



PALGRAVE STUDIES IN
MARITIME POLITICS AND SECURITY

Navigating East Asian Maritime Conflicts: Technological Change, Environmental Challenges, Global and Regional Responses

Edited by

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AN TNU Japan Program Policy Study

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The world's oceans cover over 70% of the planet's surface area. Global shipping carries at least 80% of the world's traded goods. Offshore oil and gas account for more than one-third of world energy production. With the maritime domain so important and influential to the world's history, politics, security, and the global political economy, this series endeavors to examine this essential and distinct saltwater perspective through an interdisciplinary lens, with a focus on understanding the ocean historically, politically, and from a security lens. Through a spectrum of engaging and unique topics, it will contribute to our understanding of the ocean, both historically and in a contemporary light, as source, avenue, and arena: a source of food and energy; an avenue for the flow of goods, people, and ideas; and an arena for struggle and warfare. The series will use an interdisciplinary approach—integrating diplomatic, environmental, geographic, and strategic perspectives—to explore the challenges presented by history and the contemporary maritime issues around the world.

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Espen Moe
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*The Editors Dedicate this Book to the Memory of
Ola Listhaug*

PREFACE

This is the fourth, and probably final, Norwegian University of Science and Technology (NTNU) Japan Program Policy Study. The first two Japan Program Policy Studies were published with Palgrave Macmillan in 2014, and focused on *The Political Economy of Renewable Energy and Energy Security: Challenges and National Responses in Japan*, and *Elder-care Policies in Japan and Norway: Aging Societies East and West*. The third study, published in early 2021, and entitled *New Challenges and Solutions for Renewable Energy: Japan, East Asia and Northern Europe*, was very much a follow-on and update of our first volume on renewable energy and energy security from 2014. However, the 2021 volume focused on the new “second stage” challenges and opportunities that renewable energy faces in order to become a mainstream power source that replaces fossil and nuclear-fueled alternatives. Specifically, it focused on grid capacity, both extensively and in terms of smart flexibility (i.e., Smart Grids), the need for storage assets to deal with variable solar PV and wind power, and electricity market reform and liberalization.

This fourth NTNU Japan Program Policy Study focuses on maritime conflicts in East Asia and the role of technology in exacerbating those conflicts. The underlying concept is that improvements in technology, and technological diffusion, have enhanced the ability of states to exploit resources in maritime spaces, everything from fish to oil to rare earth and renewable energy, while simultaneously also enhancing the ability of states to monitor and even exercise control over access to maritime space. The

impact of these two advances has been to raise the stakes of maritime conflicts and the ability of states to attempt to exercise control at the expense of others.

Like those studies, it is hoped that this study will contribute to understanding the major policy issues facing Japan and their relevance for other advanced industrial democracies, and indeed for the global community as a whole. Japan faces several policy challenges in common with other advanced industrial democracies, especially those in Europe. The focus here is on using common values as the basis for overcoming common challenges.

The NTNU Japan Program originated in the 1980s and early 1990s when a number of NTNU scientists and engineers conducted research at Japanese universities as visiting scholars. Based on their very favorable experiences and interest from Norwegian industry, NTNU established its Japan Program in 1998. Following the Program's establishment, it offered courses on Japanese language, society, and politics, and East Asian politics. Another hallmark of the Program became its annual Japan Seminar, which has become a leading venue for presenting and promoting the latest research on Japan and East Asia in Northern Europe and beyond. It also is a cross-disciplinary Seminar and especially promotes cross-disciplinary cooperation between engineering and natural sciences on the one hand, and the social sciences on the other.

NTNU and the Department of Sociology and Political Science will continue its East Asia focus under the leadership of Katja Levy with greater emphasis on China. Our joint editorship of this fourth volume of the NTNU Japan Program Policy Study represents the continued commitment of NTNU and this Department to creating socially and policy-relevant knowledge about East Asia.

The present volume emerged from three NTNU Japan Seminars focusing on East Asian maritime conflicts. The first Seminar was held in Trondheim in October 2019 where we assembled the initial team for this book. We scheduled the second Seminar for early March 2020, which was to be the second time the NTNU Japan Seminar was scheduled to be held in Tokyo (the first time had been in 2017).

It will come as no surprise that this Seminar had to be cancelled at the last minute due to the spreading COVID-19 pandemic as NTNU and Norway began to impose quarantines and other restrictions on travel to Japan. The project went into a deep freeze for over a year as the pandemic raged, with hopes for rescheduling several months hence being repeatedly

dashed. Also, Midford left NTNU at the end of March 2021 and accepted a new professorship at Meiji Gakuin University in Yokohama Japan from April 2021. Nonetheless, several of us were able to organize and hold an online panel at the 2021 annual meeting of the International Studies Association (ISA), a panel that had originally been scheduled for the 2020 ISA meeting in Honolulu, before it was cancelled due to Covid.

Finally, in fall 2021 we held a Zoom meeting that brought together all the participants and we agreed to hold our long delayed NTNU Japan Seminar nearly two years late in Tokyo in January 2022. Alas, the pandemic was not done with us yet, and due to continued international travel restrictions we ended up holding a hybrid conference, with participants gathering at NTNU in Trondheim and other participants joining from the Tokyo campus of Meiji Gakuin University. It was good to finally hold our long-delayed seminar, but poignant not to be able to hold it fully in person. Finally, despite some lingering travel restrictions, we were able to hold the final of the three NTNU Japan Seminars in Tokyo in September 2022, bringing us all together in person at last.

The central idea underpinning this work, and one of the main missions of the NTNU Japan Program itself, has been to bring together insights from engineering and the natural sciences on the nature of technological change together with social science insights on how technology affects society, and how society affects the development of technology, its diffusion and use. Maritime technology illustrates both the opportunities and the necessity for promoting this collaboration.

For social scientists, it almost goes without saying that we depend on engineers and natural scientists to get a clear and accurate picture of the current state and changing nature of technology, a picture that is an absolute prerequisite for us to understand how technology and technological change affects society, economics, and politics. Our ability to understand all these fields is thus increasingly tied to understanding technological change. On the other hand, the funding, success, and diffusion of innovative technology are not always simply a function of the degree of innovation and the capabilities of the technology in question. Often, the impact of new technology follows a social logic more than a technological logic. Among other factors, human perceptions of risk and benefit, and economic and political interests can either promote or inhibit the success of any technology, regardless of technological merit.

We would like to thank the Faculty of Social and Educational Sciences (SU), and NTNU Oceans for generously funding this project. We would

also like to thank the International Relations Institute of the Faculty of International Studies at Meiji Gakuin University for supporting our second and third seminars by providing venues and technical support.

We owe thanks to a great many people who contributed directly or indirectly to this volume. Especially we would like to thank participants from the three NTNU Japan Program Seminars from 2019 to 2022 from which this volume emerged, including all the chapter authors. We would like to thank Japan's Ambassador to Norway Tauchi Masahiro, for his address to our first NTNU Japan Seminar on East Asian maritime conflicts in October 2019, and Norway's Ambassador to Japan, Inga M. W. Nyhamar, for her address to our second Seminar in January 2022, and for the generous support the Norwegian Embassy provided to this Seminar. We would like to thank Fredrik Søreide of NTNU for offering an expert presentation on "Seabed mining: the state of the field at NTNU and in Norway" at our October 2019 Seminar, and to Wilhelm Vosse of International Christian University, Japan, and to Håkon With Andersen of NTNU for serving as discussants and offering valuable comments on first drafts of many of our chapters.

At our January 2022 Seminar, we would like to thank Yasuhiro Kato of the University of Tokyo for his expert presentation, based on his participation in a seabed research project on this topic, "Deep-sea mud as a new resource for rare earth elements near the Minami-torishima Island." We would also like to thank Bjørn Christensen of NTNU for his presentation on natural science cooperation between Norway and Japan, "KIFEE Cooperation Between Japan and Norway." We would like to thank Natsuyo Ishibashi of Japan's Ministry of Foreign Affairs, formerly a visiting Post-Doctoral Fellow at the NTNU Japan Program (2010–2013), for serving as a discussant at this Seminar.

We would like to thank Senan Fox of Kanazawa University and Alexander Vesey of Meiji Gakuin University for serving as discussants at our September 2022 NTNU Japan Seminar. We would like to thank Siri Granum Carson, then head of NTNU Oceans, for serving as a discussant at both our January and September 2022 Seminars. We would like to thank Nincong Qiu and Ip Chak Kin Liam for offering able technical support for our September 2022 Seminar. Finally, we would like to thank Anca Pusca for supporting this book project and ably steering it through the publication process at Palgrave Macmillan (Springer), and Geetha Chockalingam and Karthika Sundar for their able editing, proofing and

typesetting of this book. Nonetheless, any errors contained in this book are the sole responsibility of the editors and authors.

We dedicate this book and fourth (and almost certainly final) NTNU Japan Program Policy Study to the memory of Ola Listhaug, a globally renowned professor of political science who played a pivotal role in the establishment of the NTNU Japan Program at the Department of Sociology and Political Science in 1998, and led the NTNU Japan Council that supervised the Program from 1998 until 2016. From his extensive international ties, Ola understood the growing importance of Japan and East Asia for international politics and for Norway, and the need to establish an area-studies program in Norway focusing on Japan and East Asia, one that combines area competence, including cultural and especially language competence, with social science. Ola's visionary leadership made the NTNU Japan Program possible, not to mention the annual NTNU Seminar and this book, and his untimely passing in September 2023 is a great loss. Sadly, his passing coincidentally corresponds with the end of the line for the formal embodiment of the NTNU Japan Program.

Yokohama, Japan

Paul Midford

PRAISE FOR NAVIGATING EAST ASIAN MARITIME CONFLICTS: TECHNOLOGICAL CHANGE, ENVIRONMENTAL CHALLENGES, GLOBAL AND REGIONAL RESPONSES

“This book takes an original approach to maritime conflicts by focusing on the effects of technological and environmental change. A must-read for anyone interested in East Asian peace and security!”

—Stein Tønnesson, *Research Professor Emeritus, Peace Research Institute Oslo (PRIO)*

“This book presents an insightful and timely exploration of the intricate dynamics shaping maritime spaces in East Asia. There have been the escalating stakes in maritime conflicts due to rapid technological advancement and diffusion, underscored by China’s rise as a global superpower. The volume adeptly captures how advancements in technology are influencing territorial disputes and the geopolitical landscape from the perspectives of security. The chapters, contributed by distinguished authors from diverse fields and countries, skillfully intertwine theoretical frameworks like realism, constructivism, and neoliberal institutionalism, providing a multidimensional perspective on the issues. Additionally, the book delves into the political and environmental ramifications of emerging technologies, including unmanned vehicles, satellite-directed fishing fleets, and deep offshore wind power. It is a crucial read for anyone interested in understanding the complexities of maritime conflicts in East Asia and their broader global implications.”

—Yurika Ishii, *Associate Professor, National Defense Academy of Japan*

“At a time when the oceans are increasingly recognised as being vital yet also vulnerable as marine environments, habitats and biodiversity are threatened by diverse new activities and more intense exploitation, this volume could not be more timely. The contributions to the book critically engage with a range of increasingly urgent issues that are highly likely to impact on the hitherto intractable maritime conflicts in East Asia. In tackling the way in which new and emerging technologies once facilitate fresh activities in the oceans as well as offering enhanced means for surveillance and enforcement offshore, insights are provided on a range of vitally important issue areas from seabed mining to marine robotics and autonomous vehicles to the growth of offshore renewable technologies. All of these developments are pertinent to the managing disputed East Asian waters where the new technologies have the potential to both assist in helping to deliver good ocean governance to these contested ocean spaces or act as flashpoints for future conflict. This edited collection brings together an excellent group of scholars from both within and beyond East Asia who offer multi-disciplinary perspectives in keeping with the aim of the project from which the volume sprang to reach across disciplinary boundaries and connect perspectives from natural sciences and engineering to social sciences and policy.”

—Clive Schofield, *Professor, University of Wollongong, Australia*

“The East Asian seas are an area of intensifying security and environmental concern as technological developments expand the potential for marine resource extraction and offshore energy production and climate change alters the accessibility of the Arctic. In a region with many contested territorial claims, the potential for heightened maritime conflict and environmental degradation cannot be ignored. This volume brings together leading experts to examine the potentials for maritime conflict and cooperation in a region where historical legacies continue to cast long shadows and geopolitical rivalries appear to be intensifying. I can highly recommend this book to scholars, practitioners, and students alike.”

—Miranda A. Schreurs, *Professor of Environment and Climate Policy, Technical University of Munich*

CONTENTS

Part I Framework

- | | | |
|----------|---------------------------------------------------------------------------------|-----------|
| 1 | Introduction | 3 |
| | Paul Midford | |
| 2 | The Law of the Sea and Its Relevance for Maritime Conflicts in East Asia | 29 |
| | Natalie Klein | |

Part II Security Dimensions

- | | | |
|----------|----------------------------------------------------------------------------------------------------------------|------------|
| 3 | Unmanned Maritime Systems and the Undersea Struggle in the South China Sea | 57 |
| | Henrik Stålhane Hiim | |
| 4 | Low Intensity Maritime Conflicts: Escalation Management and Technology | 79 |
| | Tetsuro Doshita | |
| 5 | Military Automation, Robotics, and Maritime Security: Understanding New Dynamics in Conflict Escalation | 103 |
| | Christopher Lamont | |

Part III East Asian Maritime Competition and the Arctic

- 6 The Impact of Russia’s Ukraine Invasion on the Arctic: From Cooperation to Conflict?** 127
Andreas Østhagen
- 7 China’s Arctic Strategy: From “Follow-Up” to “Creative Involvement”?** 151
Xu Qingchao
- 8 Japan’s Arctic Policy: Science Diplomacy, Competition with China, and Renewable Energy** 175
Paul Midford

Part IV Seabed Mining

- 9 Muddy Waters, Messy Places and Muddled Concepts: The Co-Production of Marine Resources, Sovereignty and Security in the Western Pacific** 199
Mats Ingulstad
- 10 Japan’s Seabed Mining as a Cause and Result of East Asian Maritime Conflicts** 231
Paul Midford
- 11 Limited Semi-Infinity: Japan’s Deep-Sea Resources Against the Backdrop of China’s Rare Earth** 257
Carl Johannes Muth

Part V Fishing and Renewable Energy

- 12 China’s Digitalised Fishery Reforms and Its Implications on the East Asian Maritime Order** 295
Chisako T. Masuo
- 13 Japan’s New Whaling Policy: Marine Management in an Evolving Security and Technological Setting** 317
Jennifer L. Bailey
- 14 Offshore Wind in Japan: Energy Production and Conflict Reduction?** 357
Espen Moe, Mathias Shabanaj Jankila, and Hiroshi Ohta

Part VI Conclusions

15 Conclusion: This Time Is Different! Or Is It? Insights on the Changing Relationship Between Technological Development and International Relations	393
Jennifer L. Bailey, Katja Levy, and Espen Moe	
Index	411

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ABBREVIATIONS

A2/AD	Anti Access/Area Denial
A7	Seven Arctic States
ACSA	Acquisition and Cross Services Agreement
ADIZ	Air Defense Identification Zone
ADMM	ASEAN Defense Ministerial Meeting
ASBM	Anti-Ship Ballistic Missiles
ASW	Anti-Submarine Warfare
AUKUS	Australia-United Kingdom-United States partnership
AUVSI	Association for Unmanned Vehicles International
BRI	Belt and Road Initiative
C4I	Command, Control, Communication, Computer, and Intelligence
CCOP	Committee for Coordination of Joint Prospecting for Mineral Resources In The Asian Offshore Areas (Republic of China, Japan, Republic of Korea and the Philippines)
CCOP/SOPAC	Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas
CCW	Convention on Certain Conventional Weapons
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CIWS	Close-In-Weapon Systems
CMS	Convention on the Conservation of Migratory Species of Wild Animals
COC	Code of Conduct
CoCOM	Coordinating Committee for Multilateral Export Controls
DOC	Declaration of Conduct

DOMA	Deep Ocean Minerals Association (Japanese)
EAMF	East Asian Maritime Forum
EBM	Ecosystem-Based Management
ECAFE	Economic Committee for Asia and the Far East of the UN
ECOSOC	Economic and Social Council of the United Nations
EV	Electric Vehicles
FIT	Feed-In Tariff
FOIP	Free and Open Indo-Pacific
IASC	International Arctic Science Committee
ICJ	International Court of Justice
ICRW	International Convention for the Regulation of Whaling
ICT	Information and Communications Technology
IPCC	Intergovernmental Panel on Climate Change
ISA	International Seabed Authority
ISR	Intelligence, Surveillance, and Reconnaissance
IUU	Illegal Unreported and Unregulated Fishing
IWC	International Whaling Commission
JAEPA	Japan-Australia Economic Partnership Agreement
JAMCO	Japanese Manganese Nodule Development Company
JAMSTEC	Japan Agency for Marine-Earth Science and Technology
JARPA	Japanese Whale Research Program Under Special Permit in the Antarctic
JJDC	Joint Declaration on Security Cooperation (Japan-Australia)
JMSDF	Japan Maritime Self-Defense Force
LAW	Lethal Autonomous Weapons
LME	Large Marine Ecosystem
LUSV	Large Unmanned Surface Vehicles
METI	Ministry of Economics, Trade and Industry (Japan, since 1999)
MITI	Ministry of International Trade and Industry (Japan, until 1999)
MNC	Multinational Corporation
MUSV	Medium Unmanned Surface Vehicles
NdFeB	Neodymium, Iron, and Boron
NEWREP-A	New Scientific Whale Research Program in the Antarctic Ocean
NEWREP-NP	New Scientific Whale Research Program in the Western North Pacific
NIMBY	Not In My Backyard
NOAA	National Oceanic and Atmospheric Administration
NOWPAP	The Action Plan for the Protection Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region

OMA	Ocean Mining Association (Japan)
PCA	Permanent Court of Arbitration
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PICES	North Pacific Marine Science Organization
PSR	Polar Silk Road
Quad	Quadrilateral Security Dialogue
RAA	Reciprocal Access Agreement (Japan-Australia)
RE	Rare earth
REE	Rare Earth Elements
REM	Rare Earth Metals
REO	Rare Earth Oxides
REPM	Rare Earth Permanent Magnets
REY	Rare Earth Elements and Yttrium
RIMPAC	Rim of the Pacific (US Navy biannual exercise)
RMP	Revised Management Procedure
RMS	Revised Management Scheme
SOS	Southern Ocean Sanctuary
SSBN	Ballistic Missile Submarine
TAN	Total Acid Number
UMS	Unmanned Maritime Systems
UNCLOS I	United Nations Convention on Law of the Sea of 1958
UNCLOS III	United Nations Convention on Law of the Sea of 1982
USV	Unmanned Surface Vehicles
UUV	Unmanned Aerial Vehicles
UV	Unmanned Vehicles
UVA	Unmanned Aerial Vehicles
UxV	Unmanned Vehicles
WPNS	Western Pacific Naval Symposium
WTO	World Trade Organization
YSLME	Yellow Sea Large Marine Ecosystem

LIST OF FIGURES

Fig. 4.1	Air defense identification zone (ADIZ) of Japan and those of neighboring countries (image) (Ministry of Defense 2022, p. 242)	83
Fig. 8.1	Arctic ocean shipping routes (<i>Source</i> Malte Humpert, “The Future of the Northern Sea Route—A “Golden Waterway” or a Niche Trade Route,” The Arctic Institute, September 15, 2011, as accessible at https://www.thearcticinstitute.org/future-northern-sea-route-golden-waterway-niche/)	179
Fig. 8.2	Far North fiber’s proposed data cable between Japan and Europe (<i>Source</i> Far North fiber, ud)	182
Fig. 8.3	Japan’s research station on Svalbard (<i>Source</i> National Institute of Polar Research)	184
Fig. 8.4	HySTRA’s Liquefied Hydrogen Carrying Ship at a Port in Japan (<i>Source</i> Reprinted with permission from HySTRA)	191
Fig. 10.1	Japan’s Seabed mining policy implementing entities (<i>Source</i> JAMSTEC, ud; JOGMEC, ud)	237
Fig. 10.2	Normative Power of ISA Guidelines Reflected in ECS pilot mining (<i>Source</i> Author created figure based on data from Okamoto, 2017)	239
Fig. 10.3	Location of the Iheya North Knoll near the edge of the continental Shelf (<i>Source</i> JAMSTEC, 2014)	240
Fig. 10.4	Japan’s seabed mining may be on the border of China’s EEZ/Continental shelf claims (<i>Source</i> Okoli & Simon, 2018)	241

Fig. 10.5	Minami Torishima, Japan’s claimed continental shelf, and the rare-earth prospecting site (<i>Source</i> Takaya et al. [2018, p. 2]. Reproduced under Creative Commons Attribution 4.0 International License)	244
Fig. 10.6	Japan’s Plan for developing unmanned autonomous sensing vessels for seabed rare earth prospecting (Reprinted by Permission from JAMSTEC) (<i>Source</i> Cabinet Office [2019, p. 13]; <i>Note</i> This SIP report refers to UUAVs as Autonomous Undersea Vehicles [AUVs])	249
Fig. 11.1	Simplified illustration of the REE value chain (<i>Source</i> Author’s creation)	265
Fig. 12.1	Chinese Ban Line for the Motored Trawlers’ Operations (<i>Source</i> Created by the author based on data from Xia and Yan 2008, pp. 90–91; Guowuyuan, 1955; and various internet sources. Although the line is mentioned and used in various domestic laws and regulations in China, the map and locations of forty base points are not publicised by the authority officially)	300
Fig. 14.1	Annual Japanese wind power and solar power installations (MW) (<i>Sources</i> GWEC [2023] and REN21 [2023])	361

LIST OF TABLES

Table 7.1	A typological analysis of creative involvement	167
Table 9.1	Japanese participation in deep-sea mining Consortia, 1980#	214
Table 11.1	REE demand for clean energy technologies	263
Table 11.2	Japanese imports of compounds, inorganic, or organic (excluding Cerium) of REM, Yttrium, Scandium, or mixtures of these metals	277
Table 14.1	The Japanese power mix, pre- and post-Fukushima, including METI's 2030 projections (%)	358
Table 14.2	Cumulative installed offshore wind power capacity (MW) for select countries	364

PART I

Framework



Introduction

Paul Midford

OVERVIEW

The development of new technology and the diffusion of existing technologies across a broader range of actors has become an important driver of change in maritime space, especially in areas adjacent to East Asia where technological development and technological diffusion, among states and non-state actors have been particularly rapid in recent years. This has motivated states to increasingly assert territorial claims over maritime spaces. As international relations scholars Robert O. Keohane and Joseph S. Nye argued already in the 1970s: “Just as medieval villages were eventually fenced off in response to economic change, so states in the 1970s ‘fenced off’ larger parts of the oceans as technological and economic change increased the uses of the oceans” (Keohane and Nye 1989, p. 86). Maritime space subject to sovereign rights expanded from 12 nm up to 200 nm for Exclusive Economic Zones (EEZs), and in the case of the continental shelf and extended continental shelf claims can extend even

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further. Maritime space previously often overlooked as uninteresting and unexploitable began to be seen as areas where sovereign rights could be profitably claimed.

Similarly, another international relations scholar Barry Buzan argued in 1978 that the rising recoverable economic value of maritime spaces created by technological advances and the expansion of sovereign states to cover virtually all land areas have caused maritime spaces to become intensifying areas of competition for valuable and often increasingly scarce inorganic minerals and organisms, especially fish. For Buzan the (then pending) UN Convention on the Law of the Sea (UNCLOS) “will not create order out of chaos, but rather define the terms of disorder” (Buzan 1978, p. 47; also see Yee 2011; Østhagen 2020). This prediction appears to have been borne out over the past 40 plus years as the terms of UNCLOS, such as its rules for national claims of internal waters, territorial seas, Exclusive Economic Zones (EEZs), continental shelves, and extended continental shelves have indeed become the locus of interstate tensions over conflicting maritime claims.¹ This is especially true in East Asia where almost all maritime disputes remain unresolved. By contrast, about half of maritime boundary conflicts have been resolved globally (Midford and Østhagen 2022).

Maritime Territorialization. Not surprisingly, states, as inherently territorial polities, have been extending their maritime claims as much as possible, not only in terms of claimed maritime space, but also in terms of the rights they claim within that space, with a tendency especially notable in East Asia to treat EEZs as though they were territorial waters. For example, the rights of other states to “freedom of navigation” within EEZs, claimed continental shelf and extended continental shelf zones have also become a point of contention: what rights do other states have to conduct military activities such as the maneuver of naval vessels, military exercises, or intelligence gathering (passive and active) in another country’s EEZ or continental shelf? (Valencia 2011) How easy is it to distinguish between another state’s military intelligence gathering versus scientific research inside another state’s EEZ? These issues have been especially salient in East Asia, with regional states, starting with China, but at times also including Japan, South Korea and several states in Southeast

¹ For the argument that the growth in recoverable resources can under some conditions actually encourage settlement of maritime disputes, see below.

Asia, protesting foreign naval navigation, surveillance and military exercises in national EEZs. Indeed, Japan appears to have the distinction of being the only country that has opened fire and sunk a foreign (in this case North Korean) intelligence ship for operating in its EEZ (Midford 2019, pp. 47–49).

What role does dynamic technological development and diffusion play in the recent sharpening of maritime disputes in East Asia, and what mechanisms should be developed for managing and resolving these maritime disputes? The development and regional spread of technologies allowing deep-sea oil and natural gas drilling, offshore floating wind turbines (and wave power), seabed mining, island-building and even long-range fishing, have raised the stakes for East Asian countries with conflicting maritime claims. Advances and diffusion of remote deep-sea oil drilling technology have been identified as a reason for the reignition of maritime disputes in the South China Sea since 2008 between China and other claimants (Weissmann 2012, p. 94; Schofield and Storey 2009, p. 20). China's building of massive artificial islands during the past decade has grabbed global attention and has raised regional and even global tensions. Although far less well known, Japan's commencement of seabed mining for rare earths and polymetallic sulfides in potentially disputable areas of its EEZ is another example.

On the other hand, seabed mining can also be a political tool states can use to demonstrate and exercise sovereign rights, in this case, mineral rights in their EEZ. It can also be an effective means for asserting maritime claims in disputed waters, and for monitoring disputed waters and international waters (Stratfor 2012), even for seabed research that “prepares the battlefield” for submarine and other forms of undersea warfare (see the Hiim and Lamont chapters in this volume). Fishing presence is also an assertion of sovereign rights. In this sense the relationship between technology and political conflict can come full circle: technological progress and diffusion can motivate states to more forcefully assert their territorial claims as recoverable resources expand thanks to technology, and at the same time seabed mining and other maritime economic activities can become political means, rather than just economic ends, for asserting maritime claims and interests. Although many experts doubt whether seabed mining, especially in deeper waters, will ever be economically viable, states might pursue it for political reasons and may accept higher mineral costs to enhance supply security and strengthen