

f T he volume provides an exhaustive analysis of past and contemporary maritime flows and networks featuring evocative graphical representations, as well as supplying an invaluable springboard for undertaking further research into cognate areas.

Maritime Networks is a comprehensive overview and important multidisciplinary outline of past studies of maritime flows and networks in a bid not only to highlight the contributions of economists and econometricians, but also those of geographers, historians and political scientists.

Although the late application of network analytical methods to maritime transport flows has been somewhat counterbalanced by a growing number of empirical studies, this book addresses several unresolved issues: most studies remain static, so that the dynamic properties of change in maritime network organization and spatial distribution remain unclear; the majority of recent works have focused on flow patterns but without explicit reference to any theoretical model, be it spatial or statistical; and the maritime network is not an isolated entity floating in an abstract space or defined only by its costs or benefits, but it is a component of the society we live in, and as such its analysis should consider its local and regional embedding.

The first part of the volume provides an introduction to analysing maritime flows and networks. Not only does it offer a historical framework linking maritime flows and networks to the evolution of city systems over the past seven centuries, but also injects the often overlooked organizational ingredient into the mix through an analysis of a leading shipping company's changing network over time.

The second part provides a significant input into modelling the dynamic evolution of past maritime networks from the oar and sail that characterized the proto-globalization age through eras of steam, petroleum and containerization strongly linked to distinctive phases in the evolution of the capitalist system.

A third part demonstrates the important progress made in expanding and sharpening the array of tools available for undertaking the spatial analysis of voluminous amounts of data derived from monitoring ship trajectories and maritime traffic. Explorations of daily shipping movements, real time positioning data, clusters, and scale-free and small-world networks have been variously and sensitively distilled under different scenarios to identify





recurring patterns in liner shipping, unique shipping behaviour, port node specialization, network vulnerability, the significance of direct port calls and shifts in the port hierarchy in response to technological change.

The final part brings us full circle to make the link between maritime networks and regional socio-economic development that was deficient in the original graphic model of transport development in undeveloped countries outlined over fifty years ago.

Simulation, econometric methods and gravity models, network analysis and geographical information systems, singly or in combination, have been used to quantitatively assess links between maritime networks, trade and economic development, maritime regionalization within a global context, and the diverging relationship between port and urban systems over time.

The 20 chapters of the present book, written by 40 scholars from 12 countries and 10 academic backgrounds, offer a multidisciplinary perspective about one of the most vital pillars of world society.

[two third]

Table of contents

Section I. Introduction to maritime network analysis

Chapter 1. Maritime flows and networks in a multidisciplinary perspective

César Ducruet

Chapter 2. City-systems and maritime transport in the long term

Anne Bretagnolle



Maritime Networks Spatial Structures and Time Dynamics

Chapter 3. A geohistory of maritime networks since 1945: the case of the Compagnie Générale Transatlantique's transformation into CMA-CGM

Antoine Frémont

Chapter 4. Spatial networks: tools and perspectives

Marc Barthelemy

Section II. Modelling past maritime networks

Chapter 5. From oar to sail: the role of technology and geography in the evolution of Bronze Age Mediterranean networks

Ray Rivers, Tim Evans, Carl Knappett

Chapter 6. Venetian maritime supremacy through time. A visualisation experiment

Mélanie Fournier

Chapter 7. Navigocorpus database and eighteenth-century French world maritime networks

Silvia Marzagalli

Chapter 8. British and Japanese shipping networks in China in the 1920s

Llehui Wang, Theo Notteboom, Lei Yang

Chapter 9. Maritime shifts in the contemporary world economy: evidence from the Lloyd's List corpus, 18th-21st centuries

César Ducruet, Sébastien Haule, Kamel ait-Mohand, Bruno Marnot, Zuzanna Kosowska-Stamirowska, Laura Didier, Marie-Anne Coche

Section III Topology and spatial distribution of maritime networks

Chapter 10. Time considerations for the study of complex maritime networks

Frédéric Guinand, Yoann Pigné

Chapter 11. Maritime networks monitoring, from position sensors to shipping patterns

Laurent Etienne, Erwan Alincourt, Thomas Devogele

Chapter 12. Cluster identification in maritime flows with stochastic methods

Charles Bouveyron, Pierre Latouche, Rawya Zreik, César Ducruet



Maritime Networks Spatial Structures and Time Dynamics

Chapter 13. Vulnerability and resilience of ports and maritime networks to cascading failures and targeted attacks

Serge Lhomme

Chapter 14. The distribution functions of vessel calls and port connectivity in the global cargo ship network

Michael T. Gastner, César Ducruet

Section IV Maritime networks and regional development

Chapter 15. Impact of the emergence of direct shipping lines on port flows

Ronald A. Halim, Lóránt A. Tavasszy, Jan H. Kwakkel

Chapter 16. The mutual specialisation of port regions connected by multiple commodity flows in a maritime network

César Ducruet, Hidekazu Itoh

Chapter 17. Explaining international trade flows with shipping-based distances

David Guerrero, Claude Grasland, César Ducruet

Chapter 18. Interplay between maritime and land modes in a system of cities

Igor Lugo

Chapter 19. The regionalisation of maritime networks: evidence from a comparative analysis of maritime basins

Nora Mareï, César Ducruet

Chapter 20. Co-evolutionary dynamics of ports and cities in the global maritime network, 1950-1990

César Ducruet, Sylvain Cuyala, Ali el Hosni, Zuzanna Kosowska-Stamirowska

For more background information:

https://www.routledge.com/books/details/9781138911253/

[/two third]



