

## MARITIME NETWORKS IN THE MYCENAEAN WORLD

In this book, Thomas F. Tartaron presents a new and original reassessment of the maritime world of the Mycenaean Greeks of the Late Bronze Age. By all accounts a seafaring people, they enjoyed maritime connections with peoples as distant as Egypt and Sicily. These long-distance relationships have been celebrated and much studied; by contrast, the vibrant worlds of local maritime interaction and exploitation of the sea have been virtually ignored. Tartaron argues that local maritime networks, in the form of “coastscares” and “small worlds,” are far more representative of the true fabric of Mycenaean life. He offers a complete template of conceptual and methodological tools for recovering small worlds and the communities that inhabited them. Combining archaeological, geoarchaeological, and anthropological approaches with ancient texts and network theory, he demonstrates the application of this scheme in several case studies. This book presents new perspectives and challenges for all archaeologists with interests in maritime connectivity.

**Thomas F. Tartaron** is Associate Professor of Classical Studies at the University of Pennsylvania, where he is also Chair of the Art and Archaeology of the Mediterranean World Graduate Group and a Consulting Scholar in the Mediterranean Section of the University of Pennsylvania Museum of Archaeology and Anthropology. He has been a Colburn Fellow and Fulbright Fellow at the American School of Classical Studies at Athens. He has participated in numerous excavations and regional surveys in Greece, Iraq, Albania, and the United States. His current field project, the Saronic Harbors Archaeological Research Project, co-directed with Daniel J. Pullen, has exposed a unique Mycenaean harbor settlement that may have been one of Mycenae’s main ports on the Aegean Sea. This work is supported by the National Science Foundation (USA) and a number of private foundations. Tartaron has published many articles on Greek prehistory and archaeological method and theory in edited volumes and in journals such as *Antiquity*, *Hesperia*, and the *Journal of Archaeological Research*. His previous book, *Bronze Age Landscape and Society in Southern Epirus, Greece* (2004), was published in the British Archaeological Reports International Series.

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

---

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

---



MARITIME NETWORKS IN THE  
MYCENAEAN WORLD

**Thomas F. Tartaron**  
*University of Pennsylvania*



**CAMBRIDGE**  
UNIVERSITY PRESS

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

CAMBRIDGE UNIVERSITY PRESS  
Cambridge, New York, Melbourne, Madrid, Cape Town,  
Singapore, São Paulo, Delhi, Mexico City  
Cambridge University Press  
32 Avenue of the Americas, New York, NY 10013-2473, USA  
www.cambridge.org  
Information on this title: [www.cambridge.org/9781107002982](http://www.cambridge.org/9781107002982)

© Thomas F. Tartaron 2013

This publication is in copyright. Subject to statutory exception  
and to the provisions of relevant collective licensing agreements,  
no reproduction of any part may take place without the written  
permission of Cambridge University Press.

First published 2013

Printed in the United States of America

*A catalog record for this publication is available from the British Library.*

*Library of Congress Cataloging in Publication Data*

Tartaron, Thomas F.  
Maritime networks in the Mycenaean world / Thomas Tartaron.  
p. cm.

Includes bibliographical references and index.

ISBN 978-1-107-00298-2 (hbk.)

1. Navigation – Greece – History – To 1500. 2. Coastal archaeology – Greece –  
Methodology. 3. Coast changes – Greece – History. 4. Civilization, Mycenaean.  
5. Greece – Commerce – History, Ancient. 6. Aegean Sea – Navigation – History –  
To 1500. I. Title.

VK16.T37 2014

387.50938'09013–dc23 2012042713

ISBN 978-1-107-00298-2 Hardback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs  
for external or third-party Internet Web sites referred to in this publication and does not  
guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

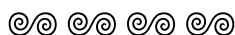
---



*Dedicated to the memory of my father,  
Francis X. Tartaron, Jr.*

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

---



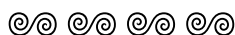
## CONTENTS

<i>Figures</i>	<i>page</i>	ix
<i>Tables</i>		xii
<i>Preface</i>		xiii
<i>Acknowledgments</i>		xv
1	THE PROBLEM OF MYCENAEAN COASTAL WORLDS	1
2	MYCENAEANS AND THE SEA	12
3	SHIPS AND BOATS OF THE AEGEAN BRONZE AGE	48
4	THE MARITIME ENVIRONMENT OF THE AEGEAN SEA	90
5	COASTS AND HARBORS OF THE BRONZE AGE AEGEAN: CHARACTERISTICS, DISCOVERY, AND RECONSTRUCTION	139
6	CONCEPTS FOR MYCENAEAN COASTAL WORLDS	182
7	COASTSCAPES AND SMALL WORLDS OF THE AEGEAN BRONZE AGE: CASE STUDIES	212
8	CONCLUSIONS AND PROSPECTS	285
<i>Notes</i>		291
<i>References</i>		297
<i>Index</i>		333

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

---





## FIGURES

- |  |   |
|--|---|
| 1.1 Map of the Mediterranean and Aegean with important Bronze Age sites indicated 2  | 3.10 MH II sherd showing armed figures aboard a ship, Kolonna 59  |
| 2.1 View of the shaft graves of Grave Circle A, as it appeared at Mycenae 13         | 3.11 Fragment of the Silver Siege Rhyton, Mycenae 65  |
| 2.2 Aerial view of the citadel, Mycenae 14   | 3.12 Kynos A galley with decked hull, LH IIIC Middle 67   |
| 2.3 Linear B social pyramid 15   | 3.13 Ship rowed from “Departure Town,” Flotilla Fresco, Akrotiri 76                                     |
| 2.4 Linear B tablet PY Tn 996 15   | 3.14 Ship under sail, Flotilla Fresco, Akrotiri 77  |
| 2.5 Colin Renfrew’s (1975) modes of exchange 31                                      | 3.15 Incised image of a boat with human and animal, Korphi t’Aroniou, Naxos 78                          |
| 2.6 The Flotilla Fresco, West House Room 5, Akrotiri 39                              | 3.16 Green steatite seal showing two men in a boat with fish swimming underneath, MM I, Malia (W808) 79 |
| 2.7 “Flagship” from the Flotilla Fresco, Akrotiri 41                                 | 3.17 Fragmentary boat from an LH IIIC pictorial krater, Kynos 79  |
| 2.8 Clay boat model, Asine LH IIIC 43  | 3.18 Sailing ship from an LH IIIC stirrup jar, Skyros 79  |
| 3.1 Mortise-and-tenon joinery 49   | 3.19 Corfiot reed boat (papyrella) at sea 85  |
| 3.2 Painted keel on boat model, Asine LH IIIC 50                                     | 4.1 Centers of cyclogenesis in the Mediterranean 92   |
| 3.3 Bird-head stempost decoration on a straight-sided alabastron 51                  | 4.2 Regional winds of the Mediterranean 93  |
| 3.4 Steering oar on an Early Cycladic III sherd 52                                   | 4.3 Basic dynamics of land and sea breezes 95   |
| 3.5 Earliest Mediterranean depiction of a sailing vessel, on a Gerzean jar, Egypt 52 | 4.4 Mediterranean currents and water circulation 98   |
| 3.6 Steatite seal with a ship and possible steering oar 53                           | 4.5 General sea-surface circulation flow in the Aegean 98   |
| 3.7 LH II signet ring showing awning structure, Tiryns 55                            | 4.6 Typical positions of major cyclonic and anticyclonic gyres in the Aegean 99                         |
| 3.8 Ikria from Flotilla Fresco ships, Akrotiri 56                                    | 4.7 Distribution, size, and intensity plots of eddies in the Aegean 101                                 |
| 3.9 Ikrion frieze from West House Room 4, Akrotiri 57                                |   |

## FIGURES

- 4.8 Satellite image of Kapsali Bay, Kythera 105
- 4.9 Visibility of land from the sea in the Mediterranean 109
- 4.10 Sun, sea spirals, and fish incised on an Early Cycladic frying pan, Louros Athalassou cemetery, Naxos 113
- 4.11 Hypothetical Aegean Bronze Age sea routes 115
- 4.12 Hypothetical long-distance sea routes in the eastern Mediterranean 117
- 4.13 Example of a star-structure compass, Caroline Islands, Micronesia 127
- 5.1 Classification of coasts by relative motion of the shoreline 145
- 5.2 Movement of sediments along Mediterranean coasts 147
- 5.3 View of the sequence of ridges and swales at the mouth of the Acheron River, Epirus 150
- 5.4 View of tombolo, Paximadi Cape, Euboea 150
- 5.5 View of an estuary in South Carolina, United States 151
- 5.6 Example of a lagoon and barrier system on coastal Elis 153
- 5.7 Formation of the Scamander plain, Troy 155
- 5.8 Reconstruction of ship sheds at Kommos 159
- 5.9 Hypothetical reconstruction of an artificial harbor at Pylos 161
- 5.10 Aerial photograph of submerged harbor remains near Naples 163
- 5.11 Plan of submerged remains at Caesarea Maritima 165
- 5.12 Correlation of biofacies and sedimentary facies in the Ancient Harbour Parasequence 170
- 5.13 Topographic typology of Bronze Age anchorages: high-energy coasts 172
- 5.14 Topographic typology of Bronze Age anchorages: low-energy coasts 173
- 5.15 Flow chart of methods in geoarchaeology and paleogeography 177
- 5.16 Location of Liman Tepe in the Bay of Izmir region 179
- 5.17 Reconstruction of the Bronze Age coastline at Liman Tepe 180
- 6.1 Map of a hypothetical Mycenaean maritime culture region 201
- 6.2 Broodbank's PPA versions 1–4, based on different initial and growth conditions 207
- 6.3 Maps of cost-weighted path distance for eastbound and westbound journeys in the eastern Mediterranean 210
- 7.1 Map of the Saronic Gulf region with important Bronze Age sites indicated 214
- 7.2 Comparative ranges of transportation modes in the Saronic Gulf region 215
- 7.3 Map showing the locations of corridor houses and fortifications in the EB II Aegean 217
- 7.4 Site plan of Bronze Age Kolonna, Aigina 221
- 7.5 "Master of Animals" pendant from the Aigina Treasure 223
- 7.6 Objects from the Aigina MH II "shaft grave" 225
- 7.7 Distribution of Aiginetan "gold mica" pottery exports 227
- 7.8 Map of Aigina showing the locations of known MH sites 229
- 7.9 Map of early Mycenaean sites in the Saronic region 237
- 7.10 Map of late Mycenaean sites in the Saronic region 238
- 7.11 General plan of Mycenaean Kanakia, Salamis 239
- 7.12 Partial plan of excavated Mycenaean structures, Ayios Konstantinos, Methana 241
- 7.13 Digital terrain model of the Korphos region 244
- 7.14 Aerial photograph of the Kalamianos site 244
- 7.15 GIS plan of architecture and other features at Kalamianos 245
- 7.16 Example of large-rubble construction of Mycenaean buildings at Kalamianos 247
- 7.17 Reconstructed coastlines and harbor basins at Kalamianos 249
- 7.18 Ballast pile identified in inshore waters at Kalamianos 251
- 7.19 SHARP survey zones and survey units 252
- 7.20 Ancient architectural remains in the SHARP survey area 253
- 7.21 Satellite image with locations of stone cairns and enclosures 255
- 7.22 View and drawing of a small cairn on the Pharonisi peninsula 255

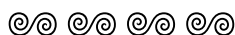
## FIGURES

- |  |   |
|--|---|
| 7.23 View of an EBA stone enclosure 257  | 7.29 Three-dimensional map of the Latmian Gulf at maximum marine transgression, circa 4000 BP 273 |
| 7.24 View of Stiri and adjacent polje, with location of the Mycenaean site indicated 259 | 7.30 Map showing the topography of Bronze Age Miletos and vicinity 275                            |
| 7.25 Differential GPS plan of Mycenaean architecture at Stiri 259                        | 7.31 Mycenaean elements in the southeastern Aegean 277  |
| 7.26 Plan of architectural features at the “saddle site” north of Kalamianos 260         | 7.32 Area map of Thessaly, with important Neolithic and Bronze Age sites indicated 278            |
| 7.27 Monumental Mycenaean agricultural terrace walls at Stiri 261                        | 7.33 Map of the changing coastline of the Bay of Volos 279  |
| 7.28 Map of the southeastern Aegean and southwestern Anatolian coast 272                 | 7.34 Architectural plan of LBA Dimini 281   |



## TABLES

- |   |  |
|---|--|
| 1.1 Chronological framework for the Aegean Bronze Age 3                         | 4.1 Potential navigational aids to Bronze Age seafaring 119                |
| 3.1 Variations in the calculation of dimensions of the Flotilla Fresco ships 62 | 5.1 Sedimentary facies in the lower Acheron valley 171                     |
| 3.2 Hypothetical LBA small boat types and functions 73                          | 5.2 Mediterranean harbors associated with topographical types 174          |
| 3.3 Range of fishing practices defined by setting 74                            | 6.1 Framework for Mycenaean maritime cultural landscapes 186               |
| 3.4 Bronze Age seacraft performance characteristics 83                          | 7.1 Chronological chart for Kolonna 219                                    |
|   | 7.2 Classes of EBA and LBA architectural remains in the Korphos region 252 |

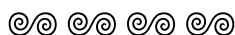


## PREFACE

This book is inspired by a keen interest in coastal archaeology, cultivated during twenty years of fieldwork in coastal regions of mainland Greece. Over this time, I have collected empirical data from three regional landscape archaeology projects with extensive coastal components: the Nikopolis Project (1991–95), the Eastern Korinthia Archaeological Survey (1998–2002), and the Saronic Harbors Archaeological Research Project (2007–11), which have allowed me to address Mycenaean coastal exploitation at multiple spatial and temporal scales. As I worked through these data and tried to arrive at a more comprehensive understanding of coastal life, I became increasingly aware of, and frustrated by, the gaps in our knowledge about coastal exploitation in the Mycenaean period and the selective treatment it has received in the scholarly literature. It seemed that local-scale maritime networks were only rarely discussed, and that the coastal communities that participated in them were largely ignored. The topic deserves more comprehensive, systematic treatment than it has received to date. This book constitutes my attempt to suggest a refocused and more holistic research agenda. The elements of this approach are both conceptual and methodological, but perhaps most importantly, they must be transferable to practice in the field, where only by generating robust empirical data can we begin to close this knowledge gap. Accordingly, I offer one detailed case study and two “sketches” to demonstrate the application of this approach and to suggest some directions for future research. I hope to make a helpful contribution to Aegean Bronze Age archaeology, but I also intend this work to be sufficiently general that archaeologists working on maritime and coastal problems in any world area might find it useful in their own investigations.

Cambridge University Press  
978-1-107-00298-2 - Maritime Networks in the Mycenaean World  
Thomas F. Tartaron  
Frontmatter  
[More information](#)

---



## ACKNOWLEDGMENTS

My love of coastal archaeology has been nurtured over two decades along the shores of Epirus and the Corinthia. I am grateful first to the directors of the Nikopolis Project (James Wiseman and Kostas Zachos) and the Eastern Corinthia Archaeological Survey (Timothy Gregory and Daniel Pullen) for allowing me to indulge my interests. I want especially to recognize Daniel Pullen, with whom I co-direct the Saronic Harbors Archaeological Research Project, who has been an extraordinary colleague and friend. The fundamental ideas about coastscapes and small worlds are ones we crafted together, and he has been unfailingly supportive of me during the gestation of this book and my concurrent progress toward academic tenure. Over the years, Heather Lechtman, Curtis Runnels, and Jeremy Rutter have been mentors whose intellectual influence on my work has been great. Cyprian Broodbank is a colleague whose work has had a tremendous impact on my thinking, as will be evident in the following pages. All of these collaborations have blossomed into long-term associations and friendships that I value deeply.

In the field, I have had the privilege of working together with a remarkable group of geoarchaeologists, including Mark Besonen, Joe Boyce, Rick Dunn, Zhichun Jing, Jay Noller, Rip Rapp, Ed Reinhardt, Richard Rothaus, Tjeerd van Andel, Lisa Wells, and Eberhard Zangger. My understanding of coastal geomorphology and paleocoastal reconstruction has been the direct result of their patient and benevolent teaching, and their broad-minded approach to the interaction of environment and culture. Because I constantly stress the importance of high-quality empirical data, I want also to thank all of the professionals, students, and volunteers – far too many to name here – who walked the fields, mapped the features, and collected the artifacts and other data that form the basis for the kind of study presented here.

## ACKNOWLEDGMENTS

No fieldwork can take place in Greece without the support of the regional archaeological authorities. In all of the above-named projects, our teams were fortunate to have the assistance and backing of the relevant ephorates. For the Saronic Gulf case study presented in this book, Daniel Pullen and I enjoyed a fruitful and harmonious collaboration with Konstantinos Kissas, Panayiota Kasimi, and Vasilis Tasinos of the 37th Ephoreia of Prehistoric and Classical Antiquities; and Demetrios Athanasoulis of the 25th Ephorate of Byzantine Antiquities, both in Corinth. I want especially to recognize Panayiota Kasimi, herself an expert in Mycenaean archaeology, for her firm but always collegial oversight of our project. The kindness and support of the people of Korphos have also been unforgettable. We fell in love immediately with this beautiful fishing village and its people, who accepted us, helped us, told us their stories, and supported our efforts to uncover a lost piece of their cultural heritage.

The bulk of this book was written while I was on leave from the University of Pennsylvania in 2009–10, with the generous support of the Loeb Classical Library Foundation and the School of Arts and Sciences of the University of Pennsylvania. I thank my wonderful colleagues in the Department of Classical Studies, who gave advice and other forms of support as I toiled to bring this project to a successful conclusion.

For discussion, advice, offprints, and other information, I am grateful to Eleni Balomenou, Philip Betancourt, Giuliana Bianco, John Bintliff, Emma Blake, Joe Boyce, Hariclia Brecoulaki, Michael Cosmopoulos, Jack Davis, Amy Dill, Eleni Drakaki, Michael Galaty, Walter Gauß, Tim Gregory, Nick Kardulias, Margaretha Kramer-Hajos, Lynne Kvapil, Joseph Maran, Jeremy McInerney, Guy Middleton, Nicoletta Momigliano, Sheila Murnaghan, Bill Parkinson, Jeremy Rutter, Vasif Şahoğlu, Philip Sapirstein, Kim Shelton, Malgosia Siennicka, Carol Stein, Sherry Stocker, Tatiana Theodoropoulou, Lita Tzortzopoulou-Gregory, Aleydis Van de Moortel, Sofia Voutsaki, Malcolm Wiener, and James Wright.

For kind permission to reproduce images or assistance in obtaining permissions, I am grateful to Tim Bekaert, Ira Block, Alexandra Christopoulou, David Davison, Stuart Dawrs, Sharon Day, Madeleine Donachie, Alice Essenpreis, Carol Hershenson, Jenni Hjothman, Amalia Kakissis, Justin Leidwanger, Kevin McMahon, Dimitri Nakassis, Julie Nemer, Andrew Reinhard, Colin Renfrew, Mimi Ross, Jeremy Rutter, Maria Shaw, Steve Thomas, Theodor Troev, and Michael Wedde. For assistance in drafting several figures, I thank Juliana Di Giustini and Felice Ford.

I owe a great debt to the professional and responsive staff at Cambridge University Press. Beatrice Rehl and her associates, Amanda Smith, Anastasia Graf, and Isabella Vitti, guided me through the complex process with skill and always expressed confidence in the final product. Peggy Rote at Aptara, Inc., was extraordinarily helpful and patient in the final stages of assembling



#### ACKNOWLEDGMENTS

the manuscript. Many thanks also to the anonymous readers: two who recommended the book for publication, and one who read the entire manuscript and gave a final positive assessment. Finally, I have two personal acknowledgments. My wife Juliana Di Giustini has given the love, support, and stability to my life that have allowed me to complete what at times seemed like an impossible task. Finally, this book is dedicated to the memory of my father, Francis X. Tartaron, Jr. Even as he wondered how I would ever make a living in this profession, he and my mother supported me unconditionally. I miss our weekly phone conversations, when he regaled me with all of the latest archaeological news he had culled from the newspapers and television. This book is dedicated with love to you, Dad.