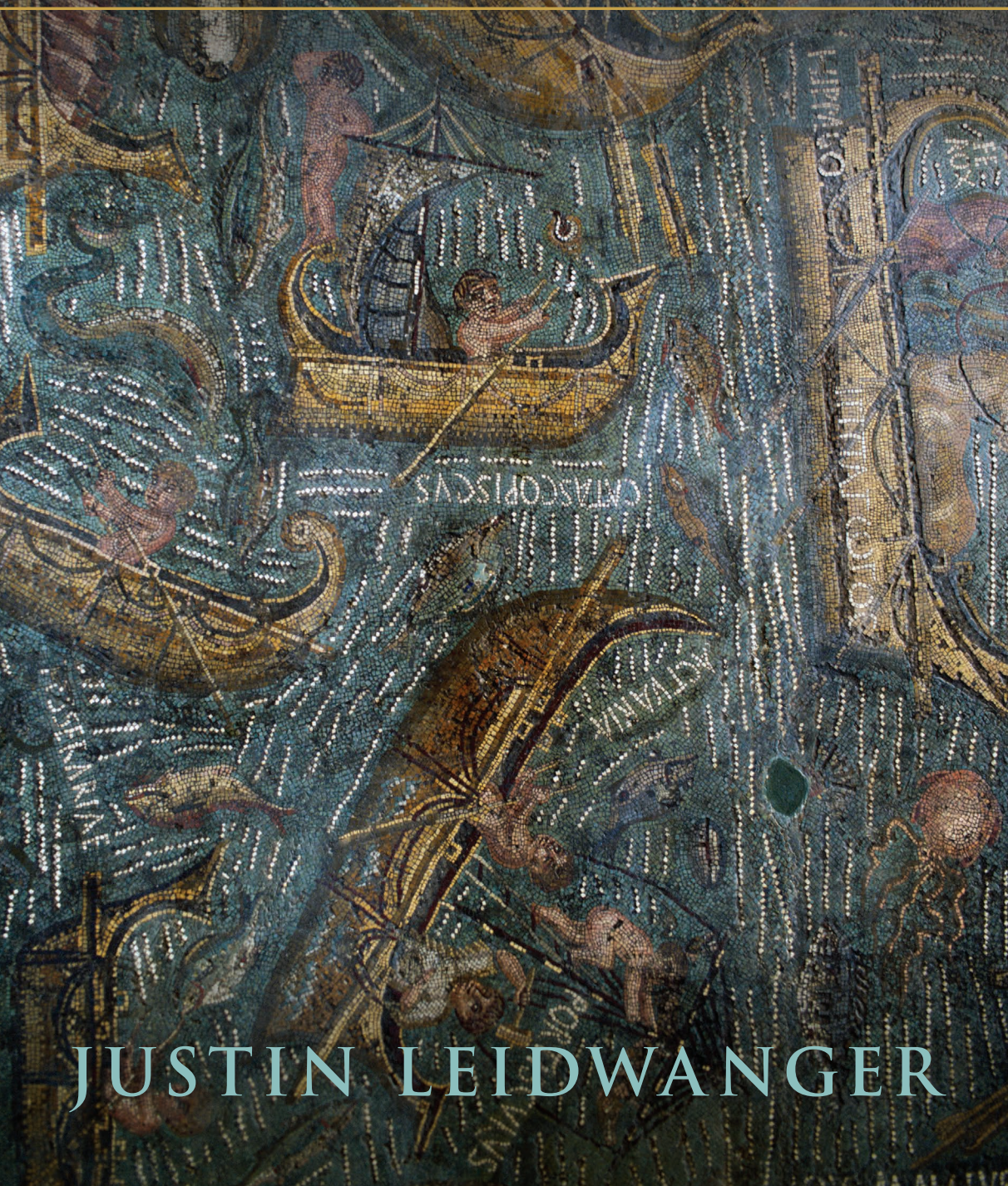


ROMAN SEAS

A MARITIME ARCHAEOLOGY OF
EASTERN MEDITERRANEAN ECONOMIES



JUSTIN LEIDWANGER

Roman Seas
*A Maritime Archaeology of Eastern
Mediterranean Economies*

JUSTIN LEIDWANGER

OXFORD
UNIVERSITY PRESS

OXFORD
UNIVERSITY PRESS

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide. Oxford is a registered trade mark of Oxford University Press in the UK and certain other countries.

Published in the United States of America by Oxford University Press
198 Madison Avenue, New York, NY 10016, United States of America.

© Oxford University Press 2020

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior permission in writing of Oxford University Press, or as expressly permitted by law, by license, or under terms agreed with the appropriate reproduction rights organization. Inquiries concerning reproduction outside the scope of the above should be sent to the Rights Department, Oxford University Press, at the address above.

You must not circulate this work in any other form
and you must impose this same condition on any acquirer.

Library of Congress Cataloging-in-Publication Data
Names: Leidwanger, Justin, author.

Title: Roman seas : a maritime archaeology of
eastern Mediterranean economies / Justin Leidwanger.

Other titles: Maritime archaeology of eastern Mediterranean economies

Description: New York : Oxford University Press, [2020] |

Includes bibliographical references and index.

Identifiers: LCCN 2019039695 (print) | LCCN 2019039696 (ebook) |

ISBN 9780190083656 (hardback) | ISBN 9780190083670 (epub) |

ISBN 9780190083663 | ISBN 9780190083687

Subjects: LCSH: Shipping—Rome—History. | Shipping—Mediterranean Region—History. |

Trade routes—Rome—History. | Shipwrecks—Mediterranean Region—History—To 1500 |

Underwater archaeology—Mediterranean Region. | Underwater archaeology—Rome. |

Merchant marine—Mediterranean Region—History. | Rome—Commerce—History. |

Mediterranean Region—Commerce—History.

Classification: LCC HE597.R6 L45 2020 (print) |

LCC HE597.R6 (ebook) | DDC 387.5/240937—dc23

LC record available at <https://lcn.loc.gov/2019039695>

LC ebook record available at <https://lcn.loc.gov/2019039696>

1 3 5 7 9 8 6 4 2

Printed by Integrated Books International, United States of America

CONTENTS

PREFACE	VII
ACKNOWLEDGMENTS	IX
1. MARITIME INTERACTION AND MEDITERRANEAN COMMUNITIES	1
Movement, Connectivity, and Economic History	2
Roman Maritime Economies	6
Shipwreck Datasets	13
An Eastern Mediterranean Case Study	17
The Route Ahead	23
2. TOPOGRAPHY AND TOOLS OF INTERACTION	25
Marine Environment of the Eastern Mediterranean	27
Evidence for Ships and Seafaring	35
Roman and Late Antique Seagoing Vessels	44
Ancient Mediterranean Sailing	53
Diversity and Dynamism	67
3. MODELING MARITIME DYNAMICS	69
Regionalisms	71
Landscapes	77
Mobilities	83
Thinking through Networks	98
From Ancient Mobility to Dynamic Networks	105
Maritime Archaeology and Network Potential	109
4. EXPLORING SHIPWRECK DATA	110
Number Crunching	111
Connective Structures	122
Spatial Topography of Seafaring	139
Toward Big Data for Maritime Economies	151

5. PORTS AND EVERYDAY ECONOMIES	154
Situating Roman Ports	156
Two Miniature “Archipelagos”	166
Ports, Hinterlands, and Network Interaction	180
“Nodes of Density”	193
6. MARITIME NETWORKS IN THE ROMAN EAST	198
Small-Scale Activity and Regional Integration	199
Emergence and Evolution of Maritime Networks	207
From Maritime Archaeologies to Economic Histories	216
Further Journeys	224
APPENDIX 1. ROMAN AND LATE ANTIQUE SHIPWRECKS FROM SOUTHWEST TURKEY AND THE NORTHEAST MEDITERRANEAN	227
APPENDIX 2. WIND PATTERNS IN THE SOUTHEAST AEGEAN AND NORTHEAST MEDITERRANEAN	239
BIBLIOGRAPHY	253
INDEX	317

PREFACE

THIS BOOK IS ABOUT USING the maritime archaeological record—especially shipwreck cargos but also ports—to study long-term economic structures in the Roman and Late Antique Mediterranean. It centers on a question that should be fundamental in the wake of a new generation of connectivity studies following the tradition of Fernand Braudel (1972), Peregrine Horden and Nicholas Purcell (2000), and, most recently, Cyprian Broodbank (2013): how did seaborne contacts influence the development of economic—and by extension social—communities at different scales around the shores of the Mediterranean? That communication, travel, and exchange across *mare nostrum* flourished during the Roman era is hardly in doubt, but a preference for viewing the grandest long-distance trade among major urban centers against a Brownian motion of small-scale, short-haul exchange has tended to flatten the finer and varied contours of maritime interaction and coastal life into a featureless blue Mediterranean.

My goal is to shed light on how economic regions, neighborhood communities of sorts, developed around maritime space over the extended Roman and Late Antique era. What did busy seaborne contacts mean for the cadence of economic life in the ancient Mediterranean, the availability of goods and patterns of consumption not only in but also beyond the metropoleis, how (and how often, and how far) one might acquire and dispose of goods, and where groups of producers, merchants, and consumers organized themselves into communities and markets? And how did these patterns of economic and social life shift over time, in particular with the rise of Rome and the subsequent transformation of the Mediterranean world into Late Antiquity? An alternative framework is necessary to address these

distinctly regional and diachronic issues through a maritime archaeological record marked by opportunistic preservation and exploration.

Through detailed study of a rich assemblage of sites in one corner of the Mediterranean, I attempt to bridge two divergent approaches to shipwrecks: on the one hand, the analysis of a single site, studied in detail and often fully excavated, and on the other hand, the massive database of wrecks more cursorily treated across the expanse of the ancient Mediterranean. Qualitative and quantitative methods each offer critical insights and distinct advantages in terms of depth and breadth of study, yet there have been few syntheses of the two. A middle ground could capitalize on the growing body of shipwreck data while also profiting from details of individual well-explored sites. There are probably many reasons for this gap, but among the most important is a comparative lack of well-developed systematic survey within the mainstream of underwater fieldwork in the Mediterranean, which has resulted in a near-exclusive focus on (well-preserved) shipwrecks and ports rather than a synthetic socioeconomic treatment of the full range of maritime archaeological evidence. Examining long-term trends in maritime regional interaction is dependent on a multiscalar analytical framework that embraces both the growing corpus of data and the nuance gleaned from close study of complex cargos and related archaeological assemblages.

My interest in these problems arose over the course of some 15 years of maritime archaeological fieldwork in Cyprus and Turkey, but no less out of a keen awareness of six decades of remarkable accomplishments by others whose long-term research programs and constant methodological innovations have brought hundreds of shipwrecks, ports, and related sites to light along these coasts. This book hardly amounts to a comprehensive treatment of the archaeological evidence for the Roman maritime Mediterranean, but with it I aim to move the discussion a step further by offering an approach to synthesizing maritime archaeological data through the dual lenses of landscape and network in one corner of the ancient world. While explicitly Roman and eastern Mediterranean in its focus, this volume offers considerations of economy, exchange, mobility, regionalism, markets, and community identity that may be of utility for intellectual voyages into other periods and areas.

People, ships, and ports: between models and reality

Stella Demesticha

Archaeological Research Unit, University of Cyprus <demesticha@ucy.ac.cy>

LEIDWANGER, J. L. 2020. *Roman Seas: A Maritime Archaeology of Eastern Mediterranean Economies*. New York: Oxford University Press. DOI: 10.1093/oso/9780190083656.001.0001. Pp. xi + 323, 1 table, 64 figs. ISBN: 0190083654, 9780190083656.

The 21st c. finds maritime archaeology burgeoning on a global scale. Maritime archaeologists, now fully integrated into academia and current scholarly dialogue, are exploring new paths through and beyond integral subjects of our domain – namely, iconography, harbors, and shipbuilding. New theoretical and technological challenges, such as digital applications and, more recently, network analysis, lead to intriguing new ideas and open new paths for exploring the past. As a maritime archaeologist who works in the eastern Mediterranean, I opened this book with great interest and with a genuine incentive to sail into the “Roman seas” of “Eastern Mediterranean economies.”

The book is divided into six chapters, accompanied by two appendixes and an index. The first three chapters (109 pages, almost half of the main text), are well-researched introductions to the main components of maritime archaeology treated in this book. Comprehensive overviews of previous scholarship, based on a copious and up-to-date bibliography, can be used with confidence by scholars who need a kick start in this area of research. Certain sections on the applications and potential of network theory in maritime archaeology, in particular, are very informative and create a robust theoretical context.

The first chapter, “Maritime interaction and Mediterranean communities,” sets the scene for what is to follow and establishes the goal of the book – namely, “to identify patterns and densities of connections through the movements of people and goods, between the 2nd century BC and the 7th century AD” (5). Four short but well-explained sections discuss basic concepts and research areas: “movement, connectivity, and economic history,” “Roman maritime economies,” “shipwreck data sets” – and they introduce the “Eastern Mediterranean case studies.” Overarching themes that the reader encounters throughout the book – such as regionalism, the necessity for a multiscalar approach to Roman maritime economies, and the significance of small ships and ports – are first addressed here.

The second chapter, “Topography and tools of interaction,” focuses on ancient seafaring and navigation. The rich literature on the subject is well handled, and the author deftly summarizes the results of previous research. Some topics could have been covered more thoroughly, such as the history of shipbuilding, where an opportunity is missed to better contextualize the social aspects of various traditions by elaborating on Pomey’s idea of different structural families of boats and ships.¹ But the overall discussion is well structured, and what the reader takes away is another key theme of this book: the significance of the

¹ Pomey et al. 2012, 303.

varied local conditions and the diversity of vessels available for use in a range of different contexts.

The third chapter, “Modeling maritime dynamics,” picks up the theme of variability and turns to maritime cultural landscape studies to explore some key conceptual approaches. This is an interesting synthesis that builds on previous scholarship about much-discussed umbrella terms, such as “islands and islanders,” “landscapes,” and “mobilities.” The concept of “region and regionalism” (70) is well defined, and an interesting argument is introduced about the interplay of the different facets of maritime mobility along intersecting geographical, scalar, and temporal axes. The theoretical inferences are quite plausible, although a bit too general. Particular elaboration is given to complexity, interdependence, and multiscalar interaction.

These well-written introductions cover a broad theoretical and methodological spectrum and epitomize the author’s evident talent for synthesis. When it comes to the eastern Mediterranean specifics, however, the signal becomes weaker. This impression is created by both small details and the discussion itself. The iconographic analysis of a central – not an eastern – Mediterranean monument, the 3rd c. CE mosaic floor from Althiburus, Tunisia, with representations of 25 different vessels (also depicted on the cover photo), is obviously one such detail.² As one reads through these introductory chapters, the impression grows. This is especially the case when one comes across complaints that might be justified for the scholarship of the 20th c., but that sound slightly unfair for the present. For instance, studies on maritime landscape in the eastern Mediterranean (80) are not that rare anymore.³ The author also lists the “uncertainty of the transport amphora provenance” as one constraining factor for this analysis (39). Again, this does not do justice to all the work done during the last two decades in refining data resolution for Late Roman amphorae, for Cyprus and the Levant in particular.⁴ Also, it is true that small ports have not attracted the attention of many Roman archaeologists, but the same can be said about urban ports in the Roman East.⁵ Similarly, the author rightly points out the disproportionate scholarly focus on the state provisions of Rome (86–87), but one would expect more on the history of this institution in the eastern Empire, which is the focus of this book.⁶

The most interesting part of the book, presented in Chapters 4 and 5, concerns the results of network analysis, defined as “the methodological framework for interrogating the changing shape of connections, which can then be measured and evaluated with certain basic statistics” (138). In Chapter 4, both quantification and network exploration are used to investigate distinct patterns that governed maritime interaction. The author is aware of the geographical unevenness of the evidence, as well as the limitations of the growing corpus of shipwrecks that have been extensively used in the past as markers of

² Duval 1949.

³ A good example was the international conference *Under the Mediterranean* (Nicosia 2017), which reflected a very dynamic turn toward this area of study (Demesticha and Blue 2021).

⁴ See for example, Pieri 2005; Reynolds 2005; Reynolds 2008. All are cited by the author in different sections.

⁵ Typical are the selections of papers in recent edited volumes on harbors by the Mainz Römisch-Germanisches Zentralmuseum (Preisler-Kappeler and Daim 2015; Schmidts and Vucetic 2015; von Carnap-Bornheim et al. 2018).

⁶ See, for instance, Mitthof 2001, not cited in the bibliography.

economic history. Accordingly, he tests his methodology – successfully – by plotting the 67 selected shipwrecks listed in Appendix I, which are a basic pillar of archaeological evidence in this book, against larger datasets known from OXREP (the Oxford Roman Economy Project) and DARMC (the Digital Atlas of Roman and Medieval Civilizations). Then follows the most interesting part of the chapter, which presents comparative visualizations of the exploratory network analysis, through which the focus is cleverly shifted from the location of the sites themselves toward the geographical links created by the composition of the cargoes. According to the results, the two areas under study – the Datça Peninsula and Cyprus/Cilicia/the Northern Levant – seem loosely connected during the Early and Mid-Roman periods, whereas during Late Antiquity, the second became more central. Connections plotted against geographical areas provide some rather hard-to-follow graphs (Fig. 4.15) that are not very well explained in the text, but in general, the results are well presented. GIS is used to estimate average journey durations, thereby adding the human experience of movement (145) and the impact of geography on maritime network development and structures.

The 67 shipwrecks of Appendix I were selected on the basis of clearly explained criteria, among which was the author's access to the material, so that immediate control over quality and representativeness could be achieved.⁷ This list makes an important contribution in itself. Only half of the 67 shipwrecks are included in two widely used online databases – OXREP and DARMC – and the author has revised these, correcting mistakes and inconsistencies. Moreover, 17 of the remainder are not published in English, and two are not published at all, known to the author by personal communications. Consequently, non-Turkish-speaking scholars will benefit a great deal. There are some methodological issues to discuss, however, that I believe are of interest, because clarity is of the essence for understanding new approaches, not least how this one is different from the “quantitative evaluations of economic historians seeking broad trends” that the author complained about at the beginning of the book (22).

First, it is not easy to consider this list of shipwrecks as being as “inclusive and comprehensive as possible” (19), and most important, representative of half the area under study, i.e., Cyprus/Cilicia/the Northern Levant. One shipwreck in Cilicia (no. 60) and one in Syria (no. 46) are inadequate for quantified analysis, general or not. In fact, given that no port site in Cilicia or Syria is discussed in the book either, one cannot help wondering why the author did not choose to focus on specific Roman provinces with available data – that is, Caria, Lycia, and Cyprus. L. explains that fine-grained datasets are rare in archaeology, and he is aware that this unevenness “bears directly on how quantitative comparisons can be structured within the study area” (111). Nonetheless, the regional patterns of maritime interaction were based on the analysis of these data, with little written about how or if this discrepancy had actually been considered.

My second point concerns the parameters and data used in the formal network modeling of shipwrecks. For readers like me, at least, with no knowledge of the specific software and with a strong interest in the archaeological material used to feed it, a section or a table with such information would help to better appreciate the connectivity graphs and the author's claim that his model allows “new consideration of maritime interaction in light of geography, environment, *and* technology” (141; emphasis my own). Regarding sailing

⁷ Most of these shipwrecks were already published in Leidwanger 2017.

times, for example, it is only in footnote 166 (60) that we find out that “all of the journeys quoted here assume 24 hours of sailing per day,” whereas it is many pages later that we read that “the GIS model does not distinguish separate seasonal communication patterns but rather relies on a single, year-round representation” (150). So were the detailed wind roses and diagrams in Appendix 2 actually used? Interim stops on these journeys were not taken into account either, although in previous chapters, we were prompted to consider the importance of local phenomena, seasonality, and geography. Moreover, despite the emphasis on diversity in tonnage, so well explained in Chapter 2, one has to assume that ship sizes were not incorporated in the model (this is not clearly stated before p. 214, at the end of the book) because only one of the 67 shipwrecks (Yassiada, no. 44) was fully excavated, and therefore could provide sufficient evidence of the hull’s size. In addition, the modeled sailing performance is based on the experimental sails of the *Kyrenia II*, which is a replica of a Hellenistic (not a Roman) ship, and there is not enough evidence to support the suggestion that it represents a “typical merchant vessel in the ancient Mediterranean” (145). This is the case not only because its depth has already been revised⁸ but also because not all Roman vessels excavated in the eastern Mediterranean had a “wine glass” cross section (unlike what the author implies on p. 144).⁹ The lack of available data on the performance of Roman ships is an understandable problem, but the lengthy analysis in previous chapters on small scale and diversity in maritime interaction would justify some more clarity on the matter. A table with the number of shipwrecks per period (Early Roman, Mid-Roman, and Late Antique) would also be very helpful. For example, the drop in numbers of shipwrecks led to an argument, further discussed in Chapter 6, that regional activity had “ground nearly to a halt” during the Mid-Roman period (211). Cross-referencing with Appendix I reveals that only three shipwrecks (nos. 32–34) date to this period (3rd to early 4th c. CE), a number too small to be left only to pedantic readers to check out.

Another area of similarly poor visibility in the modeled data concerns the cargoes themselves. There is too little space devoted to evidence regarding the provenance of the 67 cargoes, 63 of which consist of transport amphorae. According to L., this may not be necessary because “more precise origin attributions for cargoes can at times prove counterproductive” (126). It is, of course, understandable that provenance and typologies are beyond the focus on this book, but at least a section on the special character of maritime transport containers would have added meaningfully to the discussion on mobility, agency, and maritimity in antiquity.¹⁰ Provenance is also related to the “weighted values” of each cargo’s components. These are all given in a footnote (n. 42, 128) as text instead of in a separate table or as a column in the Appendix itself, an arrangement that does not make for easy referencing. For example, we learn from another footnote (n. 52, 137) that one of the Arwad B wreck (no. 46) cargo components was not included as a link in the network modeling because of its uncertain provenance. If one wants to know how many other such omissions may exist,

⁸ After a loading experiment with true replicas of the cargo amphorae, Richard Steffy suggested that the original hull could have been deeper (Katzev 2008, 78–79).

⁹ Characteristic examples are the flat-bottom ships of Tantura A (end of 5th–beginning of 6th c. CE) and Dor 2006 (beginning of 6th c. CE), discussed with other Roman and Byzantine shipwrecks in Pomey et al. 2012.

¹⁰ For some diachronic attributes of maritime transport containers, see Knapp and Demesticha 2017.

and how this affected the graphs, it is almost impossible to do so. Additionally, no distinction is made in the Appendix between coherent and scattered sites, or homogeneous and heterogeneous cargoes, all attributes with a direct impact on quantified analysis and connectivity patterns.¹¹ Consequently, it is hard to comprehend how (or if) any differentiating parameters were considered when scattered cargo assemblages – such as those found in the anchorage of Burgaz, Turkey (no. 61), or Avdimou, Cyprus (no. 44) – are quantified together with homogenous shipwrecks such as Yassiada (no. 64) or Knidos A (no. 53).

Chapter 5, “Ports and everyday economies,” turns to port sites and opens with a remarkable synthesis of the literature on secondary ports. After a brief summary of the sites under consideration, some very interesting questions are asked, such as “Who could easily and reliably reach the maritime sites in consideration? How might different communities have converged on nearby urban centers and outlying ports?” (182). An instructive, albeit slightly deterministic, GIS exercise on catchment analysis is conducted, based on the ports’ geographic locations. With no material record taken into consideration, however, no answers to “who” and “how” are provided. But the results do add a useful temporal factor to the ports in question. They demonstrate that settlements in the Datça Peninsula were located on average 2.02 hours from the nearest port during the Roman period, whereas during Late Antiquity, the average rose slightly to 2.36 hours (Figs. 5.6, 5.7). The results also suggest a hypothetical division of the peninsula into “port catchment areas.” Some archaeological information on the sites not discussed as ports – or at least their names on the map – would be useful for contextualizing this information, given that Tuna’s surveys on the peninsula are published only in Turkish.

In an effort to make a meaningful link with the concept of “extended archipelagos,” the two areas under study are reintroduced as “miniature archipelagos” (166), with local ports integrated into their respective coastal systems and maritime networks as “nodes of density in a matrix of connectivity.”¹² The cleverness of the metaphor notwithstanding, I found the use of the term “archipelagos” unfortunate in this case, mainly because of its geographic connotations. The economy and maritime connectivity of each mainland *peraia* in the Aegean, like that of the Datça Peninsula, were closely interlinked with their offshore islands, but they are not included in this study.¹³ The south coast of Cyprus, with no other land in sight, developed a distinctive maritimity, which is also very different from that of the interconnected ports of an archipelago, whether figurative or not. But the Cypriot seascape is presented in a fragmented manner in this book. Although L. explains that the list of port sites discussed is not meant to be exhaustive (166), it is still puzzling how easily coastal sites are interpreted as outlets of local agricultural products, particularly given the thorough analysis in the previous chapters of the diverse systemic contexts of small ships and anchorages. To help readers who are unfamiliar with the archaeology of the island, the author could have analyzed the sites in their Cypriot context by placing other contemporaneous anchorages on the island’s map.¹⁴ I confess that in reading about “a dense set of rudimentary ports that dotted the coastlines of south-central

¹¹ Parker 1981; Nieto 1997. For a site catchment analysis of shipwreck sites, where heterogeneous and homogenous cargoes were plotted separately, see Harpster 2017.

¹² For the concept of “extended archipelagos” and “nodes of density in a matrix of connectivity,” see Horden and Purcell 2000, 133–36, 393.

¹³ For the *peraiai* in the Aegean, see Constantakopoulou 2007, 247.

¹⁴ For a thorough analysis on Roman ports and anchorages on Cyprus, see Leonard 2005.

Cyprus,” situated no more than about 10 km apart (194), I wondered if the author was talking about the same island I have worked on most of my life. Changing our established impressions is one of the most inspiring aspects of science, of course, but this is not feasible unless arguments are based on conclusive evidence. My impression is that such evidence is lacking in this case, which is a pity because it weakens the potential of this analytical experiment.

More specifically, the first Cypriot site under discussion is Avdimou, on the western part of Episkopi Bay. Underwater finds, surveyed previously by the author, are scarce: a possible scattered wreck assemblage (no. 44) of some 30 amphorae at very shallow depth (3–4 m), 9 stone anchors, and 3 millstones, which might or might not belong together.¹⁵ Small assemblages of scattered sherds on the coast and no evidence of other sites in the immediate hinterland cannot convincingly support any kind of regular commercial activity. Still, L. sees “a space for transshipment of local agricultural produce from around the valley” (178) with “the routine of economic life” (191) underscored by a Late Roman road that led to the coast; this was, in fact, a hard-to-date vestige of a possible road, found with fragments of Hellenistic and Roman pottery on its surface.¹⁶

The elasticity of inference is stretched even more with the next site under consideration: three shallow inlets at the eastern end of Episkopi Bay, on the west side of the Akrotiri Peninsula. No anchors were found underwater. The scattered, fragmentary pottery finds located by the author could have been the result of occasional wrecking episodes rather than anchoring episodes, given that the coast is unprotected from the prevailing winds.¹⁷ Nonetheless, the inlets are plotted on the map (Fig. 5.9) as a “port of Late Antique period” and are discussed as “one of several focal points for local maritime activity,” serving “small vessels with minimal draught on short stops, perhaps limited to the calmer morning conditions or when the winds shifted direction” (179). Less than three miles west of these inconspicuous inlets of west Akrotiri is the coastal site of Dreamer’s Bay, with port infrastructure and documented terrestrial and underwater remains, which played a key role in the local maritime networks of southern Akrotiri and most probably the two bays that flank the peninsula.¹⁸ The site is marked on the map, but its role is only mentioned in passing. The omission of Dreamer’s Bay would not necessarily be a problem, given that L. explains that he picked the Cypriot sites to “illustrate some of the variety these spaces entailed” (177). But when he suggests, without any further elaboration, that it “functioned together with the more exposed West Akrotiri” (188) in a book discussing networks and interaction, it cannot go unchallenged.

The third Cypriot “port” is also a choice that may puzzle many archaeologists working on the island. Zygi-Petrini is a coastal Late Roman 1 (LR1) amphora kiln site, now completely destroyed by erosion, with no associated underwater finds. In this respect, it is similar to Mersincik and Mesudiye on the northern and southern coasts of the Datça Peninsula, respectively, also discussed in this chapter. The lack of underwater finds does not negate

¹⁵ No detailed mapping or quantification table appeared in this book or in the earlier publication (Leidwanger 2007).

¹⁶ Bekker Nielsen 2004, 218.

¹⁷ Leidwanger 2013.

¹⁸ The site was surveyed by L. and Leonard, and it is still under systematic investigation. For the latest report, see James et al. 2021.

the possibility that some rudimentary facility could have existed in front of the kiln site. But important sites nearby that could well have been used as local ports are, again, absent from the analysis – e.g., the mouth of the Vasilikos River to the immediate west of Zygi, now a modern industrial harbor; and two documented Late Roman anchorage sites within 10 miles to its east, Maroni Yialos and Mazotos Petounda.¹⁹ The main concern here, however, is neither the limited analysis of the coastal topography nor the nonconsideration of other sites. Instead, it is the creative interpretation of Petrini itself first as a port, and second, as one that served the entire Vasilikos valley. This phantom port, with a busy phase during Late Antiquity that had a “profound impact on local interaction” (193), holds a key role in the analysis of the next chapter as well. It was an inlet for Cilician amphorae, found at Kopetra, a site up the hill in the Vasilikos valley (201), which made it “a nodal point” in regional interactions.

Chapter 6, “Maritime networks in the Roman East,” is the final one, with a synthesis of the book’s findings. The diachronic, “indestructible everyday activity of maritime life” of Braudel comes to mind, when the key role of small-scale maritime activity (short-haul voyages, small ships, opportunistic ventures, inconspicuous ports) was reinstated for the connectivity of rural communities.²⁰ By this stage in the book, some readers (such as this reviewer) may have wondered where the archaeology is in processes so hard to trace, such as the possible “opportunistic transfer of goods in a fisherman’s home waters and the occasional employment of mercantile vessels and crews for shoaling fish” (98). In fact, all readers might expect some more elaboration in this chapter on how successfully networks can actually be used as interpretive tools to understand past phenomena such as maritime connectivity on such a small scale.²¹

Instead, however, the author opted to place the emphasis in this chapter on the ancient economy, drawing a notable inference from the previous analysis: maritime networks of small ports could have functioned independently from nearby urban centers, thereby reflecting the true dynamism of regional maritime economies in the Roman eastern Mediterranean. If the evidentiary support were stronger, this would constitute an important contribution of network studies to maritime archaeology and the study of the ancient economy. But I found no arguments robust enough to convince me that the evidence of the specific “inconspicuous coves” (178) and “unimportant ports” (199) could be used to trace *and* model their impact on the Roman economy. Apart from the inadequate material evidence, I felt there was an overemphasis on the small scale, which overshadowed any other economic scale. For example, the discussion on urban ports is so brief that it takes some meticulous reading to make clear that maritime economies of the Late Roman Mediterranean were not just regional, based only on exchanges with small ships that connected simple and unassuming ports. The same is true regarding ship sizes; it is stated beyond doubt that, in Late Antiquity, cargoes approaching over 500 amphorae were rare in the archaeological record (214). In this case, L. succumbs to a pitfall about which he warned the reader in Chapters 1 and 2: shipwreck datasets are neither conclusive nor comprehensive enough to support such conclusions – at least not yet. Recently published

¹⁹ Manning et al. 2002; Papakosta 2020.

²⁰ Braudel 1972, 147.

²¹ For similar questions regarding different materials and contexts, see Brughmans 2018.

shipwrecks have demonstrated that there is a lot we still do not know about Late Roman maritime scales.²²

Just before the end of the book, L. explains that his multiscalar approach goes “beyond fitting into prevailing historical narratives” (214). Indeed, historical context seems to function as a backdrop in this book, leaving the foreground to discussions on skillfully formulated new (and older) analytical approaches. The connection between the two (the historical context and the analysis) does exist, of course, but it has been left to the reader to put it together. For example, the well-documented administrative and cultural links between Cyprus and Cilicia are only touched on in a footnote (n. 31, 205), with the least possible elaboration, although the potential of direct networks between the two regions is discussed extensively in this chapter. This is not to say that these networks did not exist. On the contrary. But a lot has been left unsaid. For example, there is no comparative analysis of LR1 amphorae from both regions, which could be very telling about regional and interregional economic systems.²³ Similarly, there was no room left for local histories in the five pages at the very end of the book, where L. addresses the important issue of state provisions and their impact on commercial exchanges. A careful look at the rich bibliography on this matter, which obviously could not be exhausted in such a densely written summary, is enough to show how much of the *large* scale has been left out of this discussion of “long-term economic structures” (vii) of the eastern Mediterranean during the nine centuries of the Roman period.

The production of the book is nearly flawless and of a high standard. I have found very few and minor editing problems or omissions. Cross-references to other chapters are meant to help the reader, but they can sometimes be disruptive (a quick search in the digital document found 49 footnotes with “see chapter XX”). Moreover, it would have been helpful if some site names outside the regions under discussion – such as Akraiphia (96), the port of Anthedon (96), and Amalfi (159) – had been followed by some geographical definition, whether ancient or modern. Typos are few: a misplaced table line (shipwreck no. 44) in Appendix I (237); some missing numbers appearing as “XX”: footnote 35 “see earlier, n. XX.” (189); “see Chapter 2, Page XX–XX” (239).

This book ends by considering “further journeys” with the application of analytical approaches to the increasingly rich datasets beyond this corner of the Roman world. I could not agree more. My criticisms aside, I learned a lot by reading *Roman Seas*, and at the end, I felt that its ambitious title and the promises made in the preface may have been its worst enemies. The reader who looks for a comprehensive “maritime archaeology of eastern Mediterranean economies,” or the scholar who expects to discover a robust new perspective that bridges “previous contrasting approaches to shipwrecks,” as well as the gaps between the seminal thalassologies of Braudel or of Horden and Purcell, might be disappointed. But there is no doubt that the application of network analysis in maritime archaeology is an inspiring exercise and that this book has opened promising paths in this direction. This is true not only for those interested in exploring new approaches to

²² At least three shipwrecks with estimated tonnage of more than 750 amphorae were surveyed in deep waters of the Datça Peninsula (Brennan et al. 2020).

²³ The different LR1 variants produced in Cilicia and Cyprus have been discussed by various scholars, e.g., Pieri 2005; Opait 2010; Demesticha 2013.

old data but also for anyone who cares for a fresh view and more voyages across periods, in different corners of the maritime Mediterranean and beyond.

References

- Bekker-Nielsen, T. 2004. *The Roads of Ancient Cyprus*. Copenhagen: Museum Tusculanum Press.
- Braudel, F. 1972. *The Mediterranean and the Mediterranean World in the Age of Philip II*. Transl. S. Reynolds. New York: Harper Colophon Books.
- Brennan, M. L., D. Davis, A. Opait, and M. Stay. 2020. "Deep-water shipwrecks in the East Mediterranean: A microcosm of Late Roman exchange." *JRA* 33: 291–330.
- Brughmans, T. 2018. "Lessons learned from the uninformative use of network science techniques." In *Maritime Networks in the Ancient Mediterranean World*, ed. J. Leidwanger and C. Knappett, 184–218. Cambridge: Cambridge University Press.
- Constantakopoulou, C. 2007. *The Dance of the Islands: Insularity, Networks, the Athenian Empire and the Aegean World*. Oxford: Oxford University Press.
- Demesticha, S. 2013. "Amphora typologies, distribution, and trade patterns: The case of Cypriot LR1s." In *The Transport Amphorae and Trade of Cyprus*, ed. J. Lund and M. Lawall, 169–78. Aarhus, Denmark: Aarhus University Press.
- Demesticha, S., and L. Blue. 2021. "'Under the Mediterranean' in the 21st century: Constants, trends, and perspectives in Mediterranean Maritime Archaeology." In *Under the Mediterranean I. Studies in Maritime Archaeology*, ed. S. Demesticha and L. Blue, 7–16. Leiden, Netherlands: Sidestone Press.
- Duval, P. M. 1949. "La forme des navires romains, d'après la mosaïque d'Althiburus." *MÉFRA* 61: 119–49.
- Harpster, M. 2017. "Maritime regionalism in the Mediterranean maritime landscape." In *Ships and Maritime Landscapes: Proceedings of the Thirteenth International Symposium on Boat and Ship Archaeology, Amsterdam 2012*, ed. J. Gawronski, A. van Holk, and J. Schokkenbroek, 59–65. Eelde, Netherlands: Barkhuis.
- Horde, P., and N. Purcell. 2000. *The Corrupting Sea: A Study of Mediterranean History*. Malden, MA, and Oxford: Blackwell.
- James, S. T., L. Blue, A. Rogers, and V. Score. 2021. "From phantom town to maritime cultural landscape and beyond: Dreamer's Bay Roman-Byzantine 'port,' the Akrotiri peninsula, Cyprus, and Eastern Mediterranean maritime communications." *Levant* 52, no. 3: 337–60.
- Katzev, S. 2008. "The Kyrenia ship: Her recent journey." *NEA* 71: 76–81.
- Knapp, A. B., and S. Demesticha. 2017. *Mediterranean Connections: Maritime Transport Containers and Seaborne Trade in the Bronze and Early Iron Ages*. Oxford: Routledge.
- Leidwanger, J. 2007. "Two Late Roman wrecks from southern Cyprus." *IJNA* 36, no 2: 308–16.
- Leidwanger, J. 2013. "Amphorae and underwater survey: making sense of Late Roman trade from scattered sherds and shipwrecks. In *The Transport Amphorae and Trade of Cyprus*, ed. M. Lawall and J. Lund, 180–90. Aarhus: Aarhus University Press
- Leidwanger, J. 2017. "From time capsules to networks: New light on Roman shipwrecks in the maritime economy." *AJA* 121, no 4: 595–619.
- Leonard, J. R. 2005. *Roman Cyprus: Harbors, Hinterlands, and "Hidden Powers"*. PhD diss., SUNY Buffalo. Ann Arbor, Michigan: ProQuest Dissertations and Theses.
- Manning, S. W., D. Sewell, and E. Herscher. 2002. "Cypriot IA maritime trade in action: Underwater survey at Maroni Tsarroukkas and the contemporary east Mediterranean trading system." *BSA* 97: 97–162.
- Mitthof, F. 2001. *Annona Militaris. Die Heeresversorgung im spätantiken Ägypten. Ein Beitrag zur Heeresgeschichte des römischen Reiches im 3. bis 6. Jh. n. Chr.* Papyrologica Florentina 32. Florence: Edizioni Gonnelli.
- Nieto, X. 1997. "Le commerce de cabotage et de redistribution." In *La navigation dans l'Antiquité*, ed. P. Pomey, 146–59. Aix-en-Provence, France: Edisud.
- Opait, A. 2010. "On the origin of Carthage LR amphora 1." In *LRCW3 Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and Archaeometry. Comparison between Western and Eastern Mediterranean*, ed. S. Menchelli, S. Santoro, M. Pasquinucci, and G. Guiducci, 1015–22. Oxford: Archaeopress.

- Papakosta, L. 2020. "The Late Roman anchorage of Cape Petounda, Cyprus." In *Under the Mediterranean I. The Honor Frost Foundation Conference on Mediterranean Maritime Archaeology, Nicosia, 20–23 October 2017*. Short Report Series. DOI: 10.33583/utm2020.09.
- Parker, A. J. 1981. "Stratification and contamination in ancient Mediterranean shipwrecks." *IJNA* 10, no. 4: 309–35.
- Pieri, D. 2005. *Le commerce du vin oriental à l'époque Byzantine (Ve–VIIe siècles). Le témoignage des amphores en Gaule*. BAHBeyrouth 174. Beirut: Institut français du Proche-Orient.
- Pomey, P., Y. Kahanov, and E. Rieth. 2012. "Transition from shell to skeleton in ancient Mediterranean ship-construction: Analysis, problems, and future research." *IJNA* 41, no. 2: 235–314.
- Preiser-Kappeler, J., and F. Daim, eds. 2015. *Harbours and Maritime Networks as Complex Adaptive Systems*. Mainz, Germany: Römisch-Germanisches Zentralmuseum.
- Reynolds, P. 2005. "Levantine amphorae from Cilicia to Gaza: A typology and analysis of regional production trends from the 1st to 7th centuries." In *LRCW I. Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry*, ed. J. M. Esparraguera, J. B. Garrigos, and M. A. Ontiveros, 563–612. BAR-IS 1340. Oxford: Archaeopress.
- Reynolds, P. 2008. "Linear typologies and ceramic evolution." *Facta* 2: 61–87.
- Schmidts, T., and M. Vucetic, eds. 2015. *Häfen im 1. Millennium AD: Bauliche Konzepte, herrschaftliche und religiöse Einflüsse*. RGZM Tagungen 22. Mainz, Germany: Römisch-Germanisches Zentralmuseum.
- von Carnap-Bornheim, C., F. Daim, P. Ettel, and U. Warnke, eds. 2018. *Harbours as Objects of Interdisciplinary Research: Archaeology + History + Geosciences. International Conference at the Christian-Albrechts-University in Kiel, 30 September–3 October 2015, within the framework of the Special Research Programme (DFG-SPP 1630) "Harbours from the Roman Period to the Middle Ages."* RGZM – Tagungen Band 34. Mainz: Römisch-Germanisches Zentralmuseum; Leibniz-Forschungsinstitut für Archäologie.