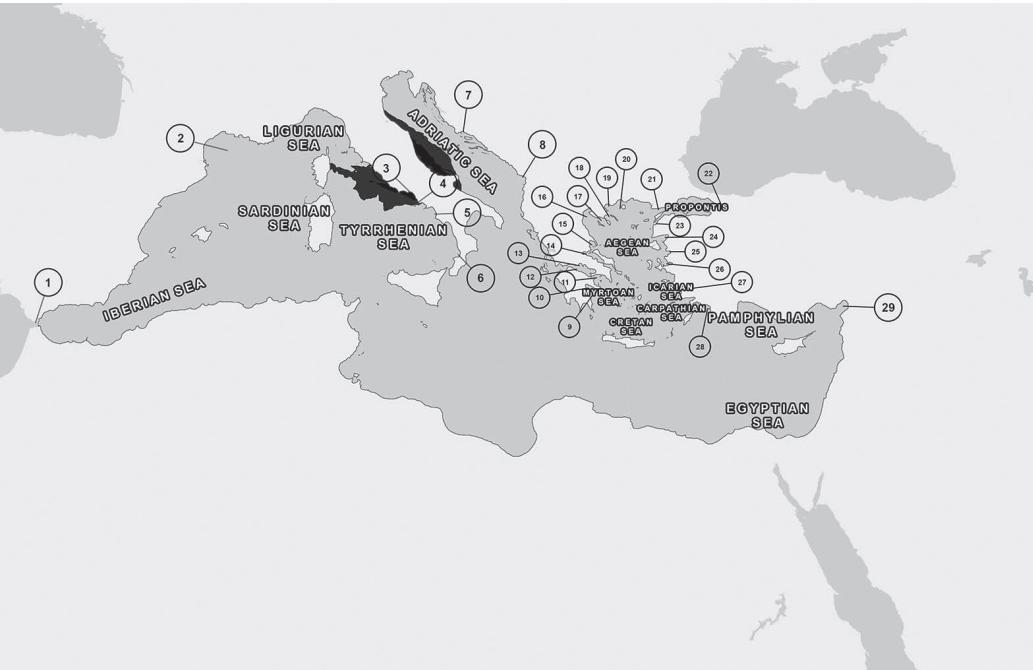
Figure 6.14 Comparison between Strabo's maritime toponyms and the maritime *places* generated at the pan-Mediterranean scale in the 1st century BC. Numerical references: 1) Pillars of Hercules, 2) Galatic Gulf, 3) Caitan Gulf, 4) Gulf of Lucrinus, 5) Poseidonian Gulf, 6) Hipponiate Gulf, 7) Salona Gulf, 8) Rhizonian Gulf, 9) Argolic Gulf, 10) Hermionic Gulf, 11) Salaminiac Gulf, 12) Saronic Sea, 13) Alcyonian Sea, 14) Mallac Gulf, 15) Pagasic/Demetrian Gulf, 16) Thermaian Gulf, 17) Toronaean Gulf, 18) Singitic Gulf, 19) Strymonic Gulf, 20) Thracian/Macedonian Gulf, 21) Melasian Gulf, 22) Astacene Gulf, 23) Hellespont, 24) Adramyttenian/Idaion Gulf, 25) Elaitikon Gulf, 26) Hermean Gulf, 27) Latmian Gulf, 28) Glaukian/Telmessian Gulf, and 29) Issus Gulf.

Figure 6.15 Comparison between Appian's maritime toponyms and the maritime *places* generated at the pan-Mediterranean scale in the 2nd century AD. Numerical references: 1) Ionian Gulf, 2) Hellespont, and 3) Propontis.

Figure 6.16 Comparison between Saint Orosius' maritime toponyms and the maritime *places* generated at the regional scale in the 5th century AD. Numerical references: 1) Strait at Gades, 2) Ligurian Sea, and 3) Numidian Gulf.

Figure 6.17 Comparison between Strabo's maritime toponyms and the maritime *places* generated at the regional scale in the 1st century AD. Numerical references: 1) Glaukian/Telmessian Gulf and 2) Issus Gulf.

Figure 6.18 Comparison between Pliny's maritime toponyms and the maritime *places* generated at the regional scale in the 1st century AD. Numerical reference: 1) Issus Gulf.

Figure 6.19 Comparison between Appian's maritime toponyms and the maritime *places* generated at the regional scale in the 2nd century AD.

the undefined space around it, whereas the textual cartography fills a broader area with multiple places. Solely in the eastern basin, for example, Pliny's Lycian or Libyan Seas, or the Gulf of Issus, have no evident analogues, like multiple places in the western basin recorded by Saint Orosius.

A tempting solution is to eliminate the binary character of the archaeological models and instead compare the textual geographies to the general gradient maps. Doing so (Figures 6.20–6.53) generates more correlations between the archaeological modelling and the textual toponyms, but this is more likely coincidence and not causation. No clear standard inherent to the archaeological modelling corresponds to the distribution and use of the textual toponyms. Among all the authors, place names appear over areas with high and low probabilities of activity, above and below the 50 percent threshold established in Chapter 5. Equally, no individual author seems to use a consistent measure related to their use and distribution of the place names. Eratosthenes' places vary between areas with probabilities of activity over 95 percent (the Gulf of Cumae) and below 5 percent (Pillars of Hercules and the Egyptian Sea). Pliny's toponyms have equally varying intensities; interestingly, Polybius' and Appian's are almost universally below the 50 percent threshold. If these authors were using patterns of seafaring activity or practices to emplace these maritime toponyms, they were apparently using criteria extrinsic to these models. More likely, these patterns of vernacular movement were peripheral to the purposes of these authors, much like the sailors themselves.

Figure 6.20 Comparison between Eratosthenes' maritime toponyms and the pan-Mediterranean modelling in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2) Cuman Gulf, 3) Poseidonian Gulf, 4) Adriatic Gulf, and 5) Issus Gulf.


Figure 6.21 Comparison between Polybius' maritime toponyms and the pan-Mediterranean modelling in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2) Strait at Gades, and 3) Adriatic Gulf.

Figure 6.22 Comparison between Strabo's maritime toponyms and the pan-Mediterranean modelling in the 1st century BC. Numerical references: 1) Pillars of Hercules, 2) Galatic Gulf, 3) Caitan Gulf, 4) Gulf of Lucrinus, 5) Poseidonian Gulf, 6) Hipponiate Gulf, 7) Salona Gulf, 8) Rhizonian Gulf, 9) Argolic Gulf, 10) Hermionic Gulf, 11) Salaminiac Gulf, 12) Saronic Sea, 13) Alcyonian Sea, 14) Mallac Gulf, 15) Pagasic/Demetrian Gulf, 16) Thermaian Gulf, 17) Toronaean Gulf, 18) Singitic Gulf, 19) Strymonic Gulf, 20) Thracian/Macedonian Gulf, 21) Melasian Gulf, 22) Astacene Gulf, 23) Hellespont, 24) Adramyttenian/Idaion Gulf, 25) Elaitikon Gulf, 26) Hermean Gulf, 27) Latmian Gulf, 28) Glaukian/Telmessian Gulf, and 29) Issus Gulf.

Figure 6.23 Comparison between Appian's maritime toponyms and the pan-Mediterranean modelling in the 2nd century AD. Numerical references: 1) Ionian Gulf, 2) Hellespont, and 3) Propontis.

Figure 6.24 Comparison between Eratosthenes' maritime toponyms and the Western-Mediterranean regional modelling in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2) Cuman Gulf, and 3) Poseidonian Gulf.

Figure 6.25 Comparison between Polybius' maritime toponyms and the Western-Mediterranean regional modelling in the 2nd century BC. Numerical references: 1) Pillars of Hercules and 2) Strait at Gades.

Figure 6.26 Comparison between Strabo's maritime toponyms and the Western-Mediterranean regional modelling in the 1st century BC. Numerical references: 1) Pillars of Hercules, 2) Galatic Gulf, 3) Caitan Gulf, 4) Gulf of Lucrinus, 5) Poseidonian Gulf, and 6) Hipponiate Gulf.

Figure 6.27 Comparison between Appian's maritime toponyms and the Western-Mediterranean regional modelling in the 2nd century AD. Numerical reference: 1) Pillars of Hercules.

Figure 6.28 Comparison between Saint Orosius' maritime toponyms and the Western-Mediterranean regional modelling in the 5th century AD. Numerical references: 1) Strait at Gades, 2) Ligurian Gulf, and 3) Numidian Gulf.

Figure 6.29 Comparison between Eratosthenes' maritime toponyms and the Eastern-Mediterranean regional modelling in the 3rd century BC. Numerical reference: 1) Issus Gulf.

Figure 6.30 Comparison between Eratosthenes' maritime toponyms and the Eastern-Mediterranean regional modelling in the 2nd century BC. Numerical reference: 1) Issus Gulf.

Figure 6.31 Comparison between Strabo's maritime toponyms and the Eastern-Mediterranean regional modelling in the 1st century AD. Numerical references: 1) Glaukian/Telmessian Gulf and 2) Issus Gulf.

Figure 6.32 Comparison between Pliny's maritime toponyms and the Eastern-Mediterranean regional modelling in the 1st century AD. Numerical reference: 1) Issus Gulf.

Figure 6.33 Comparison between Pomponius' maritime toponyms and the Eastern-Mediterranean regional modelling in the 1st century AD. Numerical reference: 1) Issus Gulf.

Figure 6.34 Comparison between Appian's maritime toponyms and the Eastern-Mediterranean regional modelling in the 2nd century AD.

Figure 6.35 Comparison between Eratosthenes' maritime toponyms and the Italian model-
ling in the 3rd century BC. Numerical references: 1) Pillars of Hercules, 2)
Cuman Gulf, and 3) Poseidonian Gulf.

Figure 6.36 Comparison between Eratosthenes' maritime toponyms and the Italian model-
ling in the 2nd century BC. Numerical references: 1) Pillars of Hercules, 2)
Cuman Gulf, and 3) Poseidonian Gulf.

Figure 6.37 Comparison between Polybius' maritime toponyms and the Italian modelling in the 2nd century BC. Numerical references: 1) Pillars of Hercules and 2) Strait at Gades.

Figure 6.38 Comparison between Strabo's maritime toponyms and the Italian modelling in the 1st century BC. Numerical references: 1) Pillars of Hercules, 2) Galatic Gulf, 3) Caitan Gulf, 4) Gulf of Lucrinus, 5) Poseidonian Gulf, and 6) Hipponiate Gulf.

Figure 6.39 Comparison between Pliny's maritime toponyms and the Italian modelling in the 1st century AD. Numerical references: 1) Pillars of Hercules, 2) Strait at Gades, 3) Ilicitanian Gulf, 4) Baian Gulf, 5) Paestan Gulf, 6) Terinan Gulf, and 7) Lesser Syrtian Gulf.

Figure 6.40 Comparison between Pomponius' maritime toponyms and the Italian modelling in the 1st century AD. Numerical references: 1) Pillars of Hercules, 2) Sucronen Gulf, 3) Herculanean Gulf, 4) Puteolian Gulf 5) Carthaginian Gulf, 6) Silician Sea, and 7) Lesser Syrtian Gulf.

Figure 6.41 Comparison between Appian's maritime toponyms and the Italian modelling in the 2nd century AD. Numerical reference: 1) Pillars of Hercules.

Figure 6.42 Comparison between Appian's maritime toponyms and the French modelling in the 2nd century AD. Numerical reference: 1) Pillars of Hercules.

Figure 6.43 Comparison between Strabo's maritime toponyms and the Spanish modelling in the 1st century AD. Numerical references: 1) Pillars of Hercules, 2) Galatic Gulf, 3) Caitan Gulf, 4) Gulf of Lucrinus, 5) Poseidonian Gulf, and 6) Hipponiate Gulf.

Figure 6.44 Comparison between Pliny's maritime toponyms and the Spanish modelling in the 1st century AD. Numerical references: 1) Pillars of Hercules, 2) Strait at Gades, 3) Ilicitan Gulf, 4) Baian Gulf, 5) Paestan Gulf, 6) Terinan Gulf, and 7) Lesser Syrtian Gulf.
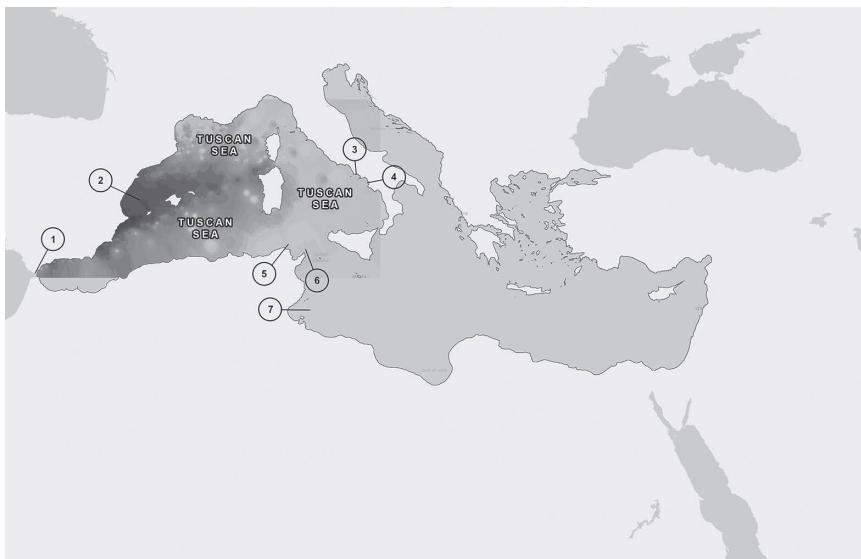
Figure 6.45 Comparison between Pomponius' maritime toponyms and the Spanish modelling in the 1st century AD. 1) Pillars of Hercules, 2) Sucronen Gulf, 3) Herculanean Gulf, 4) Puteolian Gulf 5) Carthaginian Gulf, 6) Silician Sea, and 7) Lesser Syrtian Gulf.

Figure 6.46 Comparison between Appian's maritime toponyms and the Spanish modelling in the 2nd century AD. Numerical reference: 1) Pillars of Hercules.
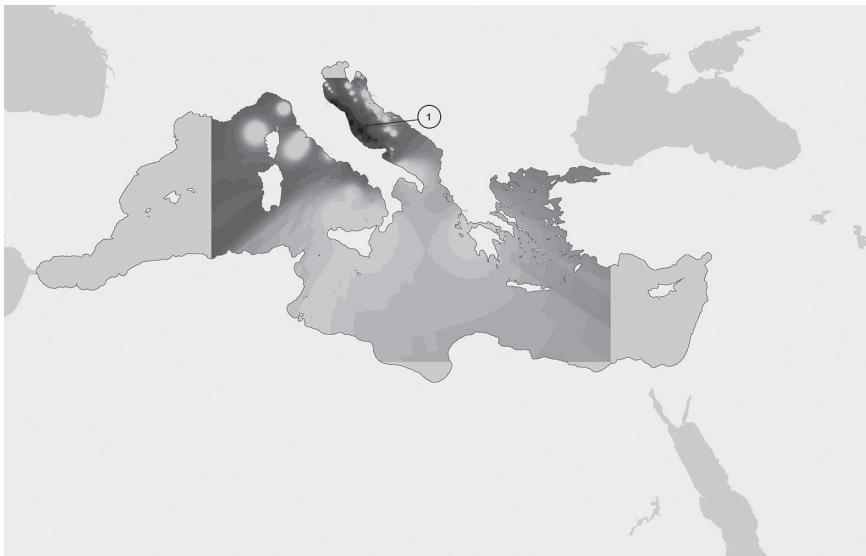
Figure 6.47 Comparison between Eratosthenes' maritime toponyms and the Adriatic regional modelling in the 2nd century BC. Numerical reference: 1) Adriatic Gulf.

Figure 6.48 Comparison between Polybius' maritime toponyms and the Adriatic regional modelling in the 2nd century BC. Numerical reference: 1) Adriatic Gulf.

Figure 6.49 Comparison between Strabo's maritime toponyms and the Adriatic regional modelling in the 1st century BC. Numerical references: 1) Salona Gulf and 2) Rhizonian Gulf.

Figure 6.50 Comparison between Strabo's maritime toponyms and the Adriatic regional modelling in the 1st century AD. Numerical references: 1) Salona Gulf and 2) Rhizonian Gulf.

Figure 6.51 Comparison between Pliny's maritime toponyms and the Adriatic regional modelling in the 1st century AD. Numerical references: 1) Tergestian Gulf and 2) Flanatian Gulf.

Figure 6.52 Comparison between Pomponius' maritime toponyms and the Adriatic regional modelling in the 1st century AD. Numerical reference: 1) Urlanian Gulf.
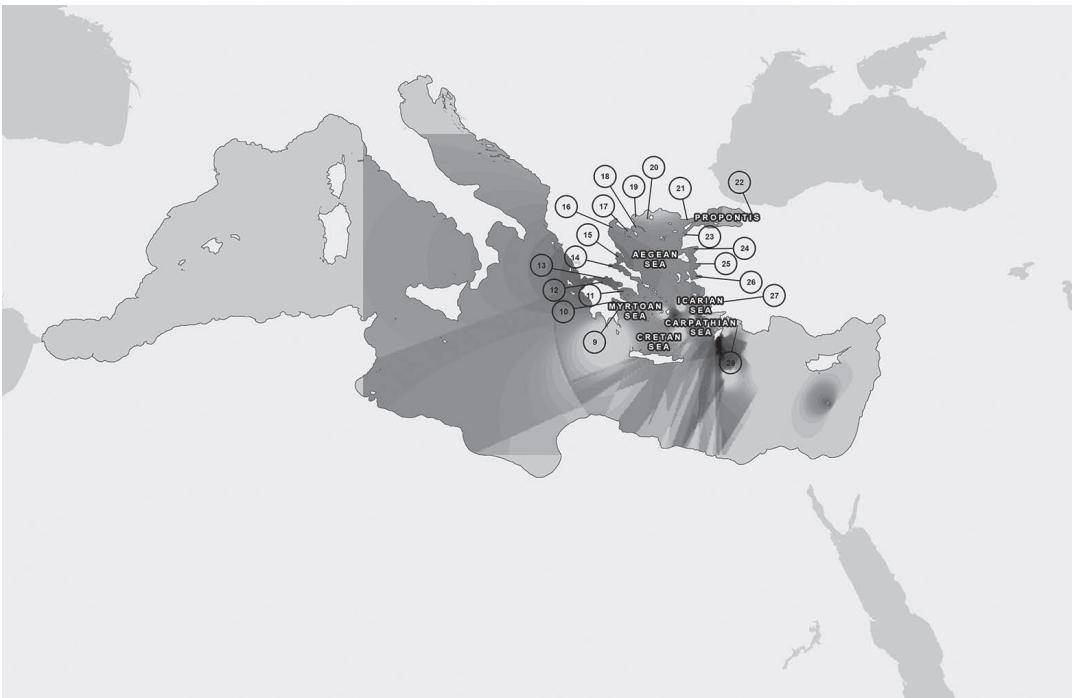
Figure 6.53 Comparison between Strabo's maritime toponyms and the Aegean regional modelling in the 1st century BC. Numerical references: 9) Argolic Gulf, 10) Hermionic Gulf, 11) Salaminiac Gulf, 12) Saronic Sea, 13) Alcyonian Sea, 14) Mallac Gulf, 15) Pagasic/Demetrian Gulf, 16) Thermaian Gulf, 17) Toronaean Gulf, 18) Singitic Gulf, 19) Strymonic Gulf, 20) Thracian/Macedonian Gulf, 21) Melasian Gulf, 22) Astacene Gulf, 23) Hellespont, 24) Adramyttenian/Idaion Gulf, 25) Elaitikon Gulf, 26) Hermean Gulf, 27) Latmian Gulf, and 28) Glaukian/Telmessian Gulf.

Archaeological movements and distribution

Amongst its methodological and theoretical underpinnings in Chapter 2, this study uses statistical analyses of large collections of ceramics by Michael Fulford, Simon Keay, Sean Kingsley, and others, as examples of the explanatory value of the archaeological dataset. Briefly, these scholars proposed that the scale and scope of the extant material culture could produce more robust and extensive models of a site's changing patterns of production, input, and output. Inherent to many of these examples, however, is the use of terrestrial material data as a proxy for patterns of maritime activity. At Carthage, Fulford's study of the ceramics from the British excavations on land suggested not only the changing fortunes of the city but also the shifting overseas connections from one century to the next.[19] Similarly, Keay's investigation of amphorae from sites at Tarraconensis found more movement and activity within the western basin prior to AD 475, and more interchange between the eastern and western basins afterwards.[20]

The incongruity of using terrestrial data as a proxy for maritime activity is not new; Michael Rostovtzeff, Johannes Hasebroek, and Alfred French each did the same.[21] Yet, although the maritime archaeological corpus has grown since French's publication in 1964, this disjunction has continued. It is found in studies of the Greek or Roman economy, ancient Mediterranean seafaring, and, more particularly, Michael McCormick's *Origins of the European Economy* or Stanford University's ORBIS project.[22] The reasons for this methodological imbalance are partially related to the purposes of these investigations and the authors' specialties and much of the intellectual history in Chapter 1. The historically small dataset of assemblages in the Mediterranean Sea has discouraged synthesizing and statistical studies until recently, and, second, the sites are perceived as particularistic phenomena allied to uniform geo-ethnic constructs. If a "Roman" shipwreck is indicative of Roman practices on *mare nostrum*, then in perception and practice, the sea and the people on it are subsumed into a culturally seamless environment.

This study's results may amplify a gulf between the terrestrial and maritime corpora, but they also offer an opportunity to deconstruct it. Much like the previous case studies with documentary information, there is a similar juxtaposition between two representations of maritime movement embedded in different epistemological contexts. Like other material data that have passed across the sea, the imported materials found in port sites were appropriated as they passed into a ship and compelled the crew to take certain actions. Unlike the submerged archaeological record, the material at these sites has passed into a different suite of human–thing entanglements and been appropriated a second time. Upon arriving at a port, coherent collections of shipboard material entered a new context and may have been partially or completely dispersed, embraced, consumed, sold, hidden, lost, or repurposed into new products. The result could be a suite of archaeological data on land different than that offshore, which has yet to be modified by these actions.

Curiously, this is not always the result. By taking a sample of the projected movements offshore of Tarraconensis, for example, the maritime and terrestrial archaeological signatures are very similar (Figures 6.54–6.58). Both are

Figure 6.54 The red boxes indicate the 250-km² areas offshore sampled for comparison to the adjacent port corpora, for the 2nd century BC.
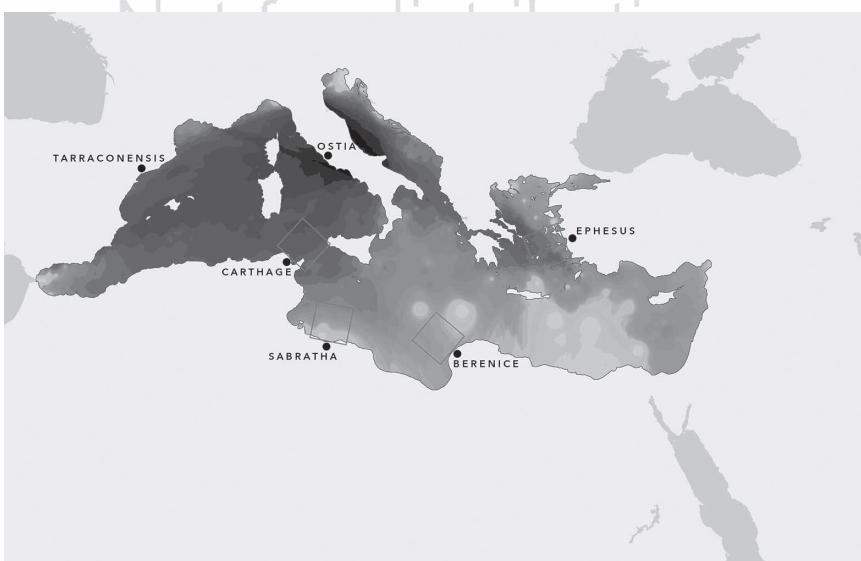
Figure 6.55 The red boxes indicate the 250-km² areas offshore sampled for comparison to the adjacent port corpora, for the 1st century BC.

Figure 6.56 The red boxes indicate the 250-km² areas offshore sampled for comparison to
         the adjacent port corpora, for the 2nd century AD.

Figure 6.57 The red boxes indicate the 250-km² areas offshore sampled for comparison to
         the adjacent port corpora, for the 3rd century AD.

Figure 6.58 The red boxes indicate the 250-km² areas offshore sampled for comparison to the adjacent port corpora, for the 4th century AD.

dominated by items from the western basin and have only intermittent elements from the other three regions (Table 6.1).[23]

Terrestrial and maritime datasets from other large and medium ports are also similar in composition. In Libya, the archaeological signatures of movement on land and under water at Sabratha are skewed strongly to the western basin, whereas Berenice – farther to the east – is more heterogeneous.[24] Greater scales of resolution, however, are found in the excavations at Ostia, Rome's port at the mouth of the Tiber. Like Sabratha or Tarraconensis, the ratios of coarseware and fineware data from recent work at La Terme del Nuotatore are similar to the archaeological signatures offshore. Generally, Western-Mediterranean material is predominant, Aegean items are common, but elements coming from the Adriatic or Eastern Mediterranean are never more than 5 percent of the total assemblage.[25] An examination of the amphorae from new trenches in Regio III, IV, and V at Ostia, however, generates details of movement at the intra-regional scale. Although material from the western basin dominates the sampling in these trenches, amphorae from Italy are not the most common type on land or under water. Instead, either Spanish or North African items prevail in both environments.[26]

The comparative results of data at Carthage also embody similarities, which is particularly surprising. The British team working on site investigated three areas: the administrative and military section of the island in the centre of the circular harbour, shops on the north side of the ancient waterfront, and possible farming structures outside the city that were later cut by a Vandal-era wall.[27] In contrast, the American team recovered data from cisterns, a corner of a peristyle

Table 6.1 Comparisons of the contents of activity implied by underwater and terrestrial datasets at six port sites around the Mediterranean. Values are percentages. In each chronological column, the left-hand values come from the underwater datasets. The chronology of Regio III, IV, and V at Ostia is by archaeological horizon, not century, so the chronology is approximate.

	2nd BC		1st BC		1st AD		2nd AD		3rd AD		4th AD	
Tarraconensis												
Western Med							96	100	96	100	100	93
Adriatic							2	0	0	0	0	0
Aegean							0	0	4	0	0	1
Eastern Med							0	0	0	0	0	4
Ostia: La Terme												
Western Med							82	79	81	78	81	83
Adriatic							5	0	4	0	1	0
Aegean							11	20	9	21	12	17
Eastern Med							0	0	4	0	4	0
Ostia: Regio												
Italy							22	20	7	7	12	10
France							14	7	12	4	12	0
Spain							30	44	2	16	0	7
N. Africa							14	16	60	50	58	61
Adriatic							5	0	2	0	1	0
Aegean							11	0	10	0	12	0
Eastern Med							0	5	5	20	3	12
Carthage: UK												
Western Med			76	91			87	89			94	100
Adriatic			11	0			4	0			0	0
Aegean			13	0			4	0			2	0
Eastern Med			0	0			3	0			2	0
Carthage: US												
Western Med							93	98			94	92
Adriatic							3	0			0	0
Aegean							3	1			2	5
Eastern Med							0	0			2	1
Sabratha												
Western Med	100	97	70	95			83	85	83	99	75	100
Adriatic	0	0	1	0			0	0	0	0	0	0
Aegean	0	0	20	0			13	0	16	0	0	0

	2nd BC		1st BC		1st AD		2nd AD		3rd AD		4th AD	
Eastern Med	0	1	0	3			3	13	0	0	25	0
Berenice												
Western Med			50	50			50	52	50	69	100	83
Adriatic			0	0			0	0	0	0	0	0
Aegean			50	50			16	39	0	23	0	0
Eastern Med			0	0			33	11	50	7	0	17
Ephesus												
Western Med	26	7	17	13			38	2	20	4	25	2
Adriatic	16	6	23	8			4	0	4	0	7	0
Aegean	49	84	48	76			53	97	61	95	45	92
Eastern Med	7	1	10	1			4	1	13	1	2	4

house, and a church.[28] These six areas had very mixed deposition signatures; the majority of the trenches had few cleanly-stratified groups of objects and secondary construction layers, backfill, and robbers' trenches were common.[29] The material in the cisterns was undeniably secondary deposits. Nevertheless, the general ratios of the material moving on land and on the sea are still similar; combined with the previous examples, they add unexpected insight regarding port activities. In general, they suggest that the various social processes that may scramble or decimate coherent assemblages in a port's context – and within different social contexts in a port – are not so deleterious. Perhaps, in these cases, there were fewer processes of reconfiguration and transformation within a port city than assumed.

Not all examples are analogous, however, for discontinuities arise at Ephesus, in Asia Minor. From the 2nd century BC to the 4th century AD, the site's terrestrial collection of amphorae is a mixture of items from all four regions. Local types are most common, never less than 76 percent of the corpus, suggesting a high level of intra-Aegean maritime activity at the port. The Western-Mediterranean signature is particularly small, varying between 2 and 13 percent of the maritime activity importing those items, whereas movements from the Adriatic and Eastern Mediterranean constitute the remainder.[30] The movements offshore, however, suggest that ships either going to the city's port or passing by had a more balanced ratio of materials. Aegean movements are still prevalent, but never more than 61 percent of the activity, and there is a noticeable increase in movements containing Western-Mediterranean items. In the 2nd century AD, for example, they constitute a third of the activity offshore (Table 6.1).

In contrast to the dynamics at Tarraconensis or Carthage, the community at Ephesus seems to be engaging in different practices. The maritime movements adjacent to Ephesus are materially rich and vibrant, with a more balanced ratio of items from all four regions. Yet, the people at Ephesus appear to be more selective. Adriatic materials were available but apparently never imported from the 2nd

to the 4th centuries AD; Eastern-Mediterranean items were equally accessible but particularly rare for all five modelled centuries. Rather than valuing and retaining what was uncommon, it seems that the community in Ephesus was relatively parochial and avoided the unfamiliar. Alternatively, the Ephesians may not have been the primary consumers of these exotica. Instead, as part of a distribution hierarchy, Adriatic and Eastern-Mediterranean movements may have deposited their items in the port for subsequent dispersal elsewhere.[31]

In comparison to the suites of coarseware and fineware, inscriptional data from ports present a very different type of comparative opportunity. Unlike the generalization inherent to large corpora of ceramics, these inscriptions are fairly particular, often representing a small group of people or an individual. They also specify a multitude of maritime occupations, such as the *nautae* who controlled river traffic, the raftsmen or *ratiari*, the *saburraii* who carried ballast, and the *fabri navales* who built ships.[32] This study will focus on the *navicularii* and the *negotiatores*, those who owned ships and the traders that supplied them with goods, because these inscriptions are comparatively more common than other occupations and because of the mobility they imply. For example, a 1st-century BC inscription from Delos records the presence of Italian and Greek *negotiatores* on the island, whereas a gravestone in Puteoli memorialized the death of a Tyrian *naukleros* in the 2nd century AD.[33] Recent studies of trading diasporas, which investigate communities dispersed spatially but tethered by strong mercantile interests, have used these inscriptions to find such groups and trace their movement and structure in the Roman era.[34]

A substantial portion of the inscriptional evidence illuminates the apparent migration of *negotiatores* and *naukleroi* around the Mediterranean region.[35] Unfortunately, because dating these items precisely can be difficult, aligning them with this study's centennial models can be tenuous. Presently, two diasporic groups, memorialized in 23 inscriptions and representing a larger number of individuals, constitute the trading communities that best coordinate chronologically with this study's proposals. The first cohort are *negotiatores* that moved from Italy to the Aegean region in the 1st century BC, establishing a presence in Aegio, Argos, Delos, Agia Triada, Ephesus, and Sardis.[36] As traders but not ship owners, their role was to maintain reliable lines of communication regarding prices and availability, effectively acting as merchant representatives regarding transactions between Italy and their adopted homes.[37] A corollary assumption is that their presence in a community signals an active marketplace, a conclusion reinforced by the densities of maritime activity evident in the pan-Mediterranean archaeological modelling in the same century. The bases of these individuals in the Aegean are each adjacent to preferred, frequented, and familiar areas of activity at sea; the community on the island of Delos is notably surrounded by potential movement (Figure 6.59).

Additional archaeological portrayals provide more nuance. Among the viable 1st century BC models, the "local" Italian maritime culture and the Western-Mediterranean community appear to have little activity in the Aegean region (Figures 4.3 and 4.13). Only the archaeological modelling of the Aegean movement generates distinct concentrations within the Aegean region (Figure 6.60), establishing similar densities of activity adjacent to the *negotiatores*.
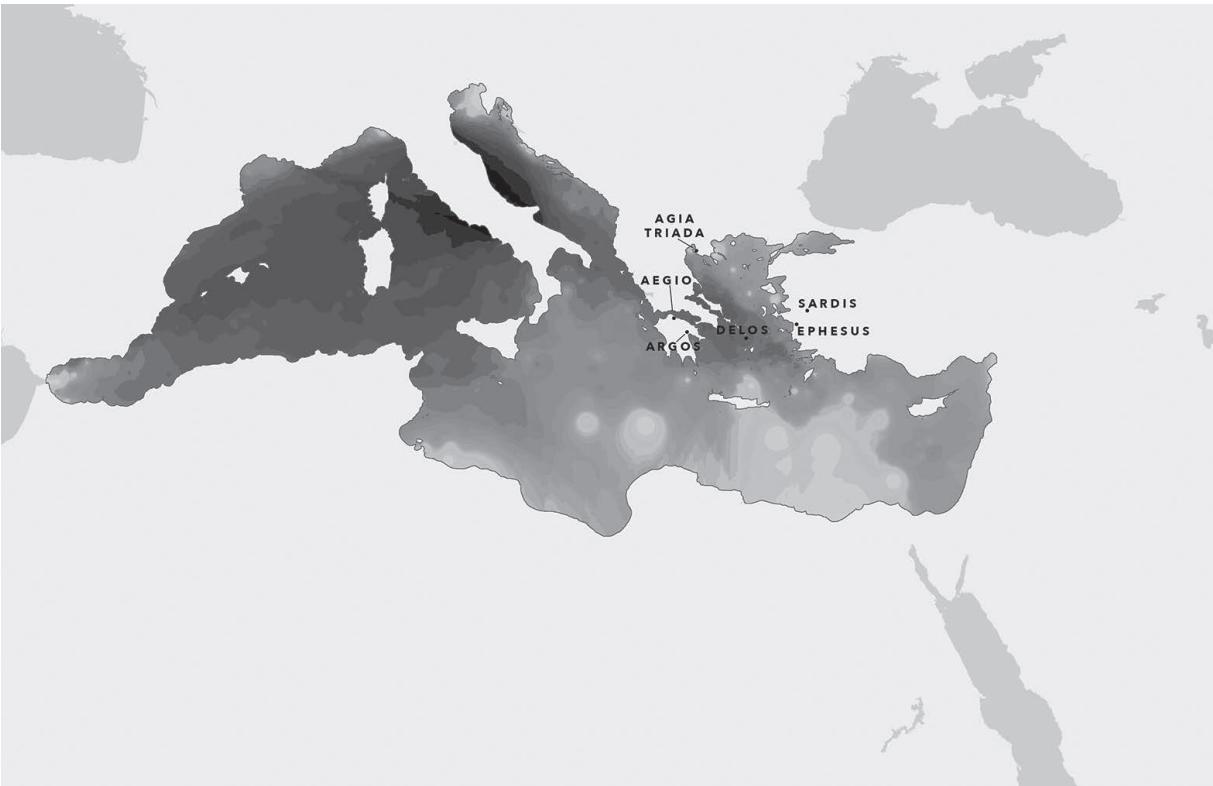
Figure 6.59 Locations of *negotiatores* dispersed around the Aegean region, in comparison to the pan-Mediterranean model of activity in the 1st century BC.
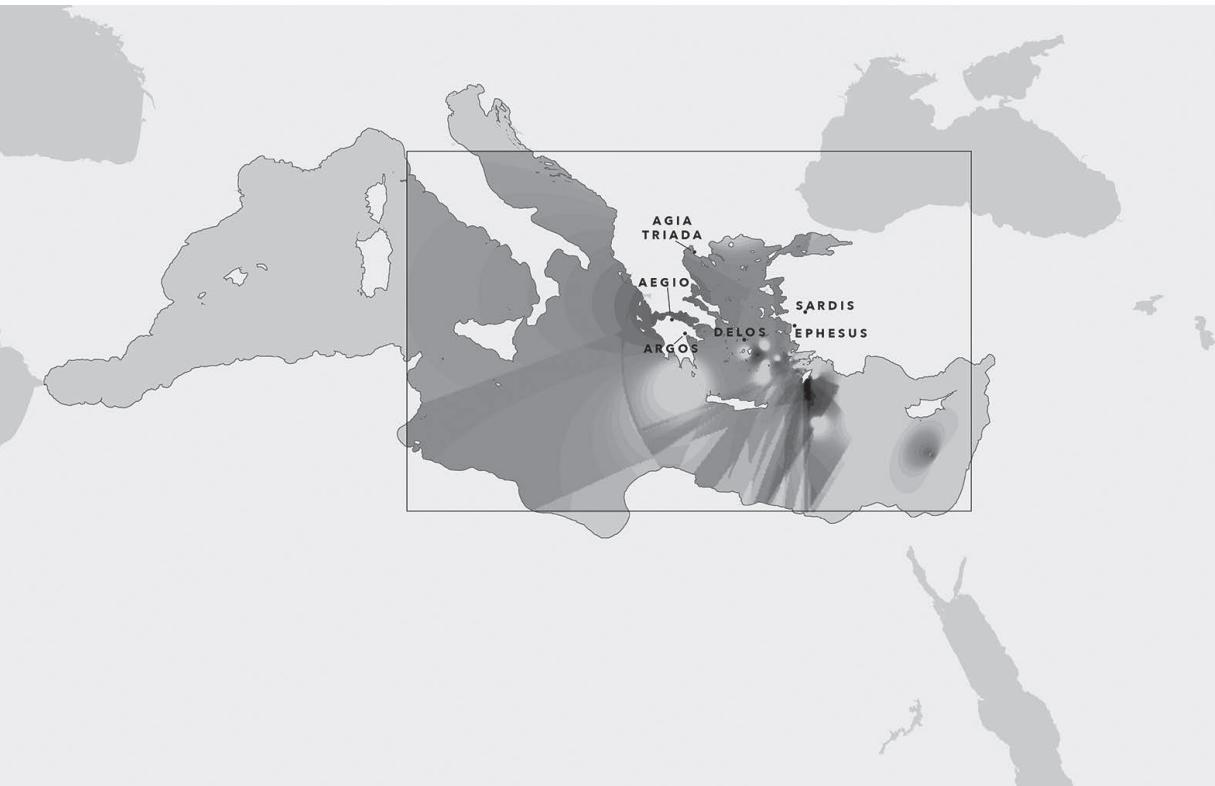
Figure 6.60 Locations of *negotiatores* dispersed around the Aegean region, in comparison to the Aegean regional model of activity in the 1st century BC.

This imbalance suggests that this community of *negotiatores* dispersed around the Aegean may have had an equally imbalanced role. Rather than facilitating parity between imports and exports, they may have focused on the export of materials to their homes in Italy, regularly sending items from the Aegean westwards.

The second cohort date to the 2nd century AD and, instead of emigrating from Italy, this is a group who established administrative offices within the Piazzale della Corporazioni, in Ostia. Among the inscriptions, 13 mention a *statio* in Ostia from which *negotiatores* and/or *navicularii* operated and maintained connections to their homes in North Africa, Gaul, and Sardinia.[38] Again, the implication of increased activity at these locations is paralleled in the associated archaeological modelling at the pan-Mediterranean scale (Figure 6.61). East and west of Carthage along the Tunisian and Libyan coasts, in the Gulf of Lyon, and close to Ostia, the waters each have demonstrably higher levels of potential activity in the 2nd century AD, an increased presence within the maritime community, and form distinct components of the maritime cultural landscape.

Importantly, the presence of these individuals in Ostia also correlates with the preferences portrayed in the archaeological models of the local Italian maritime community in the same century (Figure 6.62). As the maritime cultural landscape shaped by the movements of items from Italy clearly encompasses the over-sea bases of these individuals in the *statio*, it suggests – like the dynamic in the Aegean – that these remote representatives were primarily concerned with the export of items to their homes.

But the apparent absence of certain individuals is also important. There are none evident from Spain, for example, when the highest potential for local Spanish activity is far from Italy (Figure 4.8). Individuals from farther east are absent too, as the archaeological models of Eastern Mediterranean activity do not extend beyond Puteoli (Figure 4.29). In addition, the rest of the 2nd-century AD inscriptional corpus in Ostia reinforces these implicit preferences for North Africa, Sardinia, and Gaul. Spain and the Adriatic are present only in two inscriptions for *curatores*, or Imperial representatives, who managed the contents of ships.[39] One more mentions *navicularii* from Alexandria erecting a dedication to Emperor Commodus.[40] Otherwise, North Africa and Sardinia are present in three additional inscriptions from the same period – two for *domini navium*, ship owners or ship masters, and the last as a *curator*.[41]

Two more examples from the Piazzale should be mentioned because their tight chronology fits with two viable archaeological models. Both dating to the 4th century AD, these are inscriptions mentioning *navicularii* – ship owners or ship charterers – with ties to Africa and Spain.[42] Their implied activities fit well with the archaeological model of regional activity in the western basin (Figure 4.16), which favours movement in a zone between Ostia, southern Spain, and the North African coast. The archaeological model of preferred North African movements, however, may counter the pattern established in the previous examples. In the 1st century BC and the 2nd century AD, *negotiatores* and *navicularii* emigrated to the Aegean and Ostia apparently to facilitate the movement of local items to their homes – either back to Italy, North Africa, Sardinia, or Gaul. If these 4th-century
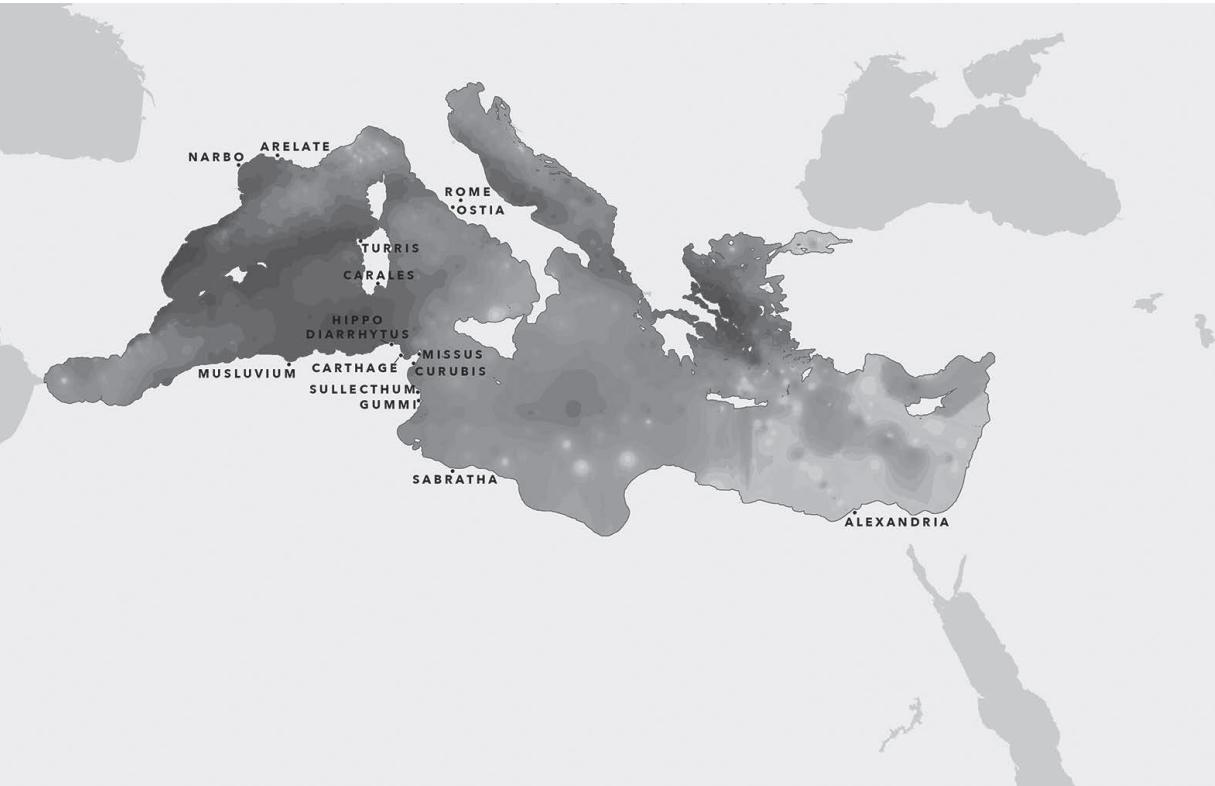
Figure 6.61 Locations of *negotiatores* and *navicularii* dispersed around the Western-Mediterranean region, in comparison to the pan-Mediterranean model of activity in the 2nd century AD.

Figure 6.62 Locations of *negotiatores* and *navicularii* dispersed around the Western-Mediterranean region, in comparison to the Italian model of activity in the 2nd century AD.

AD *navicularii Africani* also emigrated from North Africa to Ostia, then the density of activity in the archaeological modelling suggests they are not sending items from Italy home, but instead importing items from North Africa. Unfortunately, until a viable model of localized Italian or Spanish activity in the 4th century AD is generated, it is impossible to deconstruct this example further.[43]

Conclusions

The discrepancies within these case studies are not wholly unexpected. Setting aside taphonomic issues of survival and discovery, these differences reiterate imperfections in the datasets we use to fashion narratives of the past. The collection of itineraries, for example, can be expanded. One expansion would be qualitative, focusing on detailed narratives of journeys such as pilgrimages or missionary work that clarify routes, times, and, perhaps most interesting, transfers between vessels. If the gradients between the zones of activity represent where the content and nature of the modelled activity change, then they may also represent where people and things had to change transport too. The southwestern coast of Asia Minor, repeatedly adjacent to such modelled gradients offshore, may be one of these key locations; for example, it was an important waypoint for journeys to and from the Holy Land (Figures 4.32 and 5.2). Saint Paul consistently changed vessels in the cities of Ephesus, Myra, Patara, and Knidos as he travelled either farther eastwards or westwards in the 1st century AD, and Saint Willibald and his companions crossed this gradient on foot centuries later. After disembarking in Ephesus, this coterie of pilgrims journeyed to Patara before setting off again the following spring.[44] The pilgrim Paula, too, may have also stopped and changed ships in Rhodes, before sailing on to Cyprus in the 5th century AD.[45] Will further archaeological models continue to illustrate the transitional character of this coastline? If so, this may become a new point of coordination between these archaeological and textual narratives of the sea.

A quantitative expansion of itineraries would be useful too. Arnaud's focus on passages containing data on distance and duration reinforces his study of the sea's ancient cartography but is not necessarily representative of the larger body of information available. If a more comprehensive collection for the Eastern Mediterranean was fashioned, for example, discourse analysis could quantify how often a voyage from Cyprus to Rhodes was mentioned from one century to the next, theoretically representing the changing popularity of the journey. Would the shifting discourse, then, parallel the shifting spatial preferences of the maritime community? Or, would the two continue to operate apparently independently of each other? Equally interesting is a deconstruction of the contexts of the textual voyages. Do "low commerce" activities have stronger correlations with the archaeological narrative, whereas overtly political or military voyages diverge?

Differences in the archaeological and political narratives of the sea are also pertinent reminders that these media may not be portraying the same phenomena, nor emerging from the same epistemological contexts. This is emphasized by the particularly large narrative gaps between the textual and archaeological media shaping different cartographies of the sea. Whereas the archaeological data are detritus of movements,

textual passages are excerpted from a variety of formats and agendas. Polybius' relevant passages are scattered throughout his *History*, a record of the Roman Empire's rise from the 3rd to 2nd centuries BC originally in 40 books.[46] Appian's information, moreover, is a preface to his thematic record of the Roman Empire's conquest of the Mediterranean.[47] The works of Strabo and Pliny were Roman triumphalism and, for Strabo, an opportunity to explain this new Roman Empire to his Greek community.[48] Strabo's text even emulated the Empire's conquests by integrating previous works and attempting to improve upon their perceived failings.[49] Similarly, the work of Saint Orosius was Christian triumphalism, documenting the current and eventual extent of the Christian world and an addendum to Saint Augustine's *De civitate Dei*, arguing that Rome will continue to succeed due to Christianity.[50] The goal of these authors was not to present a didactic geography or a practical portolan to the reader but a context – a broad background against which their literate audience could learn the successes of a secular or sacred empire. For Isidore of Seville, the geography in his *Etymologies* or *Origins* is part of an encyclopedic tradition attempting to integrate all the known information about the world. His geographic information is in one book of 20 that include discussions of warfare, ship building, the cosmos, geology, and vocabulary.[51] Only Pomponius Mela, it seems, specifically set out to describe the geography of his world, and little else.[52]

Nevertheless, what Pomponius and his cohort have described appears to be a maritime cartography largely divorced from the activities of the Mediterranean maritime culture using the sea every day. Yet, are the few parallels in these portrayals causal or coincident? Did Saint Orosius distinguish the Numidian Gulf in his text because the maritime community already fashioned this as a *place* within their vernacular construction of the sea? What of Appian's codification of the Pamphylian Sea in the Eastern Mediterranean? Did the knowledge about these places transcend potentially large socio-economic boundaries to be memorialized in these texts? This route of transmission is plausible, as the Numidian Gulf is adjacent to Orosius' place of study and the Pamphylian Sea was comparatively close to Appian's life in Alexandria. Yet, is there a way to test these ideas, or establish more general conclusions about the transmission of this information from the underclass to those in power?

Equally intriguing conclusions arise with the archaeological comparisons. Undoubtedly, more investigation is necessary – in addition to more precise chronologies of the inscriptions, more comparisons should be made. There are reportedly 600 inscriptions mentioning *negotiatores* or their equivalents; will the patterns proposed in these preliminary comparisons continue, or were these only aberrations within larger trends?[53] And, inscriptions of *naukleroi* and *negotiatores* are not the only examples of communities migrating throughout the Mediterranean. In the 2nd century BC, the island of Delos housed a community of 90 *ephebes*, a large portion of which did not come from the Aegean region; other inscriptions on the island record the presence of other foreign resident communities.[54] How much do these migratory patterns parallel the archaeological models of activity, if at all? Just as the textual and archaeological data seem to represent different socio-economic cartographies of the sea, are these migrations conducted on top of the everyday, muted movements along coastlines, or do they exist within an epistemological sphere we have yet to encounter?

Such nuanced questions and investigations can be pursued within corpora of port data as well. If the archaeological signatures offshore and on land in medium and large port complexes are generally similar, does this suggest that these facilities – or at least the examples in this study – dominated activity offshore? It validates previous efforts that used these terrestrial corpora to model maritime activity, but is this valid at all scales? What of informal or opportunistic ports elsewhere? Other research has already investigated hierarchies of port systems in the Mediterranean, much like Jean Rougé's "grand commerce" or Xavier Nieto's system of direct routes and redistribution, so do discrepancies between the onshore and offshore corpora arise with ports below a certain size?[55] Or, lacking certain infrastructure? Equally, how far from a port like Carthage do the contents of these corpora begin to diverge? Is there a step-wise decimation of coherent ship-board assemblages as materials move inland from the coast? Michel Bonifay has already demonstrated the complexity of deciphering the dispersal of imported and local items between coastal and inland sites in Late Antique Libya and Tunisia.[56] But, does the coherence of the assemblages have a relationship to their mode of carriage? River transport in North Africa is negligible, so is there a greater rate of dissolution as materials move over land? Would carriage along the Tiber to Rome maintain the coherence we see at the shore?

These are all compelling questions, and each warrants further investigation yet, unfortunately, this is not the best forum for these efforts. More expertise in literary criticism, epigraphy, and typologies of coarsewares and finewares is required, as is additional data. Nevertheless, these preliminary foundations seem to establish a distinct expansion in the types of questions we can ask, and possibly answer, with the corpus of assemblages on the seafloor. What may be equally important, as explored in the concluding chapter, is what these new questions represent as well.

Notes

1 Muckelroy 1978, vii.
2 Hume 1964; Moreland 2006, 138;
3 Leone 1988; Binford 1987; Paynter 2000, 14–5; Houston 2004, 242; Moreland 2006, 138.
4 Constantine 2019; see also Harpster et al. (2021).
5 Smith 1848; Jones 1912.
6 Maury 1918, 99.
7 Omerod 1924, 15–6.
8 de Saint-Denis 1941, 129, 135.
9 de Saint-Denis 1941, 127–9.
10 Casson 1951.
11 Casson 1951, 145.
12 Arnaud 2005; Kowalski 2012.
13 Stewart 2013, 235–6.
14 Müller and Dübner 1853, in back cover of volume II
15 Aly 1968, in back cover of volume I. Roller (2018) does not undertake this exercise, however.
16 Burr 1932.
17 Burr 1932; Rougé 1966, 41–46. The *Barrington Atlas* (Talbert 2000) does the same, placing the classical names of seas and bays throughout the landscape.

18 See Stewart (2013) and his deconstructions of past interpretations of Pausanias, the resulting problems, and their impact on archaeological interpretations and practice.
19 Fulford 1984, 262.
20 Keay 1984, viii.
21 Rostovtzeff 1926; Hasebroek 1933; French 1964.
22 For economic examples, see D'Arms (1981), Goudineau (1983), and Reed (2003), or Rougé (1966), Arnaud (2005), and Kowalski (2012) for studies of seafaring.
23 See Keay (1984, Appendix III) for the data used from Tarraconensis.
24 See Kenrick (1985, 1986), Dore (1989), Fulford (1989), and Fulford and Tomber (1994) for data from Sabratha and Berenice.
25 See Martin (2005, 2008) and Martin and De Sena (2003) for the data from La Terme del Nuotatore.
26 See Martin and Heinzelmann (2000) for the data from Regio III, IV, and V.
27 Hurst and Roskams 1984; Fulford and Peacock 1984; Hurst 1994.
28 See Humphrey (1976, 1978, 1981) for the Michigan teams' excavation contexts at Carthage.
29 For stratigraphic issues in the British trenches, see Hurst and Roskams (1984, 3–4), Fulford and Peacock (1984, 116), and Hurst (1994, 18, 27, 64). For similar issues with the American investigations, see Humphrey (1976, 2–6), Humphrey (1978, 23–24), and Humphrey (1981, 86–112).
30 Bezeczky 2013, 189–90.
31 This is similar to Nieto's proposal of primary and secondary ports; see Nieto (1997 153).
32 See Rougier (2020, 135–40) and Aubert (2020, 201–2) for a more complete list.
33 See CIL 01.00830 for the *negotiatores* in Delos (Rice 2012), and IG XIV 830 for the gravestone in Puteoli (Schmidts 2012).
34 See Rice (2012, 2016), Schmidts (2012), and Terpstra (2013; 2020) who have used these data for studies of trading patterns and the structure of trading communities.
35 For *naukleroi*, for example, approximately 30 percent of the inscriptions in Arnaud's catalogue (2020, Table 15.1) record the movement of one or more individuals from one port to another.
36 Aigio (CIL 01.02955); Argos (CIL 03.00532; Delos (CIL 01.00830, CIL 01.00831, CIL 01.07237, CIL 01.07240); Agia Triada (CIL 01.00746); Ephesus (AE 1968.00480, AE 1990.00938); Sardis (AE 1996.01453).
37 Christol 2020, 257.
38 North Africa (CIL 14.4549.10, CIL 14.4549.11, CIL 14.4549.12, CIL 14.4549.14, CIL 14.4549.17, CIL 14.4549.18. CIL 14.4549.23, CIL 14.4549.34, CIL 14.4549.40, CIL 14.4549.48); Gaul (CIL 14.4549.32); Sardinia (CIL 14.4549.19, CIL 14.4549.21). See also Terpstra (2013, 105) for dating, and Steuernagel (2020) who deconstructs the various purposes of a *statio* for a mercantile community.
39 A *curator* from Baetica (CIL VI 1625b), and one from the Adriatic (CIL XIV 409).
40 IG XIV 918.
41 *Domini navium* (CIL XIV 99 and CIL XIV S 4142), and a *curator* (CIL XIV S 4142).
42 Africa (CTh XIII5,10) and Spain (CTh XIII 5,8).
43 This reversal of priorities might be representative of the tenor of laws in the 4th century AD that no longer portrayed Italian harbours as passively under official control, but more reckless and hazardous; see Aubert (2020, 211–3).
44 Contrast Brownlow (1895, 10–11) who writes that they remained on the coast, against Talbot (1954) who wrote that Willibald and his companions travelled inland to Hierapolis before going south to Patara.
45 Fremantle 1893, Letter 108.
46 Polybius 2012, x.
47 Appian 1913, viii.
48 Strabo 1917, *Geography* 1.2.1, 11.6.4; Pliny 1938, *Natural History* 14.2; Dueck 2000, 107, 110; Murphy 2004, 5, 130; Koelsch 2004.

49 See Strabo's discussion of Eratosthenes and Egypt 1.2.22–24.
50 Merrills 2005, 37–39.
51 Barney et al. 2006, 3–4.
52 Romer 1998, 4–9.
53 Arnaud 2020, 367.
54 Verboven 2020, 336–7.
55 Rougé 1966, 419; Nieto 1997, 153. For port hierarchies, see Schörle (2011) and Wilson et al. (2013).
56 Bonifay 2013.

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Conclusions

The questions closing the previous chapter were almost unavoidable, mostly because the case studies in Chapter 6 are preliminary and suggestions for future research. More cynically, some readers might observe that half the chapters in this book have ended with questions. But, what may be more important is the direction the questions in Chapter 6 lead us. From one perspective, the investigations they propose almost require the interpretive approach and methodology crafted in this study. The cartographic questions necessitate models of the maritime cultural landscape and the socially constructed places within it. Comparative studies of routes, migrations, and port assemblages do as well.

Another perspective, however, might see a more fundamental issue, which is the *equivalency* of the archaeological and textual narratives implicit in these proposals. Fundamentally, this parity has been inherent to much of the argumentation in this study. By deconstructing how a culture-history interpretive approach became embedded within maritime archaeological practices in the Mediterranean region, Chapter 1 also deconstructed the creation of an evidentiary hierarchy. Efforts to associate assemblages on the seafloor with affiliations within textual media – usually from antiquity – place the textual narrative in a powerful position. The language and affiliations within it become necessary for the context and understanding of the assemblage under water. Giving the site a label literally gives the site meaning and purpose, whereas the absence of an affiliation consigns the assemblage to anonymity and a contextual vacuum. The archaeological corpus on the Mediterranean seafloor, then, relies on a textual narrative for explanatory power.

This is the primary reason that this study adopted many of the theoretical and methodological ideas in Chapter 2. Due to their intellectual origins primarily in prehistoric archaeology practiced in North America and northern Europe, these approaches foreground material data because there is no alternative. The objects, assemblages, sites, and the continually evolving body of theory represent the primary sources from which a narrative of the past emerges. Their explanatory power arises entirely from their own corpus. The associated methods and theories, however, are also the foundation for two important characteristics of this book. The first is the adoption of a fluid perception of culture, something antithetical to the normative perspectives inherent to culture-historical frameworks, and the

basis for *maritime culture* as an alternative. The second is the need to build a contextual chain of interpretation from the archaeological corpus alone. Doing so not only creates a narrative exclusive to the material data, in certain circumstances – such as the underclass in the ancient Mediterranean – it also creates a narrative equivalent in scale and scope to one created by those in power.

This is another reason why, as mentioned in the Introduction, Chapters 3–5 were the crux of this study. Chapter 3 established the methodology to create a contextual chain visualizing a maritime culture in the ancient Mediterranean, and Chapters 4 and 5 contain the first narratives of that culture derived from this archaeological corpus. This is a new narrative modelling how local, regional, and pan-Mediterranean cohorts of this community may have shaped and perceived their maritime landscape, and how they may have experienced it too. Inherent to the questions that closed Chapter 6, then, is not the amalgamation of data into a single model of "Roman" seafaring, but a multiplicity of perspectives and epistemological venues. The questions' tenor is one of explanation – why some corpora agree on their portrayal of a maritime past, why others do not, and what the emerging lacunae tell us about people's relationships with the sea.

Finding explanations may not come quickly, however. The present methodology seems to work, but there are still narrative gaps that need to be mended. Compiling more data is one solution, but not the only one. There is only a weak correlation (0.24) between the number of assemblages within an archaeological model and the probability that the model will be distinguished from random chance. A secondary issue can be the content of the added data. Justin Leidwanger's recent work has shown the value of re-assessing and updating the sources and typologies of legacy data prior to their synthesis and analysis.[1] A similar process may be central to further iterations of this work as well. Crucial to filling these narrative gaps, then, is not only more data, but also understanding what *combination* of criteria establishes a viable model, and this may not be easy. As an example, the pan-Mediterranean models of activity in the 1st centuries BC and AD have 284 and 283 assemblages, respectively. The resulting *p*-values, however, suggest that the 1st-century AD model was virtually the same as a haphazard collection of data (Table 3.2 and Figure 3.13). What combination of assemblages, content, dispersal, and orientation generates a viable model? How might an answer be found, and could a collaboration between machine learning, pattern recognition research, and the social sciences find a solution?

Solutions to this problem would be valuable. Primarily, they could guide further desk-based and field research to collect the data necessary to affirm models that are presently unreliable. A complete chronological sequence would allow us to examine more closely human relationships with the sea at different scales and locations, and in comparison to a more diverse suite of Mediterranean phenomena. The disruptive era immediately after the turn of the millennium would be a particular focus, primarily because it is possible to interpret the unreliable models in two ways. Within the criteria of this study, unreliable models were not used because they presumably contain an explanation no better than that generated by a random collection of data. Yet, perhaps their significance lies in the randomness

they portray. Maritime activity at the turn of the millennium may have been experiencing dramatic shifts in priorities, infrastructure, scale, and content as the Roman Empire reached its greatest extent. Perhaps the randomness in this era, and presently excluded by this study, is instead representative of this maritime culture adjusting and establishing new patterns and systems.

Understanding what constitutes a viable model could also prompt the application of this approach beyond the Mediterranean Sea. This study and earlier iterations consciously excluded data from the Black Sea, primarily because it contained a relatively small corpus (page 75). But, a more robust understanding of the criteria necessary to establish a viable model may open opportunities to apply this methodology in the Black Sea and elsewhere. Perhaps the North Sea or the Atlantic has the necessary amalgamation of data, content, dispersal, and orientation to build other viable models and narratives.

A complete suite of archaeological models encourages more comparisons to the environment as well. Risky activity was briefly explored in this study but characterized only on a binary criterion of the land's in/visibility. Such behaviour certainly contains much more subtlety, however, and not everyone engaged this risk equally. For example, the maritime culture's extensive history and apparent comfort with open-water sailing in the eastern basin are striking. Between the 7th and the 5th centuries BC, despite the provincial scale of the movements, there is a steady engagement with risky behaviour over the horizon. This predilection continues in the following centuries, perhaps also catalysing the broader dispersal of this community's activities. Cultural behaviour in the western basin is generally different. The potential for movement beyond the sight of land was always present, yet never apparently a priority until the 3rd century AD and afterwards. And, despite a sense of *dominion*, this activity remained confined by Gibraltar and Sicily. How much does the environment impact risk-taking behaviour, or the establishment of activities across a spectrum of risk? Sailing across the Aegean can be accomplished without ever leaving the sight of land, so did the sea's insular geography determine similar near-shore preferences within the Aegean maritime community when sailing elsewhere? The present results are mixed. In the 1st century BC, the *places* preferred by this community were consistently near the shore, although the overall extent of their maritime activity was much greater (Figures 4.22 and 4.65). In contrast, the comparatively lower coastal silhouettes from Syria to Egypt may have determined different communal behaviours and patterns. As even brief journeys offshore could pass over the horizon, was this community – unlike that in the Aegean – inured to blue-water sailing? Their fluorescence of activity from the 3rd century BC to the 2nd century AD suggests so.

In addition, data on wind and current patterns were not applied in this study, although they can be considered. In the Western-Mediterranean basin, for example, the modelled local movements roughly follow the counter-clockwise currents from Sicily to Rome, then through the Ligurian Sea and on to the Balearics. In turn, Italian movements consistently prefer Marseille from the 3rd to the 1st centuries BC (Figures 4.1–4.3). Spanish movements seem driven by the currents

flowing eastwards through the Balearics, and North African patterns tend to move north and east, also with the currents (Figures 4.7–4.11). Similarly, the *places* manifesting off the coast of Italy at the local, regional, and pan-Mediterranean scales correlate well with an oceanic gyre between the mainland and Corsica, just as modelled *places* in the Eastern Mediterranean fit over gyres between Rhodes and Cyprus. More models and data can clarify these possibilities and explore more closely the environmental and human dynamics of sailing in antiquity: How much do these patterns rely on environmental phenomena, and does this relationship vary at scale? Do local or pan-Mediterranean patterns rely more or less on environmental factors? Are political or military movements more independent of these environmental constraints?

Considerations of the sea's relationship with human activities are also a reminder that, as stated previously, this was not a human-centred world. Human–thing entanglements were explored in Chapter 5, and, as discussed in Chapter 2, the sea could impact personal and social identity, but the notion of the water or sea as half of that relationship was left untouched. Luckily, other scholars are already doing so. Classified as a *hyperobject* or a *hyperfact*, water or the sea takes on the same agential power as people or things. Yet, the sheer scale of water, its multiple states of existence, extensive chronology, and our continual interaction with water make it more than we can perceptually contain. As discussed by Timothy Morton, hyperobjects defy human time and spatial scales, yet, like other things in human–thing relationships, they still compel our actions.[2] With these new models of a maritime culture's apparent preferences and patterns, how might this particularly large entangled relationship be explored further? Can we progress from human–thing entanglements at a very human scale, and to entanglements at the *communal* scale? Can these theoretical perspectives, drawn from Object Oriented Ontology, operate between two large constructs? Craig Cipolla, Amélie Allard, Sara Rich, and Peter Campbell have already begun investigating these questions, posing rivers as the corollary to human agency, or the sea as an *other* with forces contrary to land and equivalent to human demands.[3] Just as this alternative archaeological modelling seems to be manifesting a narrative of a previously muted maritime culture, these post-modern approaches are equally building a narrative of the sea's agency in antiquity.

Briefly, then, the next stage of this research hopes to investigate many of these questions. Some elements of this work will be methodological and statistical, other elements will be comparative, and yet other agendas will be exploratory, philosophical, or abstract. As a whole, however, what they hope to achieve is a new way of utilizing and understanding maritime archaeological data, and a better understanding of the human relationship with the sea.

Notes

1   Leidwanger 2020.
2   Morton 2011a, 80, 2011b.
3   Cipolla and Allard 2019; Campbell 2020; Rich 2021.

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Index