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Maritime Studies A Conceptual Framework For Portugal

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Abstract

Maritime studies is a new transdisciplinary academic field within the social sciences, aimed at managing the challenges arising from Man's critical and ongoing relationship with the sea in matters of development and security. Due to its modernity, it is at an early stage of construction and composition of its scientific content and institutionalization. It is a fact that some courses on maritime studies are already being taught in several countries. However, due to its recent creation, this field of study has yet to produce a body of academic work of reference. For this reason, it is poorly known and there are not many scientific papers related to it. This scientific article aims to share some preliminary thoughts on how to develop and deliver such a course in our country. In addition, it intends to facilitate the understanding of how to structure the research lines of an academic body dedicated to the investigation and teaching of maritime studies. Furthermore, it contributes to the reflection on a possible way to achieve these two goals, taking advantage of the potential of teaching, research and development, as well as the resources, capabilities and competences of commercial, industrial, academic, applied science and maritime security and safety corporations that exist in Portugal.

Resumo

Os estudos marítimos são um novo campo académico transdisciplinar das ciências sociais, destinado a gerir os desafios resultantes das relações críticas e contínuas do Homem com o mar em matérias de desenvolvimento e segurança. Devido à sua modernidade, estão numa fase inicial da construção e composição do seu conteúdo científico e institucionalização. É um facto que já são ministrados alguns cursos de estudos marítimos em vários países. Contudo, devido à sua recente criação, este campo de estudo ainda não originou um conjunto de trabalhos académicos de referência. Por esta razão, são pouco conhecidos e não existem muitos artigos científicos com eles relacionados. Este trabalho visa partilhar algumas ideias preliminares sobre como desenvolver e pôr em funcionamento um curso deste tipo no nosso país. Também visa facilitar a compreensão sobre como estruturar as linhas de investigação de um organismo académico dedicado à investigação e ao ensino dos estudos marítimos. Para além disso, contribui para a reflexão sobre uma possível forma de alcançar estes dois objetivos,

INTRODUCTION

Maritime studies is a new transdisciplinary academic field within the social sciences, aimed at managing the challenges arising from Man's critical and ongoing relationship with the sea in matters of development and security.

Due to its modernity, it is at an early stage of construction and composition of its scientific content and institutionalization. It is a fact that some courses on maritime studies are already being taught in several countries. However, it can be seen that, due to its recent creation, the field of study has yet to produce a body of academic work of reference. For this reason, it is poorly known and there are not many scientific papers related to it, contrary to what we have seen in the field of natural sciences linked to the sea and focused on biology, physics and chemistry, or in the area of earth sciences, which include, among others, geology, geophysics, meteorology, hydrography and oceanography.

Portugal, even with so much maritime tradition and culture, does not have a formal course on maritime studies in the context of social sciences! Therefore, this scientific article aims to share some preliminary thoughts on how to develop and deliver such a course in our country. In addition, it intends to facilitate the understanding of how to structure the research lines of an academic body dedicated to the investigation and teaching of maritime studies. Furthermore, it contributes to the reflection on a possible way to achieve these two goals, taking advantage of the potential of teaching, research and development, as well as the resources, capabilities and competences of commercial, industrial, academic, applied science and maritime security and safety corporations that exist in Portugal.

The approach to the topic starts with the definition of the concept of maritime studies, explaining its nature, subject, purpose, attributes, method, tools and scientific utility.

Next, the proposed model for developing maritime studies is described. This explanation begins with the examination of the critical and ongoing relationship of Man with the sea, in matters of development and security, in order to identify the challenges arising from them. The description of the research model goes on to explain that, for theoretical support of maritime studies, the technique of transdisciplinary articulation is applied, in order to use the enabling contributions of several social sciences, namely history, international relations, political philosophy, economics, law, psychology,

anthropology, etc. The same technique is used for the investigation and analysis of the subject of maritime studies, to explore the structuring contributions of geography, political science, strategy and management. The definition of the research model then proceeds with the description of how to manage the challenges arising from Man's critical and ongoing relationship with the sea, in matters of development and security. In this context, the limitations of the scientific basis, the importance of art creativity, and the need for harmony between the scientific basis and creative genius in the model of maritime studies are highlighted.

The work proceeds with the explanation of the research and analysis method, addressing the nature of the research lines and their direction, content and structure. The nature of the research lines results from the contributions of geography, which allow us to identify, from development and security concerns, the types of cultural, economic, environmental, diplomatic and security challenges arising from the imperatives of Portugal's location. The direction and content of the research lines are a consequence of the contributions of politics and strategy, which make it possible to highlight the processes of expression and the ways of materializing the challenges associated, respectively, with power relations and the exploitation of force at sea. Management enables the identification of solutions and measures to overcome development and security challenges, aiming to define the structure of research lines, which is materialized by the strategic objectives to be achieved (what to do) and by the characterization of the corresponding actions (how to do it), intended to prepare and employ Portugal's maritime resources, capabilities and competences, so that the country can use the sea in its interest, with efficiency and efficacy.

The research paper ends with the presentation of the conclusions, which briefly highlight the main lines of the procedure followed, as well as the contributions of the work to the development of knowledge of the sea, and the practical subsidies for structuring the academic field of maritime studies.

1. CONCEPT DEFINITION

As stated before, maritime studies is a new transdisciplinary academic field within social sciences, aimed at managing the challenges arising from Man's critical and ongoing relationship with the sea, in matters of development and security.

Intrinsic to this definition, and with great relevance, are the operational concepts of: transdisciplinary academic field; management; development and security challenges, and finally, critical and ongoing human relationship with the sea. Regarding these four

concepts, it is important to clarify their understanding in the context of the present scientific article, due to the relevance they have in structuring the mindset about the various realities of the sea, by representing them, in our spirit, through their general characteristics.

The transdisciplinary academic field translates the branch of knowledge formally taught at university, which adopts a complex and organized way of thinking that crosses several disciplines, which interact with one another in order to provide unity of knowledge and dynamics to teaching.

Management can be defined, in a very simplified way, as the set of decisions and actions linked, in essence, to planning, organization, leadership and control, which determine the performance of an entity.

The development and security challenges are both related to the threats and opportunities existing in the external environment of actors, and to the strengths and weaknesses that compose their internal environment. Development challenges are associated with maritime activities that can provide significant gains in progress and welfare, whereas security challenges are associated with maritime activities that can ensure the orderly and peaceful use of the physical, mental, and moral assets related to the sea.

For different maritime actors, public and private, national and international, where States are particularly relevant, the critical and continuous relationship of Man with the sea is redefined by the processes that contribute to alter the established order, and that is developed by questioning the normality recognized by those entities. These processes, of a political and strategic nature, often resort to coercion, with ample exploitation of the material and mental forces at the disposal of each maritime actor, according to actions that foster a state of disagreement in the political system, associated with the pursuit of divergent objectives.

Maritime studies, with the nature that has just been described, appeared, with some visibility, in the first decade of the 21st century, having as its subject the geographical challenges that arise from the imperatives of Portugal's location, and the political and strategic circumstances associated, respectively, to the power relations and the exploitation of force at sea.

The definition of this subject is closely linked to the purpose of maritime studies, which is to qualify complete professionals, providing them with the management tools and knowledge necessary to think like men of action and act like men of thought, within

the decision-making processes, in matters of development and security related to the sea use, inherent to the activities of the public and private sectors, which are important to governments, industries, services, infrastructures, environmental organizations, maritime communities, cultural organizations, and security and safety organizations. All of this aims to facilitate the integration of the sea in public and private policies and strategies, by increasing awareness, accessibility and appreciation of its use.

The scientific attributes of maritime studies derive from the fact that it has a precise subject, which can be researched and analyzed with a method that conveniently explains the essence, causality and effects of facts and events arising from Man's critical and ongoing relationship with the sea, using theoretical tools (perspectives) and practical tools (techniques), its own or borrowed from other social sciences, cyclically transformed by intellectual activity.

To this end, the research and analysis method of the subject of maritime studies relates, aggregates, interconnects, integrates, modifies and enriches several disciplines of social sciences, which have distinct subjects of study, namely history, international relations, political philosophy, economics, law, psychology, anthropology, geography, political science, strategy and management, among others. Thus, from the confrontation between the various scientific disciplines, new data emerges, which articulate them and offer a new vision of the reality of the sea, and allow us to understand phenomena that would not be intelligible with the knowledge resulting from any one of them alone.

The theoretical tools for research and analysis of the subject of maritime studies may be the perspectives of individual, rationalist, functionalist and systemic trends. Regarding practical tools, the techniques of documentary observation, direct observation, comparison, systematization and transdisciplinary articulation are relevant. However, it is important to emphasize that, in relation to theoretical tools, the systemic perspective is particularly useful because, by structuring the examination of the critical and continuous relationship of Man with the sea, in terms of development and security, it ensures the prevalence of organized thinking, in the search for understanding about the complexity of maritime issues faced as a whole, as well as in overcoming the movement of specialization of science and the fragmentation of knowledge about the sea. As for the practical tools, it is stressed that the technique of transdisciplinary articulation is the determining factor in the theoretical support, and in the research and analysis of the subject of maritime studies, as it aims at the unity of knowledge, resulting from a maximum interaction between the disciplines to which it resorts, respecting their

individuality, where each of them contributes to the development of a complex common knowledge, without transforming them into a single discipline.

The subject, purpose, attributes, method and tools of maritime studies are highly relevant in their usefulness to foster research about the sea in multiple disciplines of social sciences, to promote rigorous and constructive academic debate on the sea, and to inspire the understanding of maritime affairs. All of this is in order to facilitate the work of experts in maritime studies, in the development and implementation of public and private maritime policies and strategies, in the relevant participation in the maritime activities of national and international organizations, and in the management processes of scientific and technological maritime innovation, essential aspects to enable a new encounter between Portugal and the sea.

2. DEVELOPMENT MODEL

The characterization of the model to develop maritime studies is a subject that has been getting increased attention in some countries, supported by researches, debates and scientific work. Nevertheless, there are still no clear trends or a firm consensus on this matter, due to the nascent nature of this new transdisciplinary academic field within social sciences, as well as the specificities of human behavior regarding the sea in each country.

As a contribution to such debate, and based on our research on the subject, it seems plausible to develop maritime studies according to a model that, with the aid of the social sciences' theoretical tools, begins by examining Man's critical and ongoing relationships with the sea in matters of development and security, seeking to identify the challenges that, in these areas, need to be perceived and managed.

As mentioned before, the theoretical tools encompass the perspectives of individual, rationalist, functionalist and systemic trends. For the examination of the critical and continuous relationship of Man with the sea in matters of development and security, the systemic perspective is particularly useful, because as was said before, it ensures the prevalence of organized thinking in the search for understanding about the complexity of maritime issues faced as a whole, as well as in overcoming the movement of specialization of science and fragmentation of knowledge about the sea.

In this context, it is important to note that, in the past, the oceans were illusorily associated with the abundance of maritime resources and the ability to resist the uses and abuses of Humanity. For centuries, despite the problems of piracy and the risks of natural storms, fish stocks were sufficient to meet consumption needs, the waste thrown into the

sea created only small temporary local disturbances, the protection of cultural heritage was not a concern and there were few relevant navies capable of affecting the security of coastal states. Hence, the concept of freedom of the seas was developed, based on the assumption that the exercise of the right of use by an entity would hardly entail the violation of the same prerogative by other users. The only exception to that concept was to allow the defense of coastal States. For this purpose, a band of three nautical miles wide was established, which matched to the range of a cannon in the 17th century, called territorial sea, and where it was legitimate to affirm the sovereign authority of coastal States.

The rapid progress of science and technology in the 20th century enabled a better understanding of the impacts of human activities on the oceans, which, combined with their intensive and broad worldwide spread, changed the belief that, in the use of the sea, all of Humanity's interests could be accommodated. In fact, conditions of abundance and freedom have been substantially reduced, and disputes have come to determine Man's critical and ongoing relationship with the sea, in matters of development and security, from which very relevant and complex challenges have emerged. In the field of development, they are associated with the processes of enrichment of countries and citizens related to the sea, also taking into account the greater scarcity of resources on land. In the field of security, they are linked to the preservation of territorial integrity and the physical, mental and moral assets of countries and citizens related to the sea.

Once the examination of the critical and ongoing relationship of Man with the sea has been concluded, and the resulting development and security challenges identified, the model of maritime studies uses practical tools, which include the techniques of documentary observation, direct observation, comparison, systematization and transdisciplinary articulation. As previously mentioned, all of these techniques are important to maritime studies. However, it is the technique of transdisciplinary articulation that provides the greatest contributions to the theoretical support and to the research and analysis of the subject of maritime studies, as it aims at the unity of knowledge, resulting from the maximum interaction between the disciplines of social sciences to which it resorts, respecting their individuality, where each of them contributes to the development of a complex common knowledge without being transformed into a single discipline.

The enabling contributions of social sciences are provided by a number of indirect disciplines, thus designated by their function as theoretical basis for maritime studies.

Among others, the following can be highlighted: history, which deals with the evolution of policies; international relations, directed towards the interaction of actors; political philosophy, concerned with normative issues with a vision of the future; economics, focused on maritime activities and their benefits; law, centered on constitutional norms, customs and treaties; psychology, devoted towards the personality of maritime leaders and peoples; and anthropology, dedicated to the physical and cultural characteristics of these peoples.

The structuring contributions of the social sciences are provided by the four direct disciplines, thus designated by their relevance in research and analysis of the subject of maritime studies. These disciplines are: geography, which focuses on the imperatives of the location; political science, which is directed towards power relations at sea; strategy, which privileges the exploitation of force at sea; and management, which aims to achieve efficiency and efficacy on the solutions and measures to overcome the challenges of development and security. They provide a representation of the simplified examination of Man's critical and ongoing relationship with the sea, in matters of development and security, given that:

- Geography makes it possible to identify the essence of the various types of development and security challenges, arising from the imperatives of the location held by each actor at sea, which give nature to the research lines of maritime studies;
- Political science makes it possible to identify the causality of the various processes of expression of the challenges of development and security, linked with power relations at sea, which give direction to the research lines of maritime studies;
- Strategy makes it possible to identify the effects of the ways of materializing the challenges of development and security, linked to the exploitation of force at sea, which determine the content of the research lines of maritime studies;
- Management makes it possible to implement the solutions and measures to overcome, efficiently and effectively, the challenges of development and security, which are the structure of those research lines of maritime studies.

As a result, the management of development and security challenges is made using the enabling and structuring contributions of the social sciences, provided by a set of indirect and direct disciplines. The scientific knowledge they provide must, however, be

combined with the creative genius, especially in the articulation of decision factors, using the objective and subjective part of the strategic criteria of suitability, feasibility and acceptability, essential to the elaboration, choice and operationalization of research lines of maritime studies, whose content includes the definition of strategic objectives, (what to do), as well as the design of the corresponding actions (how to do it), aimed at preparing and implementing the resources, capabilities and maritime competences, so that the sea can be used in the interest of Portugal.

Jointly, both the direct and the indirect disciplines of social sciences contribute to give substance to the scientific basis of the maritime studies model. However, it should be noted that, although this scientific basis is constantly being expanded and improved, it always has structural and operational limitations. The structural limitations arise, in particular, from insufficient data, the diversity of possible solutions, the accidental or deliberate irrationality of the maritime actors, as well as the multiplicity and personalization of decisions. The operational limitations are a consequence, above all, of providing results with different levels of success, depending, to a large extent, on the creativity linked to the inspiration and innovation of professionals in maritime affairs.

Under these circumstances, given the structural and operational limitations of scientific knowledge associated with maritime studies, it is essential that this transdisciplinary academic field within social sciences also resorts to the creative genius:

- Translated into the effectiveness of the formulation and operationalization of research lines, where the decision factors are combined, according to the principles and strategic rules of application;
- Reflected in the inspired choice of these research lines, after being submitted to the strategic criteria, and developed at the levels of decision and execution required by the complexity of the organization of each maritime actor;
- Represented in the innovative way in which these lines of research can contribute to provide strategic advantage to the maritime actor that conceives and operationalizes them.

The creative genius required for maritime studies is revealed by the talent of the professional, projected by his intellectual capacity and enhanced by his personality. Therefore, it has a strong innate component to the person who performs the maritime studies. However, it can and must be developed at the expense of management training and much varied practical work, as it occurs in all fields of human activity.

It is the just harmony between the scientific basis and the creative genius that gives maritime studies a great relevance to train complete professionals, endowed with the management tools and knowledge necessary to think like men of action and act like men of thought, in the development of public maritime policies and strategies, in the management of decision-making processes and in the implementation of public and private sectors' activities.

3. RESEARCH AND ANALYSIS METHOD

3.1. Nature of research lines

In the case of Portugal, geography shows that, in light of development and security concerns, it is necessary to take into consideration: the enormous area of its jurisdictional waters, with 1.7 million km², equivalent to 19 times the national land territory; the possible extension of the continental shelf, with almost 3.6 million km², corresponding to 40 times the national land territory; the 97% of maritime territory, which makes up Portugal's sovereign patrimony. In these maritime areas, which are rich in living resources and, most likely, with high-value minerals, it is necessary to consider everything that derives from maritime cultural thought and experiences, from the intense traffic at sea and cyberspace supported by submarine cables, namely the circulation of people, goods and information essential to globalized economic activity, to environmental sustainability and the maintenance of the levels of progress and welfare of the populations. It is also essential to keep in mind the disputes over the delimitation of maritime spaces and the multiple challenges arising from erosive, economic and military threats, which impose security measures, as well as the dangers resulting from patrimonial threats, which require safety actions.

Under these circumstances, and associated with these geographical factors, highlighted by the imperatives of Portugal's maritime location, it is possible to identify development and security challenges of a cultural, economic, environmental, diplomatic and security nature, related to the use of the sea, which give nature to the research lines of maritime studies, whose direction and content, based on the political circumstances associated with power relations (expression processes) and the strategic circumstances related to the exploitation of force (ways of materialization), are outlined below, in order, by means of management, to set out the respective structure, translated into efficiency and efficacy (solutions and measures), and linked to what to do (objectives) and how to do it (actions) for Portugal to use the sea in line with the nation's interest.

3.2. Direction, content and structure of research lines

3.2.1. Cultural research line

The political circumstances, associated with power relations focused on maritime culture, reveal that the processes, where development and security challenges in the oceans are expressed, have a philosophical and a sociological dimension.

The philosophical expression of such processes is linked to the intellectual life and critical and reflective thinking of the Portuguese about the sea. In this context, it is evidenced in the study of sciences and arts related to the sea, as well as in the state of intellectual and moral perfection on the issues of the sea, only achieved by some national elites.

The sociological expression of these processes is translated by the set of styles, methods and material values that, along with the moral assets related to the sea, were adopted by the Portuguese. In this context, it is part of the collection of maritime objects, utensils and instruments, as well as the set of maritime bodily or mental habits, which directly serve to satisfy the needs of citizens.

The strategic circumstances, related to the exploitation of force in the field of maritime culture, according to the philosophical expression, show that the ways in which the challenges of development and security in the oceans have materialized, may be linked to the greater or lesser robustness of the Portuguese maritime mentality, which translates not only their talent to value what they were, what they are and what they want to be by using the sea, but also their ability to think of the sea as a core element of collective life, according to which they can conceive and put into practice the great maritime projects of the country.

The strategic circumstances, related to the exploitation of force in the field of maritime culture, according to the sociological expression, show that the ways in which the challenges of development and security in the oceans are materialized may be linked with those maritime projects, assumed by an inner capability or power, by virtue of which each Portuguese expresses a desire, an intention, an ambition, a tendency, a disposition of spirit, or a propensity, more or less irresistible, to engage in acts of a maritime nature. In other words, each citizen is determined to do what he is supposed to do regarding the use of the sea in the collective interest, which is commonly referred to as the national maritime will. This will be an intangible force that mobilizes the Portuguese in the pursuit

of those national maritime projects, accepting the greatest individual and collective sacrifices.

From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of the cultural research line associated with solutions and measures linked to the definition of a strategic objective. For this, according to the philosophical and sociological expressions, it is important to design the corresponding actions, aimed at preparing and employing the maritime resources, capabilities and competences necessary for the materialization of that objective.

3.2.2. Economic research line

The political circumstances, associated with power relations focused on the maritime economy, reveal that the processes where development and security challenges in the oceans are expressed are linked to the management of maritime resources, as human activities, of its exploitation and consumption, threaten the levels of sustainable use of the goods that make up the natural maritime heritage. In fact, fishing areas that used to be very productive are now on the verge of depletion, or are irreversibly destroyed, a situation that has eliminated the source of subsistence and the purpose of the lives of some coastal communities. On the other hand, the seabed is the world's last great mine of inert resources. However, their extraction may disturb ecosystems and make it impossible to preserve the living resources in the overlying water column. If the needs for maritime resources, imposed by the growth of the world's population and associated development requirements, are increased, it is likely that the powers with the most dynamic economies, with the necessary political, scientific, technological, economic and security capacities, will be less supportive of measures based on equity, solidarity and sharing, to regulate the economic exploitation of the high seas fairly and effectively. Such regulation would impose restrictions on access, for example, to inert resources in the common oceanic Area, and would strengthen the jurisdiction of powers without those capacities, to exploit them in their exclusive economic zones. In these circumstances, it seems obvious that the benefits derived from the exploitation of maritime resources will continue to be unequally shared.

In addition to the considerations made about the management of maritime resources, the political circumstances associated with power relations focused on the

economy of the sea are relevant for two other areas where the challenges of development and security in the oceans are expressed. Firstly, in the field of industrial and commercial activities on the coast, because these have associated growing conflicts of interest between economic groups and, of these, with coastal states, social groups and individuals. Secondly, in the exploitation of new economic opportunities linked, in particular, to recreational boating and nautical tourism, maritime transport, port activity, maritime logistics, fishing, aquaculture, the fishing industry, and shipbuilding and repair.

The strategic circumstances, related to the exploitation of force in the field of maritime economy, show that the ways in which the challenges of development and security in the oceans are materialized may be linked to the possibility of conditioning new restrictive measures in fisheries, whose operationalization requires great determination in the exercise of the authority of the State at sea. As for inert resources, these challenges may be associated with the promotion of the effects of unequal sharing in maritime areas, common or of third countries, through the use of scientific and technological capabilities that guarantee competitive advantage in the identification and exploitation of these resources. As for the exercise of State authority at sea, these challenges may arise from legislation and international projects that defy the nature and dimension of Portugal's maritime interests, as well as from possible difficulties in exercising fair, effective and equitable governance of industrial and commercial activities related to the sea.

From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of the economic research line associated with solutions and measures linked to the definition of a strategic objective. To this end, it is important to design the corresponding actions, aimed at preparing and employing the maritime resources, capabilities and competences necessary for the materialization of that objective.

3.2.3. Environmental research line

The political circumstances, associated with power relations focused on the maritime environment, reveal that the processes where development and security challenges in the oceans are expressed are linked to their influence on the life of the planet, because they are an immense source of energy and water supply and the main

stabilizer of the climate. Despite the evidence of these facts, Man continues to pour into the oceans products extremely harmful to maritime ecosystems, such as hydrocarbons, plastics, pesticides, heavy metals and radioactive waste. However, the environmental crisis affecting the oceans cannot be isolated from the many problems affecting the land and the atmosphere. In fact, they jointly form a large part of the problems of the biosphere, where the issues of the sea are linked to those of the land, through rivers, the atmosphere and coastal areas. Together, they form part of a broader framework that links the use of resources to the well-being of future generations and, ultimately, to the prospects of humankind's survival. As the impact on sea resources escalates, the sciences and technologies linked to the sea will become more and more relevant in environmental preservation, because they will make it possible to: highlight and reduce the impacts of human activities on the sea and coastal areas; foster knowledge of the sea and share information, and rationally meet the basic needs of a rapidly growing population.

The strategic circumstances, related to the exploitation of force in the field of maritime environment, show that the ways in which challenges of development and security in the oceans are materialized may be linked to international mechanisms of coercion, aimed at containing the degrading effects of the irrational use of the oceans. It is very difficult to accurately predict its nature and manner of implementation. However, based on past examples from other areas of human activity, it seems plausible to admit the possibility that, in a first instance, they may consist only of criticism in international *fora*. But, as the energy resulting from fossil fuels ceases to be so relevant to sustain the industrial processes that drive progress in the most developed countries, namely because, in the future, it will be possible to store electricity, the latter will advocate the use of diplomatic pressure and may resort to manipulation of public opinion and economic sanctions to force other States to comply with more demanding environmental standards. In this sense, they will contribute to environmental preservation. And yet, they will also ensure the competitive advantage of their products, manufactured using stored electricity, which, from the start, will certainly have higher financial costs. In these circumstances, a similar situation will arise, for example, to that which occurred in the early 19th century, when the United Kingdom, by mastering high-pressure steam machine technology, was able to dispense with massive slave labor in its agricultural and industrial processes, publish the Slave Trade Act (1807) before abolishing slavery (1837), use the Royal Navy to prevent the slave trade in the Atlantic, and, thus, force other European countries to use mechanical energy, so that their economy would not lose competitiveness. In this context,

one cannot reject the hypothesis that, in the future, the more developed coastal States will, occasionally, use military force to eliminate infrastructures existing in other countries that they consider to be hotspots of environmental degradation, if less serious forms of coercion are not effective, and if the threat is sufficiently important and has transnational consequences.

From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of the environmental research line associated with solutions and measures linked to the definition of a strategic objective. To this end, it is important to design the corresponding actions, aimed at preparing and employing the maritime resources, capabilities and competences necessary for the materialization of that objective.

3.2.4. Diplomatic research line

In 1982, due to the need to maintain the legal order in the oceans and to guide the use of the resources in them, the United Nations Convention on the Law of the Sea (UNCLOS) was approved. This "Universal Constitution of the Oceans" or "Law of the Sea", as it is also known, standardized the criteria for the exact delimitation of areas of jurisdiction in maritime space, the materialization of which is now beginning to give rise to lively debates, directly related to the two contrasting positions, in terms of power relations focused on maritime diplomacy, adopted by developing and developed coastal States, within the framework of the global movement for jurisdictional expansion in the oceans.

The political circumstances associated with power relations focused on maritime diplomacy, reveal that the processes where development and security challenges in the oceans are expressed are linked to the fact that developing coastal states, while having legally established their sovereignty rights and jurisdiction over vast maritime spaces, as they have enormous vulnerabilities in their political, scientific, technological, economic and security power instruments, reveal many difficulties in the definition and operationalization of maritime public policies, as well as in research, exploitation, management and defense of maritime resources. In the hope of overcoming such deficiencies, they search for external alliances with developed coastal States and invoke ethical and moral principles, which they seek to incorporate into International Law, so as

to claim their authority over their respective maritime spaces. However, in the absence of resources, capabilities and competences to exercise proper maritime governance, they feel their interests are threatened.

Developed coastal States adopt a distinctive behavior, because they question any change that is detrimental to the freedom of exploitation of the seabed and the subsoil, compatible with their interests and their superior political, scientific, technological, economic and security capacity. To this end, they move the discussions on the exploitation of the sea away from the economic benefits that their natural resources can provide, to put them in the light of major political principles. They also strive to make International Law compatible with their own interests, which means avoiding further restrictions on the exploitation of natural resources at sea. In this regard, in relation to the Area, they adopt the egalitarian rhetoric of the sea as a common resource. As for the extended continental shelf, they favor the rhetoric of equity in the cooperative management of maritime spaces, as is happening within the European Union. In both cases, developed countries aim to guarantee privileged access, in particular, to the inert resources existing on the ocean beds.

The strategic circumstances, related to the exploitation of force in the field of maritime diplomacy, show that the ways in which the challenges of development and security in the oceans are materialized may be linked to the movement aimed at making them the object of the sovereign heritage of coastal States in a considerable part of their extent. Such action is materialized by: restrictions on the economic exploitation of maritime spaces; differentiated access, resulting from political, scientific, technological, economic and security superiority; levels of exploitation resulting from states capabilities of effective use, and disconnected from the ownership of sovereignty or jurisdiction, as it is already the case with offshore oil.

From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of the diplomatic research line associated with solutions and measures linked to the definition of a strategic objective. To this end, it is important to design the corresponding actions, aimed at preparing and employing the maritime resources, capabilities and competences necessary for the materialization of that objective.

3.2.5. Security research line

The political circumstances, associated with power relations focused on maritime security, reveal that the processes, where development and security challenges in the oceans are expressed, are linked to the combination of the inoperativeness of failed coastal States, the globalization of the uses of the sea and poor international cooperation.

The inoperativeness of failed coastal States is a result of governance difficulties and ineffective functioning of their political-administrative system, circumstances that facilitate the occurrence of security disruptions in maritime activities.

The globalization of the uses of the sea in the areas of maritime transport, cyberspace communications supported by submarine cables, and resources exploitation, has exponentially expanded the number of actors and processes, the geographical area of commitment, and the networks through which people, goods, and information circulate.

The poor international cooperation is verified in the operationalization of surveillance, control and information sharing measures regarding maritime traffic, as well as in the adequacy of International Law to the strategic circumstances of the moment, in the creation of judicial mechanisms that allow the respect to national and international law, and in the commitment of naval assets in regions distant from the national territory and in areas where coastal States exercise sovereignty and jurisdiction.

The strategic circumstances, related to the exploitation of force in the field of maritime security, show that the ways in which the challenges of development and security in the oceans are materialized may be linked to four types of threats:

- The erosive ones, which remain on the margins of the international order and require it to exist, that integrate drug trafficking, illegal immigration, arms smuggling, illegal forms of fishing and piracy, activities that undermine the security of coastal regions and harm national interests;
- The systemic ones, which aim to change the international order so they can exist, and include international terrorism and attempts to access or build unconventional sophisticated weapons, taking advantage of emerging technologies, to which globalization facilitates access, with the purpose of acquiring statutes of strength that allow active interventions in international politics, dangerously disturbing the established order;
- The military ones, which aim to assert the maritime interests of the coastal State, and are mainly led by emerging maritime powers, equipped with surface ships and modern submarines, armed with missiles, capable of seriously

hindering the use of the sea and threatening the territorial integrity of other States;

- The patrimonial ones, resulting from natural accidents, or from human negligence, that disturb people's lives, degrade the quality of the environment and dilapidate material goods, and that imply safeguarding actions.

From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of the security research line associated with solutions and measures linked to the definition of a strategic objective. To this end, it is important to design the corresponding actions, aimed at preparing and employing the maritime resources, capabilities and competences necessary for the materialization of that objective.

CONCLUSIONS

Maritime studies is a new transdisciplinary academic field within social sciences, aimed at managing the challenges arising from Man's critical and ongoing relationship with the sea, in matters of development and security. It addresses the geographical challenges that arise from the imperatives of Portugal's location, and the political and strategic circumstances associated, respectively, with power relations and the exploitation of force at sea. Its purpose is to qualify complete professionals, providing them with the management tools and knowledge necessary to think like men of action and act like men of thought, within the decision-making processes, in matters of development and security related to the sea use, inherent to the activities of the public and private sectors, and aiming to facilitate the integration of the sea in the respective policies and strategies, by increasing awareness, accessibility and appreciation of its use.

Regarding scientific attributes, maritime studies has a precise subject, that can be researched and analyzed with a method that conveniently explains the essence, causality and effects of facts and events arising from Man's critical and ongoing relationship with the sea, using theoretical tools (perspectives) and practical tools (techniques), their own or borrowed from other social sciences, cyclically transformed by intellectual activity. The research and analysis method of the subject of maritime studies relates, aggregates, interconnects, integrates, modifies and enriches several disciplines of

social sciences which have distinct subjects of study. From the confrontation between the various scientific disciplines, new data emerges, which better articulate them and offer a new vision of the reality of the sea, allowing us to understand phenomena that would not be intelligible with the knowledge resulting from only one of the disciplines.

The theoretical tool of the systemic perspective, by structuring the examination of the critical and continuous relationship of Man with the sea, in terms of development and security, ensures the prevalence of organized thinking, in the search for understanding about the complexity of maritime issues faced as a whole, as well as in overcoming the movement of specialization of science and the fragmentation of knowledge about the sea. The practical tool of the transdisciplinary articulation is the determining factor in the theoretical basis, and in the research and analysis of the subject of maritime studies, as it aims at the unity of knowledge, resulting from a maximum interaction between the disciplines to which it resorts, respecting their individuality, where each of them contributes to the development of a complex common knowledge, without transforming them into a single discipline.

Maritime studies, thus structured, is very useful for: fostering research about the sea in multiple disciplines of social sciences; promoting rigorous and constructive academic debate on the sea; inspiring the understanding of maritime affairs; facilitating the development and implementation of public and private maritime policies and strategies; enhancing relevant participation in the maritime activities of national and international organizations, and fomenting the management processes of scientific and technological maritime innovation. As a consequence, it has the potential to enable a new encounter between Portugal and the sea.

Maritime studies follows a model that, with a systemic perspective, first examines the critical and ongoing relationship of Man with the sea in matters of development and security, seeking to identify the challenges that, in these areas, need to be perceived and managed. After that, and for theoretical support of maritime studies, the technique of transdisciplinary articulation is used, which enables contributions of social sciences, through a set of indirect disciplines, thus designated by their function as theoretical basis, and which are: history, which deals with the evolution of policies; international relations, directed towards the interaction of actors; political philosophy, concerned with normative issues with a vision of the future; economics, focused on maritime activities and their benefits; law, centered on constitutional norms, customs and treaties; psychology, devoted towards the personality of maritime leaders and people, and anthropology,

dedicated to the physical and cultural characteristics of these people. The same technique of transdisciplinary articulation is used to explore the structuring contributions of the social sciences, provided by the four direct disciplines, thus designated by their relevance in research and analysis of the subject of maritime studies. These disciplines are: geography, which focuses on the imperatives of the location; political science that is directed towards power relations at sea; strategy, which privileges the exploitation of force at sea, and management, which aims to achieve efficiency and efficacy on the solutions and measures to overcome the challenges of development and security. They provide a representation of the simplified examination of Man's critical and ongoing relationship with the sea, in matters of development and security.

Based on the described model to develop maritime studies, and resorting to the perspectives and techniques of the social sciences that shape the research and analysis method, starting from geography it is possible to identify the essence of the various types of development and security challenges, arising from the imperatives of the location held by each actor at sea, which give nature to the research lines of maritime studies. Based on political science and strategy, it is possible to analyze the processes of expression and ways of materializing the challenges of development and security associated, respectively, with power relations and the exploitation of force at sea, which give direction and determine the content to the research lines of maritime studies. Based on management, it is possible to implement the solutions and measures to overcome, efficiently and effectively, the challenges of development and security, which are the structure of those research lines of maritime studies. Among the essential elements for the management of those development and security challenges are the definition of strategic objectives (what to do), as well as the design of the corresponding actions (how to do it), aimed at preparing and implementing the resources, capabilities and maritime competences, so that the sea can be used in the interest of Portugal.

Jointly, both the direct and indirect disciplines of social sciences contribute to give substance to the scientific basis of the maritime studies model. However, it should be noted that, although this scientific basis is constantly being expanded and improved, it always has structural and operational limitations. Therefore, it is essential that this transdisciplinary academic field within social sciences also resorts to the creative genius, aiming to foster: the effectiveness of the formulation and operationalization of research lines; the inspired choice of these research lines, and the innovative way in which these lines of research can contribute to provide strategic advantage to the maritime actor.

It is the just harmony between the scientific basis and the creative genius that gives maritime studies a great relevance to train complete professionals, endowed with the management tools and knowledge necessary to think like men of action and act like men of thought, in the development of public maritime policies and strategies, in the management of decision-making processes and in the implementation of public and private sectors' activities.

The maritime studies research and analysis method consider that geography, focused on the imperatives of Portugal's location, enables the identification of development and maritime security challenges of a cultural, economic, environment, diplomatic and security nature, related to the use of the sea, which give nature to the research lines of maritime studies. For each of them, the political circumstances, associated with power relations, focused on the maritime culture, economy, environmental, diplomacy and security, reveal the processes where the challenges of development and security in the oceans are expressed, and give direction to the lines of research of maritime studies. The strategic circumstances, related to the exploitation of force in the fields of maritime culture, economy, environment, diplomacy and security, show the ways of materializing development and security challenges in the oceans, and determine the content of the research lines of maritime studies. From the analysis of the political and strategic circumstances associated with power relations and the exploitation of force at sea, as well as the respective processes of expression and ways of materializing development and security challenges, management will show the structure of cultural, economic, environmental, diplomatic and security research lines, which may be associated with solutions and measures linked to the definition of strategic objectives to be achieved, through actions aimed at preparing and employing Portugal's maritime resources, capabilities and competences, necessary for the materialization of those objectives.

Maritime studies, with the concept, the development model and the recommended research and analysis method, is especially relevant to Portugal, because there is no organization or law that leads other countries to renounce their maritime interests, if the Portuguese do not have full awareness, enormous intelligence and total commitment to explore opportunities and contain threats related to the use of the sea that is theirs. However, maritime studies, as a new academic field, is still at a very early stage of development of its scientific content, and therefore requires recognition and acceptance, as well as a permanent enhancement, consolidation and dissemination of its development

model and method of research and analysis, along with an urgent institutionalization, tasks where a course in maritime studies may have a relevant role in the establishment of conditions for a new strategic encounter between Portugal and the sea.

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