Area-Based Management Tools and Marine Fisheries

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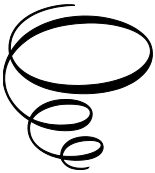
A Comprehensive Review

Edited by

Serge Michel Garcia and Jake Rice

Cambridge Scholars Publishing



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PREPARATION OF THIS DOCUMENT

The process leading to the preparation of this document started in 2021 among members of the IUCN-CEM Fisheries Expert Group (https://www.ebcd.org/FEG) on the tensions between marine protected areas (MPAs) and fisheries and the growing emphasis and visibility of area-based management tools in both fisheries and conservation during the last two decades. Discussions went on informally on the potential of these instruments and the tensions, misunderstandings, misinterpretations, and ideologies affecting and potentially limiting the widespread use of this approach to fisheries.

It was decided that a comprehensive review of area-based management tools would be prepared as a contribution to a better common understanding. A first annotated outline was prepared by S. M. Garcia in January 2022, circulated, and discussed. Dr. François Féral was specifically asked to contribute a prologue, positioning ABMTs in their broad spatial and historical perspective.

The contributions were progressively assembled by S. M. Garcia. The contributions touched on many interconnected parts of the book. In the progressive review process, many FEG members reviewed specific sections of the book, commenting on and editing them and adding material and references as needed. The consistency across chapters was ensured by S. M. Garcia so that all chapters of the document, except the Prologue and a few specifically requested case studies, can be considered as jointly elaborated by the authors, under the overall responsibility of S. M. Garcia and J. Rice for the assemblage and final editing.

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Attributions

The cover page has been produced by Genuineromanart in Rome (https://genuineromanart.com/home). Figure 5.1 is kindly provided by Adrienne Williams https://adriennewilliams.com/.

Disclaimers

The designations employed and the presentation of material in this book do not imply any opinion whatsoever on the part of IUCN, CBD, FAO, EBCD, the sponsors of the Fisheries Expert Group of the IUCN Commission on Ecosystem Management, or any of the institutions to which the authors and collaborators are affiliated. The designations employed and the maps used in the book do not imply the expression of any opinion whatsoever on the part of these institutions concerning the legal or constitutional status of any country, territory, or sea area concerning the delimitations of frontiers.

While the book is the result of a joint effort of the authors and occasional collaborators, the final assemblage of the contributions and final editing was the responsibility of Dr. Serge M. Garcia who, as main author and editor, remains entirely and solely responsible for any errors in the whole book.

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ABSTRACT

This book provides a comprehensive review of area-based management tools (ABMTs) used in the ocean. It focuses on conventional area-based fisheries management measures (ABFMs) used to protect target resources, non-target species, and essential habitats, as well as on marine protected areas (MPAs) and community-managed multipurpose areas in which fisheries operate.

The review takes an unusually broad perspective on the concept and successive zoning of ocean space, from antiquity to today, providing mystical, historical, philosophical, political, economic, and ecological points of view. The prologue illustrates the evolution of the ocean space from the obscure realm of Gods and monsters in Antiquity to a fundamental modern space involved in, and fragmented by, processes of war, colonisation, independence, industrial development, environmentalism, and financial forces, in a global competition of states and interest groups.

The background on area-based management looks at the human dimensions of ABMTs including governance, tensions between conservation and sustainable use, trends in area-based management, the UNCLOS overarching framework, unilateral attempts at territorialisation, and other legal and informal frameworks including institutional efforts by the United Nations and global policy frameworks.

Area-based management is briefly addressed as the framework within which ABMTs are used, to which they are functionally linked and on which their effectiveness depends. ABMTs are defined, with their emerging roles, goals, and objectives in relation to ecosystem services, offsets, nature-based solutions, and so on. Existing ABMT typologies are examined, particularly in MPAs, area-based fisheries management measures, and community-managed multi-purpose areas. It is clear that no single typology can classify all ABMTs and that many purpose-built typologies are possible. The formal names of ABMT categories and the local names of ABMT sites are examined to illustrate the respective nomenclature “rules”.

Human dimensions are often at the core of tensions, synergies, and trade-offs in the use of ABMTs. The concepts and pathways to tension resolution

and mobilisation of synergies (or simple complementarity) are examined together with the trade-offs implied. Finally, the central issue of ABMTs' effectiveness is addressed, looking at general considerations emerging from the literature, methodological challenges, factors of effectiveness, and, finally, the extent to which various types of ABMTs have been effective.

The book also presents some case studies on ABMTs, in the northeast Atlantic area, in South Africa, from an industry perspective, in the context of the European Common Fisheries Policy, and with a view of the fishing industry with regard to ABMTs. An extensive inventory of 85 ABMT categories is also given in Annex 1, with their names, definitions, and a brief outline of their characteristics.

PROLOGUE

SPACE, HUMANS, AND NATURE – A SHORTCUT THROUGH THE CENTURIES

FRANCOIS FERAL AND SERGE M. GARCIA

It is easier to legalize than to legitimize
(Champfort. Maximes et pensées, 1795)

Space is not found. It must always be constructed
(Bachelard. Le nouvel esprit scientifique, 1934)

Summary

This prologue considers the marine space from the perspective of fisheries and biodiversity conservation, considering the legal, environmental, and socio-political dimensions. Though the centuries, the antique, mysterious, and mystic conception of the ocean space has been progressively replaced by communities' and states' jurisdictions. The modern fishery and ecological visions of the marine space rests on a political–economic representation of space which, through the strong influence of the West over the seas and oceans, has gradually become 'universal'. The most striking phenomenon since the 17th century has been the growing influence of states on marine and oceanic spaces. The early customary maritime law, and then the recent Law of the Sea, are the political and normative expressions of that historical ocean 'appropriation' process. However, the modern evolution of fishery and environmental regulations – particularly through area-based management tools – indicate a new step in the conception of marine space that the prologue describes as a background to Parts I and II.

The prologue is structured around the following themes: (i) evolution from the antique representation of the ocean space to its modern legal construction; (ii) from a gods' space to a humans' space; (iii) the prominence of the modern state in the constitution of marine space; (iv) states' control of marine spaces by maritime law and the Law of the Sea;

and (v) a new chapter in the international management of marine spaces: nature protection, knowledge, and marine protected areas.

1. From the antique marine space to its modern legal construction

This prologue opens a comprehensive book on area-based management (ABM), in its broadest sense, and on area-based management tools (ABMTs) in the ocean. It provides a historical background on the subject, starting from Antiquity and the 15th century splitting of the Earth into two equal parts between Spain and Portugal. It also describes the historical evolution of this space allocation during more than five centuries, to better understand the forces at play in the past and the implications today, when dividing the dynamic, interconnected ocean into delimited areas. The authors briefly review the concept of space and its evolution with time, from (i) an antique space of fear, full of gods and mystic creatures to (ii) centuries of navigation, trade, discoveries, competition, and colonisation; (iii) a framework of spaces shared and controlled by states through the Law of the Sea; and (iv) a huge economic resource for the expansion of the blue economy. In the process, the role of states is essential, ocean zoning is progressing; communities are better recognised and involved, and the concern about biodiversity keeps increasing.

The seas and oceans make up most of our planet's space with deceptive physical unity and plural representations. These representations are in fact available in the forms of infinity, cornucopia, and freedom, but also in the forms of danger, the unknown, the vacuum, or the last frontier. 'Terrestrial people' have often and for a long time considered the sea as an insurmountable barrier filled with threats, even though many have learned to enjoy it as a temporary source of recreation. More 'aquatic people', such as sailors, fishermen, ship-owners, many merchants, and some specialised industries (e.g. oil and gas companies), look to it and use it as the most effective means of communication and as a source of livelihoods and revenues. In these confused and contradictory representations, the notion of *marine space* raises questions of definition and content to facilitate communication between 'terrestrial' and 'aquatic' people, exchange hypotheses, and link reliable data on the subject.

Defining and conceptualising are always delicate operations because the vision of those involved is inevitably charged with subjectivity and presumptions linked to their cultures, backgrounds, and interests. In these

conditions, as Bruno Latour invites us to do, we can say that there are 'several truths' of the marine space – that is, different representations by different actors (Latour, 2006). Over the centuries, the representations of the sea have been nourished by navigation, exploration, fisheries, battles, and piracy, as well as by geography, oceanography, myths, and religions, from village economy to global maritime trade and to the outer space vision of a blue planet. More recently, these representations have been influenced by tourism, recreation, sailing competitions, growing industrial development (the last frontier, the blue economy), and the continuous geopolitical race of states aiming to strengthen their jurisdictions and technocratic governance. In parallel, a more ecological conception of marine space – which we will examine – has been emerging.

This prologue deals with the marine space from the perspective of fisheries and biodiversity conservation, considering their legal, environmental, and socio-political dimensions. The modern fishery and ecological visions of the marine space rest on a political–economic representation of space which, through the strong influence of the West over the seas and oceans, has gradually become 'universal'. The most striking phenomenon since the 17th century has been the growing influence of states on marine and oceanic spaces. The early customary maritime law, and the more recent Law of the Sea, are the political and normative expressions of that historical ocean appropriation process. However, the modern evolution of fishery and environmental regulations – particularly through protected areas – indicates a new step in the conception of marine space, which we will examine.

This chapter is structured around the following themes: (i) the ocean: from a gods' space to a human space; (ii) in modern times, the preeminent place of the modern state in the constitution of marine space; (iii) states' control of marine spaces by maritime law and the Law of the Sea; and (iv) the improvement and increase of marine zoning in the 20th century for conflict reduction and the protection of nature.

2. From a gods' space to a humans' space

2.1 Space as the container of human production

During Antiquity and the Middle Ages, the concept of space included the representation of myths and gods of the forests, of the sea and the oceans, of the mountains, and of the Earth. This non-human space was also filled with mysteries, monsters, and personified animals. For the Greeks of the

Archaic period, in the Mediterranean marine space they surveyed, explored, and colonised, Ulysses was the object of the fury of Neptune and the seduction of the sirens. In the 8th and 7th centuries BC, the sea described by Homer and Hesiod was the gods' domain. However, despite its myths and its gods, and nourished by its mysteries, the marine space has also existed for many centuries as a socialised space, for example as a circulation route: by the thousands, antique ships used the sea as a means of transport, discovery, and trade; a battlefield; an area of ethnic mixture and colonisation; and, of course, as fishing grounds.

Closer to the present, in the pre-colonisation civilisations of the so-called primitive peoples or Prime Nations, nature 'fills' the space and is a mighty power that is deified and worshipped (e.g. mountains, rivers, lakes, rain, thunder, other atmospheric powers, animals).[1] This nature deserved to be feared and respected but could also be used – with appropriate rituals – for food and other human needs (Guthrie, 1971).[2] Johannes (1978) describes the traditional management of marine resources in Polynesian societies based on a system of values that determines preferences in the satisfaction of needs. The description illustrates a sophisticated village-based utilitarian conservation system of marine resources. These systems combined technical measures comparable to what was considered as state-of-the-art fisheries management measures in Europe at that time, including tenure systems, closed areas and seasons, and protected areas, but few gear or fish size regulations. Measures were also taken based on religious or other ritual grounds with potential ecological consequences. The nutritional needs, albeit fundamental, were superseded by transcendental obligations to meet social relationships, kinship responsibilities, and other rituals (including animism and totemism).[3] Economic value was secondary at best. However, this did not necessarily mean that these peoples lived 'in harmony with nature'. They also wasted resources, and environmentally destructive practices coexisted, as in most societies, with efforts to conserve natural resources (Guthrie, 1971: 355; Johannes, 1978). Following colonisation,

[1] See, for instance, https://www.britannica.com/topic/nature-worship

[2] https://www.britannica.com/topic/nature-worship

[3] *Animism*: the belief that all natural phenomena, including human beings, animals, and plants, but also rocks, lakes, mountains, weather, and so on, share one vital quality – the soul or spirit that energises them. It is at the core of most Arctic belief systems (Wikipedia) and was common in West Africa. *Totemism*: a system of belief in which humans are said to have kinship or a mystical relationship with a spirit-being, such as an animal or plant, for example bears, birds, frogs, sharks, cetaceans, turtles, and various supernatural beings.

marine resources dwindled, due to several interrelated causes including: (i) the introduction of cash economies, (ii) the breakdown of traditional authority and social bonds, and (iii) the imposition of new laws and practices by colonial powers that redistributed authority over spaces and resources (Johannes, 1978).

The spatial conception of the Enlightenment era in the 18th century and of 19th century society is built on a preconception established by geographers (inspired by the political economy) of a planetary space that exists only when it is filled by the whole system of social relations, including economy and conflicts, and does not exist otherwise. We refer to this concept below (Section 2.1) as the 'presumption of vacuity'. Space thus becomes explicitly a product constructed by human societies, which can thus interact with its content.

Space is not found. It has to be constructed.
(Bachelard, 1934)

Economic thought integrates the spatial factor into the study of the formation and circulation of wealth.
(Rallet, 1984)

Therefore, the social sciences distinguish, on the one hand, a terrestrial reality of space with its material productions and content of human activities and, on the other hand, a societal representation of space based on the values and dynamics of its main actors. Thus, for centuries, sailors, crews, fishermen, explorers, and merchants have jointly 'constructed' the marine space and its values and dynamics. However, in modern times, with the progress of capitalism within the social sciences, economics and geography have taken over the representation of space. More recently, this space has also been invested by scientists, conservationists, industrial operators, and recreational users. In this process, the liberal economic thought, which feeds on abstraction, promotes the vision of a space made up of natural goods for mankind.

This is the time of the fusion of space and economy.
(Rallet, 1984)

The fallacious dimension and deleterious scope of this political–economic approach to space, particularly when applied to the marine space, is examined below.

2.2 The primacy of geographical and economic conceptions of terrestrial space

How did we arrive at this immanent political–economic conception of space, and what lessons can we draw from it for the protection of marine space?

We mentioned above how the archaic thought of the Greeks, for example, filled space with gods, monsters, and mysteries, even though, at that time, the sea was already a source of wealth and the most important means of circulation for them and many others (Lefebvre, 2007). Therefore, the non-natural, politico-economic conception of the space does not originate in the proto-science of the Greeks, Arabs, and Christians of the Middle Ages, deeply dominated by mythology and sacred books. It emerged centuries later, establishing a privileged relation between humans and space to the detriment of the ancient natural and mythological dimensions. In the last page of his *Discourse on Method*, René Descartes (1637) refers to Man, with his reason and scientific knowledge, as '*the master and possessor of nature*'.

Nature, however, will later be paradoxically evacuated from the modern political–economic paradigm as not constitutive of space. In the 18th century, in a scientific atmosphere illustrated by the 'Encyclopaedists',[4] Jean-Jacques Rousseau was the only philosopher who reflected about the relations of Man and Nature in a political movement centred on liberalism, bourgeoisie, science, questioning the privileges of nobility, and absolute authority. Within the Enlightenment movement, he appears as an exception, raising awareness of the ongoing transformations of natural space into a human endeavour. However, Rousseau does not specifically address the question of space except in his analysis of 'proprietorism',[5] including the question of fences and borders as a factor of conflict and violence (Rousseau, 1755).

[4] The French Writers' Society, who contributed to the development of the Encyclopaedia (from June 1751 to December 1765), included Voltaire, D'Alembert, Diderot, and many others.

[5] Translated from French '*propriétarisme*'. For those theoreticians, property is not a social fact to be defined by society but derives solely from individual will. It has been defined also as '*a political ideology placing at the heart of its project the absolute protection of the right to private property*' (Piketty, 2019).

It is in the politico-economic thought of the 19th century that the exclusion of nature from space is most obvious and becomes definitive. Marx, in his analysis of the accumulation of capital and the colonial phenomenon, discusses the use of space by capitalist society, both in microeconomics[6] and in projecting its overseas conquests (Rallet, 1984). However, he only refers to space as inducing the existence of spatial relationships in capitalistic economies. Thus, for Lefebvre (1970, 1997), 'Real space is that of social practice (...) produced, from social relations'. This is why some geographers accuse Marx of having no approach to the concept of space: 'Marx's essentialist thought always begins with an elimination of space' (Claval, 1977). Paradoxically, Adam Smith (1776) joins the Marxist analysis for which space is only the container of social relations, because the English economist conceives space only in terms of the production of values, without any consideration other than the relationships of interest and the mechanisms of wealth circulation (Dubeuf, 1991). Thus, liberal economics and Marxist doctrines come together in considering that space is essentially commoditised because it is where people satisfy their needs, particularly in the form of a market or a state. In that process, the public space or the commons – the 'land without a master' – inevitably falls into the commercial and capitalist sphere in a process often referred to as 'commodification'.[7] Urban planning, or the integration of rural space into the city, measures demographic goods, services, and financial flows to qualify and model space transformation. However, these approaches are not interested in anything constituting that space except these flows. In particular, they exclude the space's ecological content and, sometimes, its historical dimension.

At this stage of our observation of the concept of space in economics and geography, there appears to be an almost universal representation of 'space', advocated by the West, only interested in the social (mainly economic and commercial) relations that occur in that space, as consumer goods, following the law of supply and demand (Harvey, 2010). This dominant capitalistic thinking inspires not only corporate strategies but also public policies of order and wealth. It is the dominant conception of Western

[6] In the spatial deployment of capitalism on markets, and industrial and urban expansion.

[7] 'Commodification' is the extension of the market space (and reference to economic value) at the expense of collective or common spaces (or other social and societal values). It implies a dynamic, illustrated by the 'enclosures' that 'devoured' the villages' common spaces in England in the 15th century.

society, in which weak discordant voices are heard[8] or are confronted with traditional conceptions. The ecological approach and thought that – contrary to political–economic thought – integrates the human/nature dimensions is still present in many traditional communities and has been growing in science, most international institutions and policy agreements, and in the media for over three decades but is not yet fully mainstreamed, in practice, in development policies.

3. The prominent place of the modern state in the marine space

3.1 The singularity of marine space in modern times: A presumption of vacuity

To analyse the concept of 'marine space' and to bring out the socio-political issues that emerge in protected areas, it is necessary to examine how the presumption of vacuity, now accepted in modern market society, applies. Compared to this presumption, the situation of the marine space appears singular, is scarcely documented in geographical and economic disciplines, and deserves careful consideration.

Market relations do not exhaust the content of the modern space concept because capitalism and the market exist in their universal form only within the state framework. In modern nations, space is not only a set of social relations but also the container of the relations within and between states. Through the production of norms, policies, and domestic and international public laws, which are consubstantial with it, the state participates in the definition of the content of space and its commodification, particularly with respect to marine space. To illustrate this notional approach, we could say that the terrestrial space (the land) is 'filled with social relations', while the modern marine space is 'filled with state interventionism'. The reason is that the quasi-impossibility of physical human settlements, cadastres, control, protection, and fences in the ocean, if not at short distances from

[8] For example, Thomas Malthus (1766–1834), in *An essay on the Principle of Population*, looks at the past and present effects of demography on human happiness and enquires on our prospects regarding the future removal or mitigation of the evils it generates. Malthus stresses the tension between demography and available space and natural resources, arguing that the power of population is indefinitely greater than the power of the earth to produce subsistence for man.