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**Organizational perspectives on sustainable ocean governance:
a multi-stakeholder, meta-organization model of collective action**

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Abstract

Meta-organizations (MO, i.e. organizations of organizations) are increasingly set up and used to tackle contemporary environmental or social problems. The primary focus of this novel concept has been traditional industries and cases of MO made of one single type of members, e.g. firms, often in the same industry. Little research has examined cross-sectoral or multi-stakeholder MO and their roles in the governance of economic activities, especially in the oceans, which face severe and complex grand challenges. Here we investigate the forms and conditions under which MO can effectively facilitate the joint governance of ocean problems. Our paper develops a conceptualization of ‘governing MO’ as a category of MO dedicated to sustainability and organizations’ practices self-governance. We then conduct a comparative study of ocean governance devices through the MO lens and highlight broad variations in the use of MO characteristics. Lastly, we define ideal-typical dimensions and boundary conditions for a MO model of ocean governance.

Keywords

Meta-organization, partial organization, ocean governance, organization theory, marine ecosystem, self-governance

1. Introduction

Oceans face complex, multi-scale challenges that call for collective action responses, from small-scale fisheries management to coastal ecosystems protection and global-scale climate change impacts. These problems result not simply from human activity but also from governance failure; addressing them therefore requires rethinking governance systems (Crowder et al., 2006). Further, sustainably governing oceans implies addressing problems that are also multi-actor, thus demanding extensive and diverse expertise. Tackling ocean challenges necessitates the involvement of not only various scientific disciplines, but also local and global activists and non-governmental organizations (NGOs), as well as policy-makers that belong to agencies or institutions across scales (Gopnik et al., 2012). Sustainable ocean governance also concerns diverse private stakeholders, i.e. those that belong to a vast array of economic sectors affecting marine ecosystem. Under which organizational forms can ocean problems be collectively governed while involving this variety of stakeholders?

An increasing, recent literature in management and organization studies investigates “meta-organizations” (MO), organizations that are constituted of other organizations (Ahrne & Brunsson, 2008). A growing stream of research focuses on the nature of and conditions under which such MO can contribute to governing economic activities in a way that is sustainable—for instance tackling climate change (Chaudhury et al., 2016). Little research has closely examined the relevance of this concept in the field of ocean governance. Yet, oceans face severe socio-environmental pressures, from plastic to underwater noise pollution or overfishing, which call for rethinking governance systems in an innovative way (Crowder et al., 2006). Answering recent calls for the study of MO’s contributions to sustainability transitions (Berkowitz & Bor, 2018), this paper proposes to take a MO approach to analyze ocean governance challenges.

The literature shows that MO strictly differ from individual-based organizations and present specific characteristics (Ahrne & Brunsson, 2008; Berkowitz & Bor, 2018; Cropper & Bor, 2018; Garaudel, 2020). MO are associations of organizations, whose members generally seek to retain their own identity, autonomy and resources. As a result, MO are often set up as a form of partial organization (Ahrne et al., 2016; Kerwer, 2013). Partial organization allows them to foster collaborative behaviors among competitors across sectors or even types of actors, e.g. social movements, academia, policy makers (Berkowitz & Souchaud, 2019).

Drawing on this novel MO approach (Ahrne & Brunsson, 2008), we investigate under which conditions and forms MO may help organizations tackle multi-scale, multi-stakeholder ocean problems like overfishing or climate change. We conceptualize ‘governing MO’ as a category of MO dedicated to self-coordination, joint decision and control of organizations’ practices. Our main contributions are twofold. First, we provide an integrative analytical tool to study MO. Second, we outline a model of self-governance based on four ideal-typical dimensions: 1) governing MO, 2) multi-stakeholder membership, 3) spatial embeddedness and 4) collective actorhood.

In the next section, we develop our conceptual framework based on a review of the literature on MO. Then we conduct a multiple case study of existing governance devices in the field of oceans, with the purpose of highlighting similarities and variations. After describing the cases and analyzing their MO characteristics, we draw general lessons for the establishment of oceans-related governing-MO and discuss our work’s contributions and limits.

2. Meta-organizations: an innovative way to look at collective action among organizations

A growing body of literature has been investigating the innovative way that organizations formally organize collective action at a meta level, since the pioneer work by Swedish sociologists Ahrne and Brunsson (2005, 2008).

2.1. The distinctive nature of meta-organizations

The concept of MO emerged to account for the different dynamics of collective action among organizations compared with individual-based organizations (Ahrne & Brunsson, 2008). Several recent efforts have sought to unpack MO attributes (see for a review Berkowitz, 2018; Berkowitz & Bor, 2018). Drawing on these and other colleagues' works, we review seven key characteristics of MO of particular importance for governance: formal organization, organization-based, partial organization, inter-organizational space, coopetition enabler, and regulatory intermediation (synthesized in table 1).

Table 1: MO key common characteristics

Characteristics	Implications	Advantages	Disadvantages	References
Formal organization	Creation date Collective goal	Collective action among organizations	Potential inertia due to the necessity to take decisions Decisions produce contestation	(Ahrne et al., 2007; Ahrne & Brunsson, 2008, 2019; König et al., 2012; Luhmann, 1964; Spillman, 2017)
Organization-based	Membership made of organizations Access to direct and indirect resources	Representativeness Delegation of decision-making	Limited resources Difficulty to build an identity of its own	(Ahrne & Brunsson, 2008; Bor, 2014)

Partial organization	Selective combination of organizational components Consensus	Low-cost structure	Difficulties to assess performance of members and to sanction them	(Ahrne et al., 2016; Berkowitz & Souchaud, 2019; Kerwer, 2013)
Inter-organizational space	Knowledge brokerage	Facilitated dialogue and knowledge sharing Outreach strategies	Potential lack of actorhood Risk of ghost MO	(Berkowitz, 2018; Grothe-Hammer, 2019)
Coopetition enabler	Gathers direct competitors	Neutralization of conflicts Information capture	Predatory strategies Competition among MOs or among MO and members	(Berkowitz & Dumez, 2016; Chiambaretto & Dumez, 2016)
Regulatory intermediation	Integration of levels of regulation Self-regulation Reporting mechanisms	Strength and scope of regulatory diffusion, Harmonization Legitimacy and effectiveness	Potential competition of norms and rules Risk of regulatory capture or stalemate	(Ahrne et al., 2019; Brès et al., 2019; Jordana, 2017; Vifell & Thedvall, 2012)

MO are formal organizations (Ahrne et al., 2007), where expectations about participants are made explicit (Luhmann, 1964). MO involves formalized processes that guide decision-making, rather than emerging order like networks or institutions (Ahrne & Brunsson, 2019). MO therefore possesses a date of creation that incarnates the decisions of members to pursue collective goals in a formal device. Further, MO means the development of joint decision-making processes at a meta level. By nature, a social order based on decisions raises issues of uncertainty and contestability, because decisions

engender needs for subsequent decisions (Ahrne & Brunsson, 2019). Being a MO means that decisions are in a way amplified because they are structuring two, intertwined levels of social order: the organizational member, and the MO itself. This may produce inertia and a low reactivity to external changes (König et al., 2012).

MO are organization-based, rather than individual based (Ahrne & Brunsson, 2005). This implies having organizational members, like firms, states, cities, non-governmental organizations or associations, with their own resources and identities (Ahrne & Brunsson, 2008). While traditional MO like trade associations are made of one class of members, i.e. businesses, new innovative forms of MO are increasingly developing, like civil society MO (Laurent et al., 2019) or multi-stakeholder ones that may gather firms, states and civil society (Berkowitz et al., 2017). Organizational members delegate authority and resources to the MO through their representatives. The MO gets access to both direct resources, e.g. financial fees, and indirect resources, e.g. members' social capital, human and material resources (Bor, 2014). But having organizational members raises specific issues, like the fact that members may refuse to give more resources or power to the MO, which may in turn find it difficult to create an identity of its own.

MO are often a form of partial organization (Ahrne et al., 2019; Kerwer, 2013). A partial organization is a decided order that selectively combines organizational components of membership, hierarchy, rules, monitoring, and sanction (Ahrne et al., 2016). Hierarchical power often has little strength in MO, due to the reluctance of organizational members to relinquish their autonomy (Ahrne & Brunsson, 2008; Kerwer, 2013). An implication of both being a partial organization with little hierarchical power and organization-based is that MO decision process often works on consensus (Malcourant et al., 2015). This also gives MO a low-cost structure that is easy to set up and maintain (Berkowitz, 2018). However, it may prove difficult to assess members' performance or compliance with

collectively decided rules without informal mechanisms or the intervention of an external auditor (Berkowitz & Souchaud, 2019).

Next, MO exist outside of formal organizations and among them. As such, they constitute an inter-organizational space for dialogue (Berkowitz, 2018). By making some organizational boundaries disappear, MO act as boundary organizations or even as knowledge brokers, meaning that they facilitate information sharing, production and diffusion (Berkowitz & Bor, 2018), networking (Zyzak & Jacobsen, 2019) and collective learning through reflexivity (Gadille et al., 2013). As a result, growing membership and shaping members' practices often require 'outreach' activities or strategies, i.e. the informal advocacy or lobbying of other players (Berkowitz, 2018; Berkowitz & Dumez, 2015). However, this also raises issues of actorhood, i.e. the ability not only to make collective decisions but to be addressable and made accountable as an actor (Garaudel, 2020; Grothe-Hammer, 2019). Grothe-Hammer (2019) shows that there can be very complex and structured inter-organizational spaces that actually lack actorhood. In the case of MO, this particularly casts doubt on their responsibility and accountability towards external stakeholders, like citizens, governments or society (Berkowitz & Bor, 2018). More generally, MO lacking actorhood and constituting merely a neutral space, risk ending up as ghost or dormant MO (Berkowitz & Bor, 2018).

The literature has highlighted another key characteristic of MO, which is to enable coopetition among member-organizations (Berkowitz & Dumez, 2016; Chiambaretto & Dumez, 2016). Brandenburger and Nalebuff (1996) coined "coopetition" the combined advantages of both competition and cooperation among competitors when they are seeking resolution of a larger-scale problem. Organizations can achieve more success by developing dynamic collective strategies than by working on their own. MO incorporate this very argument by gathering either direct competitors, from a given sector, or even

organizations with competing logics, e.g. NGOs and businesses. MO also allow to build synergies and economies of scale and to neutralize conflicts among actors, as it has been shown in the oil and gas industry (Berkowitz & Dumez, 2015). However, coopetition creates new types of tensions among organizational members and MO themselves, as it can be the case in the airlines industry with Lufthansa and Star Alliance (Chiambaretto & Dumez, 2016).

A last key characteristic of MO, that results from some of the previous ones, is to facilitate regulatory intermediation among different levels of governance but also different levels of stakeholders, i.e. local, regional, national, international, transnational ones (Ahrne et al., 2019; Berkowitz & Souchaud, 2019). MO can help disseminate existing formal and informal regulations (Brès et al., 2019; Jordana, 2017). Or, they, themselves, produce intermediary self-regulation mechanisms such as standards and industrial norms (Berkowitz et al., 2017; Berkowitz & Souchaud, 2019). When MO design corporate social responsibility rules or industry norms, these tend to be both highly legitimate and effective, precisely because they have been collectively decided. Paradoxically, by acting as regulatory intermediaries, MO may contribute to norm harmonization or introduce yet new rules at another level of governance. They may thus make regulatory and governance frameworks more complex.

2.2.Developing a MO analytical framework to study governance

We categorize this kind of MO for governance and governing-MO and develop an analytical tool to study governance devices through this MO lens. We have begun to outline some concrete implications that can be easily observed and collected, such as a date of creation or the type of membership. We propose to move a step further and to identify the different observable elements that can be studied for each characteristic, as table 2 presents.

Table 2: MO analytical framework applied to governance devices.

MO characteristics	Observable elements
Formal organization	Date of creation Status Scale and nature of collective goals
Organization-based	Type of members Diversity of membership Direct and indirect resources
Partial organization	Organizational components Decision-making process and mechanisms
Inter-organizational space	Type of information shared or produced Other types of activities Outreach strategies
Coopetition enabler	Types of competing players Benefits from the coopetition Types of neutralized conflicts Types of created coopetitive tensions Free riding mechanisms
Regulatory intermediation	Regulatory roles Reporting mechanisms Standardization of members' practices Internal or external accountability mechanisms Effectiveness tools

For a governing-MO, being a formal organization can translate into several observable elements like having an official date of creation and formal status. This also translates into formalizing behavioral expectations (Luhmann, 1964), specifying collective goals, which can have very different scales and natures (Berkowitz & Bor, 2018; Spillman, 2017).

Being organization-based means members ought to be organizations, e.g. businesses, civil society representatives, states. But this can also mean a diversity of membership: whether it is sectoral or cross-sectoral, mono-class or multi-stakeholder. Finally, Bor (2014) has highlighted that MO have specific ways of accessing and creating resources, that can be direct or indirect. This means identifying elements like membership fees, paying services (direct resources) or delegated, indirect resources (offices, human resources, etc.).

Next, being a partial organization means that the MO may lack certain organizational components and may work on consensus for decision-making. Membership is already implied by the previous concept. Drawing on Nielsen (2018), studying partial organization in a MO can mean focusing on who holds decision power and whether this is shared horizontally or not, on the parameters creating an understanding about collective goals, on the existence of a surveillance system, and rewards or punishments of members. Being an inter-organizational space implies that information constitutes a major output of MO (Berkowitz, 2018; Berkowitz & Dumez, 2015). This can be studied through the identification of types of information, e.g. statistics, research, produced or shared, and their frequency, as well as other types of communication and negotiation activities (Berkowitz & Bor, 2018). As mentioned earlier, MO primarily use outreach strategies, which nature and strength can therefore be observed, as well as their target (potential members, end-users, etc.)

Studying the dimension of cooperation in MO means making explicit types of competing players, benefits from the cooperation, neutralized conflicts, but also potential cooperative tensions that are created, and free riders or free riding mechanisms.

Lastly, regarding regulatory intermediation, observable elements consist of the diffusion or relay of policy rules, types of self-regulation instruments, reporting mechanisms, standardization of members' practices, the existence or not of effectiveness tools that seek to measure the impact on members, and accountability mechanisms towards internal or external members.

3. Methodology and case studies

3.1. Research design and case selection

Our paper ultimately seeks to develop a preliminary MO model of ocean governance, based on the identification of ideal-typical dimensions. To do so, we apply our analytical

framework to a variety of cases to study the use or absence of MO elements in the field of ocean governance. We develop a multiple case research design, following Eisenhardt (1989), Eisenhardt and Graebner (2007) and Yin (2003) guidelines to compare cases, i.e. to highlight similarities and variations across cases to draw general lessons and to develop theoretical contributions.

For the sake of understanding an irregular and changing phenomenon – ocean governance – we focus on six cases (see table 3): Southern California Coastal Water Research Project (SCCWRP); Ocean Action Plan; Mid-Atlantic Regional Planning Body, USA; Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR); International Sea Bed Authority (ISA); International Whaling Commission (IWC), Catalan Sand-eel Co-Management Committee (CMC). This multiple and diverse set of cases includes governance devices at different levels of action, i.e. local, regional, national, transnational or international. These devices vary in terms of status and goals but also in terms of membership, i.e. characteristics that relate to our MO framework.

Table 3: Brief presentation of the cases

Name	Creation	Status	Scale
Southern California Coastal Water Research Project (SCCWRP)	1969	Public agency	Regional (Southern California, United States)
Ocean Action Plan, Mid-Atlantic Regional Planning Body, USA	2016	Regional Planning Body, US National Ocean Council, National Ocean Policy	Mid Atlantic US Delaware, Maryland, New York, New Jersey, Pennsylvania, Virginia
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	1980	International commission part of the Antarctic Treaty System	International: governs the entire Southern Ocean (the area south of the Antarctic Convergence, roughly 10% of the global oceans)
International Seabed Authority (ISA)	1994	International organization	International
International Whaling Commission (IWC)	1946	Inter-Governmental organization	Global

Catalan Sand-eel Co-Management Committee	2012	Multi-stakeholder organization, enforced via a regional decree	Local, North of Catalunya, NW Mediterranean Sea
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To ensure triangulation, we collected two types of data: primary data on websites or through first-hand knowledge of the authors, and secondary data through literature. When an author had not been directly involved in a case and could not fact-check the analysis, we conducted a phone interview with an informed third party or sent them the case. We then applied the framework developed in the previous section. Our results take the form of narratives of the cases that highlight key analytical elements while allowing to gain abstraction (Dumez, 2016).

3.2. Southern California Coastal Water Research Project (SCCWRP)

SCCWRP is a regional-level public agency that was created in 1969 (Mearns et al., 2000). SCCWRP is composed of fourteen public agencies which represent a composite group of actors in the field of water quality management and aquatic ecosystems protection from Southern California. SCCWRP also counts four wastewater dischargers, four stormwater agencies and six agencies from the regulatory sector (SCCWRP, 2018a). As such it is relatively cross-sectoral and multi-stakeholder, i.e. different types of actors, public, private and regulators. Its goals as an organization are fourfold (SCCWRP, 2018a). First it aims to undertake and participate in scientific investigations to understand ecological systems and to serve as a respected source of unbiased coastal water quality science. Second, SCCWRP aims to develop scientific consensus on environmental issues relevant to management decisions. Third, it seeks to influence end-user water-quality management community decision-making. And fourth, its final objective is to provide long-term support expertise to the fourteen agencies in order to stimulate transformation of science into action.

Resources are mostly provided by sponsoring member-agencies through grants (Mearns et al., 2000; SCCWRP, 1974, p. 197). Members work cooperatively and support SCCWRP to provide top quality information and advice. They are motivated to interact to efficiently acquire the data needed to meet their mandates and to efficiently resolve conflicts. This cooperative dimension is facilitated by the decision-making process. SCCWRP provides the data and scientific consensus is reached by the members. The decisions to act on the science are made by individual agencies in consultation with the other agencies.

Members meet to discuss management issues quarterly and jointly examine the scientific information they have supported collecting (SCCWRP, 2018b, 2019). There is no external monitoring of SCCWRP. There are no sanctions either, especially no membership exclusion. Membership has been stable for more than 20 years, a sign that all member-organizations find it in their interest to remain. SCCWRP provides annual reports and an annual performance review of the president. All data, methods, analyses are subject to accountability to the members who have open access to all provided information and debates (SCCWRP, 2018a, 2019).

Members agree on data collection protocols, quality assurance, quality control, and independent analyses (SCCWRP, 2019). SCCWRP revisits its research plan frequently to ensure it is providing best available science to support management decisions. There is no measurable indicator to assess performance, but goals are set and reviewed every year (SCCWRP, 2018a, 2019). SCCWRP has developed outreach strategies towards internal stakeholders, as it provides presentations to member agencies upon request. In addition, SCCWRP hosts a biennial Symposium for the staff of member agencies to learn about SCCWRP research.

3.3. Ocean Action Plan (OAP)

The Ocean Action Plan was created by the Mid-Atlantic Regional Planning Body and was published in 2016 in the United States (LaBelle et al., 2016). Its scale is regional as it covers Mid Atlantic US, i.e. Delaware, Maryland, New York, New Jersey, Pennsylvania, Virginia. Through Mid-Atlantic regional ocean planning body, Federal agencies, States, Tribes, and the Mid-Atlantic Fishery Management Council worked together with stakeholders on ocean management solutions. Membership consists of federal agencies that are required to join under executive order, but also states and tribes as voluntary members, but with fewer resources. OAP is multi-stakeholder, since membership spans across levels of governance – federal, states, tribes – but not cross-sectoral since it does directly not involve private actors (LaBelle et al., 2016; Raymond-Yakoubian & Daniel, 2018).

This initiative does not result from legislation but from presidential executive order, so resources are limited (Science and Technology Policy Office, 2016). This is particularly pressing for the states and tribes. Members are not direct competitors and they are willing to cooperate because future regional planning decisions may affect their interests. Decisions follow thorough discussions and debates among members are made by consensus. To date, the decisions have been limited to agreeing on setting up a data portal and a planning process (Science and Technology Policy Office, 2016). The actors have set some guidelines and responsibilities for future steps, but these are still subject to negotiation (LaBelle et al., 2016). There is no monitoring, no sanctions and no agreed upon monitoring mechanisms. The Federal Agencies in the OAP are accountable to the National Ocean Council for draft plans on schedule and compliance with the Presidential Executive Order (Science and Technology Policy Office, 2016). The states and tribes are voluntary participants.

To date, the main outcome was an approved plan in 2016. No actions have been taken yet, beyond setting up the data portal for information sharing and development of the approved plan. While members are encouraged to use identified best practices for sustainable ocean management, implementation is only voluntary (LaBelle et al., 2016). The MO has not developed tools to measure its own effectiveness. Finally, there is no outreach to engage new members, but some outreach activities are aimed at engaging stakeholders in ocean industry and civil society.

3.4. Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

The Commission for the Conservation of Antarctic Marine Living Resources or CCAMLR, was established by an international convention in 1982. The Commission, through its Convention, governs the entire Southern Ocean; the area south of the Antarctic Convergence, roughly representing 10% of the global oceans (The Convention on the Conservation of Marine Living Resources, 1980). It aims to regulate the use of economically valuable resources while protecting the integrity of the Antarctic marine ecosystem, all under conditions of rapid environmental change (Rayfuse, 2018). In line with principles of peace, science, and environmental preservation embodied in the Antarctic Treaty System, CCAMLR has the explicit objective to ‘conserve’ marine living resources (Berkman et al., 2011; Jacquet et al., 2016; The Convention on the Conservation of Marine Living Resources, 1980).

CCAMLR Membership is comprised of 24 sovereign nations and the EU. Membership is limited to nations, but they represent cross-sectoral and multi-stakeholder concerns, including research, fishing and conservation interests, primarily (Dodds et al., 2017; Liggett et al., 2017). Recent additions to membership have included more fishing

nations, which now make up the majority of member States (Brooks, 2013). The CCAMLR Secretariat operates by membership fees, as well as fishery notification fees (see e.g. CCAMLR, 2018a). The members that comprise CCAMLR also provide resources in the form of research, monitoring, and enforcement capabilities, through human, infrastructure, and financial resources. The motivation to participate is to protect and promote sovereign interests in the context of the international convention (Dodds et al., 2017).

With CCAMLR, all decisions are made by consensus, including scientific criteria for protection or for allowing fisheries (CCAMLR, 1982). Members are responsible for monitoring their national fishing activity in the CCAMLR Area (Miller & Slicer, 2014). CCAMLR is advised by a Scientific Committee, which is further advised by Working Groups dedicated to Ecosystem Monitoring and Management, Fish Stock Assessment and other topics. Collectively, these science teams support research, monitor the status of living resources and provide guidance to CCAMLR (Miller, 2011). As for sanctions, no member has ever been removed from CCAMLR. However, there are a variety of mechanisms that could be viewed as sanctions. CCAMLR collectively evaluates member compliance annually through its Standing Committee on Implementation and Compliance (see e.g. CCAMLR, 2018a). If a member is non-compliant, there are various formal, e.g. adding to the IUU vessel list, or informal sanctions, e.g., shaming. For good behavior, a State may continue to be granted fishing rights or be openly praised on the meeting room floor (both informal rewards) (see e.g., CCAMLR annual meeting reports).

Commission States are responsible to each other for their actions and responsibilities. A variety of other organizations and stakeholders work to hold CCAMLR accountable, these include civil society (via NGOs and media), environmental organizations, industry, science NGOs, and others, e.g., the International Union for

Conservation of Nature, or Agreement on the Conservation of Albatrosses and Petrels. Some of these organizations possess observer status to participate to CCAMLR annual meetings. They can make statements in the meeting, submit documents, and interact with CCAMLR members directly (CCAMLR, 2019b).

CCAMLR established guidelines for developing marine protected areas (MPA) in 2011 (CCAMLR, 2011). It established the South Orkney Islands MPA in 2009, and the Ross Sea MPA in 2016 (the latter took six years of negotiations) (Brooks, 2017). They have also established numerous scientific fishing zones to assess the effects of fishing for krill and toothfish, as well as sustainable management rules, seabird bycatch mitigation measures, ban on trawling and gillnets (CCAMLR, 2018b)

Performance of members is assessed in the form of compliance, i.e. whether member states are complying with rules. Compliance is evaluated at the CCAMLR annual meetings. Achieving mandated goals is also similarly assessed (see e.g. CCAMLR, 2018a). Outside of CCAMLR, practitioners and scholars have evaluated CCAMLR on similar metrics, e.g. compliance, sustainability, and their reports are publicly available (e.g. Cullis-Suzuki & Pauly, 2010; Lodge et al., 2007). CCAMLR also did an external performance review in 2008 (CCAMLR Performance Review Panel, 2008) and in 2017 (CCAMLR Performance Review Panel, 2017). Various outreach activities occur on a national and international level. For example, some CCAMLR States provide forums for stakeholder engagement and others produce media or reports for their governments, industry or the public (e.g. Commonwealth of Australia, 2016; United States Department of State, 2017). CCAMLR itself also has an up-to-date website; they have a media team and provide media while also engaging with other media outlets (CCAMLR, 2019a).

3.5. International Seabed Authority (ISA)

International Seabed Authority (ISA) is an autonomous international organization established under the 1982 United Nations Convention on the Law of the Sea and the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (Montego Bay, 1982). It aims to organize and control seabed and ocean floor activities in the area beyond the limits of national jurisdictions. ISA has 168 countries as full members, as well as observer states, observer intergovernmental and UN organizations, and observer non-governmental organizations. Full members are limited to states, but observers are more cross-sectoral.

Resources derive from members' contributions, which are decided every two year by the Assembly. Members are willing to join for two main reasons: first, to gain access to exploration contracts, second to benefit from wealth redistribution (Lodge et al., 2014). While a 1994 agreement states that all decisions "should" be based on consensus, in practice only distributional decisions are taken by consensus whereas procedural questions, communications and agreements or policy questions are decided by a complex form of majority rule (Posner & Sykes, 2014). The Assembly of the Authority consists of all ISA members. This Assembly constitutes the "supreme organ" with the power to establish general policies by approving rules, regulations, and procedures (see e.g. International Seabed Authority, 1994). These decisions may address prospecting, exploration, and exploitation in the 'Area', i.e. beyond national jurisdictions (Jaeckel, 2016). For instance, in 2000, the Assembly took its first action by approving "Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area", as first formulated by the Council (Lodge et al., 2014).

So far, there is no monitoring, no sanctioning and no external accounting, by ISA itself (Jaeckel, 2016). There are no reporting mechanisms either, which would be needed

to increase transparency (Ardron et al., 2018). While ISA is developing regulatory frameworks for commercial mining, it has no power to ensure that contractors comply with environmental standards once the contract has been awarded (Jaeckel, 2016).

3.6. International Whaling Commission (IWC)

The International Whaling Commission (IWC) is an inter-governmental organization set up to implement the International Convention for the Regulation of Whaling (ICRW), in 1946 (IWC, 1946). It aims to ensure the proper conservation of whale stocks and a sustainable development of whaling industry (Gillespie, 2001). Membership of the IWC is open to any country in the world that formally adheres to the 1946 Convention (IWC, 1946). Each member country is known as a Contracting Government and represented by a Commissioner, who can be assisted by experts and advisers (IWC, 2018b).

Membership of the IWC currently includes a diversity of potentially rival actors: whaling nations, anti-whaling nations and conservation-oriented nations. There are no businesses or NGOs in the membership though they can be accredited to observe meetings and participate in intersessional working groups (Gillespie, 2001). They also conduct advocacy activities aimed at delegations. There are strong divisions between nations with active whaling or “scientific” whaling interests and those with conservation or anti-whaling interests with little consensus on the use of scientific knowledge (Gillespie, 2001). Indeed, scientific uncertainty appears to be used to serve one political agenda or the other (Heazle, 2004).

Resources are based on financial contributions from Contracting Governments (IWC, 2018b). These fees constitute IWC's core income, but a significant part of resources results from additional voluntary donations. Non-governmental organizations

(NGOs), industry bodies, or sometimes contracting governments make these donations to support specific work programs (IWC, 2018b).

During annual meetings, the Scientific Committee provides scientific assessment updates to the full Commission through an annual report (Vernazzani et al., 2017). The Commission discusses and approves them or otherwise, at its biannual plenary meeting. The Commission also define new rules for whaling, whale watching, designation of whales' sanctuaries and other proposals from the membership (Punt & Donovan, 2007). The IWC authorizes catch quotas based on the Scientific Committee advice, then members must comply with those limits (Punt & Donovan, 2007). They also need to report exploitation. Permits for "scientific whaling" are used to collect various types of data. Aboriginal whaling, justified by cultural reasons and conducted by indigenous people, is managed through a strict process that guarantees the sustainability of their hunts, including animal welfare considerations (Reeves, 2002). The IWC has an Infraction Committee. However, it does not sanction members, and there is no external accounting. In the context of the recently agreed renewal of Aboriginal Subsistence quotas (2018), any infraction can automatically freeze the assigned quotas (IWC, 2018a).

The Scientific Committee has assessed populations for potential exploitation through a rigorous scientific process, i.e. "Implementation Reviews" (Punt & Donovan, 2007). All species that have passed this assessment appear in good shape, e.g. all eight populations subject to Aboriginal Subsistence Whaling and several populations of minke, Bryde's whale fin or humpback whales (*Intersessional Report of the International Whaling Commission*, 2018). The IWC has not yet developed effectiveness tools to assess either its own effects on practices or members' compliance with the guidelines (Vernazzani et al., 2017), but there is an ongoing governance review that could lead to

the definition of indicators (*Intersessional Report of the International Whaling Commission*, 2018).

3.7. Catalan Sand-eel Co-Management Committee (CMC)

The Sand-eel Co-Management Committee was set up in 2012 to sustainably and collaboratively manage fisheries at a very local level, i.e. the north-east part of Catalonia (Lleonart et al., 2014). Back then, a regulatory change at the European level compelled fisheries to provide a management plan with scientific input. Lacking the latter, the sand-eel fishery was first shut down in March 2012. In response, the fishing sector reached out to civil society, research centers, and the administration to find a solution. A co-management committee was first experimented with as an ad-hoc pilot project. Given its success, it was then institutionalized through a decree by the Catalan government in 2018 which established co-management committee as a norm for fishing governance in the region (*2030 Maritime Strategy of Catalonia. 2018-2021 Strategic Plan*, 2018). The sand-eel co-management committee is quadripartite. It gathers 1) fishing companies and boat owners through an association called a *cofradia* (brotherhood), 2) a marine biology scientific institution (ICM), 3) two NGOs (WWF and Greenpeace) and 4) the Catalan regional government and the central Spanish government (Lleonart et al., 2014). Human and material resources are delegated by each organizational member.

Each member organization possesses equal voting rights in the monthly committee meetings. With all voices treated equally, there is a high consensus among members and the decision-making process is considered to be more legitimate than when imposed from the outside (Bjørkan et al., 2019). Members are setting target catches and treatments for the Catalan sand eel. Fishing companies, members of the committee, are compelled to follow several rules. First they must sell their catches through the *cofradia's*

auction house. Second, boat owners are compelled to keep track of days at sea, fishing time, catches by species, by-catch, geo-localization. Technicians are hosted on boats to collect samples. Other fishing rules apply, beyond the committee, i.e. respecting seasons, time limitations, fishing gear's characteristics, among others (Lleonart et al., 2014).

Self-monitoring is conducted by fisherpeople, through the cofradia. Scientists conduct stocks monitoring thanks to data collected through the cofradia. The regional government still conducts external monitoring, which is not part of the committee's mandate. There is no formal sanctioning mechanism at the level of the committee itself. However, fishing sales made above the limit were not paid to the fisherpeople, rather they were donated to fulfill social purposes (Lleonart et al., 2014). In addition, the cofradia could informally sanction the fishing companies that are not compliant, for instance by preventing them to go to sea for a few days. And the regional government can issue fines. Lastly, the committee draws on a standardized scientific methodology taking into account a precautionary approach for fishing targets (Lleonart et al., 2014).

In 2013, the co-management committee received the WWF Award for conservation because of the successful recovery and protection of sand eel. In 2018, it was also awarded by the United Nations Food Organization Administration. In addition, the committee has been conducting campaigns of communication towards citizens, consumers, fishermen and fisherwomen to outreach them on the importance of supporting local fisheries and more sustainable economic practices.

4. A MO lens on ocean governance

After describing the six cases, we now further highlight their governance features and how they relate to MO characteristics. We also analyze elements that may motivate member-organizations to participate, obstacles that may make collaboration difficult, and evidence of success of collaboration. Table 4 presents these elements.

Table 4: Similarities and dissimilarities of studied ocean governance devices

Cases	MO characteristics	Motivations to participate	Obstacles/difficulties	Evidence of success
SCCWRP	Formal organization, Organization-based, Inter-organizational space, Cross-sectoral, multi-stakeholder, collective research, cooptation	Cost pooling, legitimizing produced research	Regulatory responsibilities vs. implementation costs, political resistance	Fostering open discussions of data and interpretation. Reduced conflict coming to decisions.
Ocean Action Plan	Organization-based, Inter-organizational space	Presidential Executive Order	Different mandates, culture, language and priorities	More functional cooperation across agencies
CCAMLR	Formal organization, Organization-based, Inter-organizational space, no hierarchy, information production, Self-regulation	Consensus support for national activities	Disagreements on priorities and interpretation of Convention language, Geopolitical roadblocks	Scientific rigor, Progress toward consensus decision making, Sustainable fisheries stocks
ISA	Formal organization, Organization-based, Inter-organizational space, self-regulation	Increased ability to self-determine	Asymmetry of power, marginalization and inequities, Geopolitical roadblocks	Progress toward consensus decision making,
IWC	Formal organization, Organization-based, Inter-organizational space, self-regulation,	Increased ability to self-determine	Asymmetry of power, marginalization and inequities, sheer numbers of fishers, Geopolitical roadblocks	Progress toward consensus decision making, sustainable use of whale populations
Sand-eel Co-Management Committee	Formal organization, organization-based, Inter-organizational space, multi-stakeholder, cooptation, self-regulation, Outreach	Increased ability to self-determine Threat on the sector	Risk of illegal fishing outside of the framework, long-term trust needed, intermediary actors needed, collaborative mindset needed	Increase of fish stocks and habitat conservation, economic dynamism, international awards

4.1. Variations in the use of MO characteristics

Our multi-case study suggests the existence of governance devices drawing more or less on MO characteristics, with varying degrees of formality. SCCWRP for instance presents characteristics of an informal governance device, with a clear MO form. SCCWRP indeed is an organization of organizations which informally facilitates governance of the water quality sector by collectively producing data.

Conversely, the Ocean Action Plan constitutes a formal governance and policy making device decided through a presidential executive order. However, it presents only few MO characteristics. Indeed, the Ocean Action is made of other organizations and constitutes an inter-organizational space for discussion and policy making but it is not a formal organization itself. CCAMLR, ISA and IWC also constitute formal governance devices but based, this time, on an international treaty rather than national policy. They cumulate several characteristics of MO. Lastly, the co-management committee has a hybrid status. While it constitutes a multi-stakeholder MO, it is also a formal governance device that however emerged bottom up, from local needs of economic players.

Our multi-case study also highlights very different levels of regulatory intermediation and self-regulation, i.e. on activities such as reporting, monitoring, or developing industry norms. Some devices such as SCCWRP or fisheries co-management committees are relatively advanced where self-regulation and accountability towards stakeholders is concerned. They either have implemented reporting mechanisms or even jointly designed fishing plans. Other devices however, such as ISA, have no accountability procedure, or even little collective actorhood, like the Ocean Action Plan.

4.2. Strengths and weaknesses of the devices

With such different features and different objectives, these governance devices may offer diverse advantages for members. Motivation to participate in SCCWRP may

result from cost pooling and the legitimizing effect of collectively produced research. In the cases of ISA and IWC, the increased ability to self-determine may be what most appeals to members. It also applies to the Co-Management Committee where, in addition, members are motivated to collaborate due to a very risk on the sector itself. Indeed, anthropic pressures threaten fish stocks and the fishing sector of disappearance. Finally, in the case of CCAMLR, it is the consensus and support for national activities resulting from collaboration that may motivate members.

Various obstacles or challenges in collaborating may arise, as Table 4 shows. In the case of SCCWRP, there may be high implementation costs and a strong political resistance. In the case of Ocean Action Plan, members have different agency mandates, culture, language and priorities, all of which may make dialogue and progress difficult. In CCAMLR, members may strongly disagree on priorities and there may be great variations in the interpretation of the Convention's language. These may lead to geopolitical roadblocks, as it has been the case in the past (Brooks et al, 2019). In ISA as well, geopolitical roadblocks may constitute the main obstacle to effective governance, resulting from asymmetries of power, marginalization and inequalities among members. IWC presents very similar challenges due to its formal nature based on an international treaty. In very local devices like the Catalan Fisheries Co-Management Committee, trust among participants seems of utmost importance. In addition, an important change of mindset occurred from competition towards collaboration.

4.3. Assessing the impact of the governance devices on practices

Our multi-case study shows that evidence of success can be hard to find as governance devices seldom provide effectiveness measures or tools. This relates to the ambiguity around what effectiveness or performance means for a MO (Berkowitz & Bor,

2018; König et al., 2012). This is the reason why we focused on pinpointing concrete elements of positive impact that were relevant to each case.

In SCCWRP, we identified two pieces of evidence of success: first their ability to foster open discussion about data and their interpretation, second the resulting dramatically reduced conflict in coming to decisions. The Ocean Action Plan's main piece of evidence would be encouraging a more functional cooperation across agencies. For CCAMLR, scientific rigor, progress toward consensus decision making and sustainable fish stocks constitute three main proofs of success. At ISA, it would mostly be progress toward consensus decision making. For IWC, similarly to other formal governance devices based on international treaties, one success criterion is making progress toward consensus decision making, but another also consists in reaching sustainable use of whale populations. Lastly, since the implementation of the sand-eel co-management committee, scientists observed enhanced in fish stocks and habitat conservation and local economic dynamism. This explains why Catalonia received international awards, which may also be used as evidence of success.

Generally, we could assume that organization-members learn from their experience over time and that this affects the development of governance devices. It may also be that newer devices can more easily benefit from past successes and failures in ocean governance, but also be more innovative in their approaches to member-participation. In addition, setting up new devices may also allow organizations to bypass geopolitical roadblocks in which older devices may be stranded.

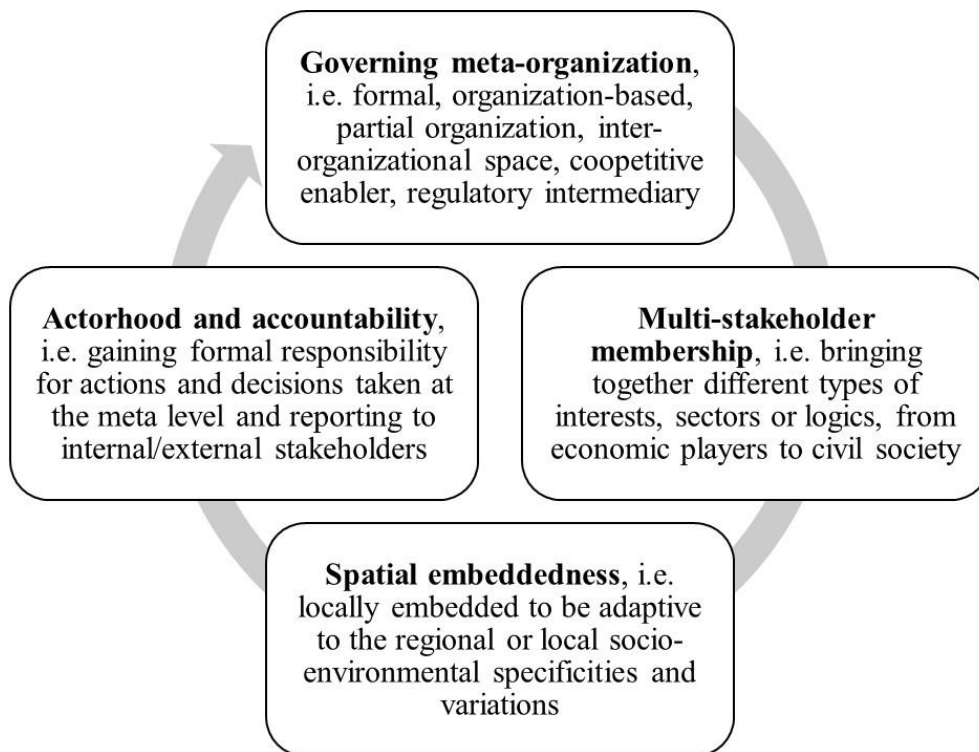
From these analyses, two cases emerge as particularly interesting for the coordination of multiple stakeholders to tackle environmental or social problems related to the ocean or water: SCCWRP and the Catalan fisheries co-management committee are two extreme and successful cases of governance devices that constitute MO and that

address problems in the ocean. We propose to draw specific lessons from these cases and to use them, in combination with the theoretical framework, to develop a multi-stakeholder, MO model of ocean governance.

4.4. Towards a multi-stakeholder, MO model of ocean governance

Drawing on the literature review and on the case studies' insights, especially from SCCWRP and the Catalan case, we develop a model of ocean self-governance based on an "ideal-type", i.e. one that would gather all the advantages and strengths of meta-organizations identified until now. Figure 1 synthesizes this ideal-type.

Figure 1: Ideal-typical dimensions of multi-stakeholder meta-organization ocean governance



We suggest that to collectively address ocean problems with several stakeholders, organizations can jointly organize self-governance following four main ideal-typical dimensions: setting up a 'governing meta-organization', with a multi-stakeholder membership, spatial embeddedness, and addressability, i.e. possessing collective actorhood.

First, the governance device needs to be a *governing meta-organization*, to enable decision-making among organizations, their coordination and the control of their practices and impact on natural resources. By governing meta-organization, we mean that the collective action device needs to meet MO governance characteristics (see Figure 1): it needs to be a formal organization, that is organization-based. It is also a partial organization, that at least jointly produces rules, maybe monitors and more or less sanctions members. But hierarchy may be weak or at least shared among members. It also needs to offer a neutral inter-organization space for collective dialogue and negotiations, to facilitate cooperation and to intermediate regulation.

Second, in the context of oceans and climate crisis, the governance device needs to involve *multiple, cross-sectoral stakeholders*, i.e. to bring together not just one single class of actors, but several ones: at least businesses, scientific institutions, and civil society representatives. Indeed, the objective is to engage economic players, while considering more long term views, and making evidence-based decisions. In that sense, different types of stakeholders create a ‘multi-referentiality’ (Apelt et al., 2017) in the meta-organization, i.e. the interaction of economic, political, scientific, social references or paradigms. This raises decision-making issues and requires parties to agree on a shared goal, with a strong commitment from all parts. However, the multi-stakeholder meta-organization also benefits from the diversity of expertise and references, which is crucial for the governance of ocean problems.

Third, the multi-stakeholder meta-organizations (MSMO) must also be to some extent *spatially bounded* and above all *spatially and locally embedded*. We call this ideal-typical dimension of the model ‘spatial embeddedness’. This is essential to address ocean problem in their local context. In other words, spatial embeddedness enables the MSMO

to be as adaptive and responsive as possible to regional or local specificities and changes (Bjørkan et al., 2019).

Fourth and last, the spatially-embedded MSMO must be addressable, i.e. it must gain *collective actorhood* to be made fully accountable and responsible for the decisions it takes collectively on behalf of member-organizations. Gaining actorhood at a meta-level means that the meta-organization itself is recognized as an agent and is attributed the capacity of collective deliberation and responsibility (Grothe-Hammer, 2019). This fourth ideal-typical dimension also implies taking responsibility for the impact, or lack of impact, on business practices as well as on marine ecosystems. To gain actorhood and to build accountability, the meta-organization may for instance implement reporting mechanisms at the meta level, towards internal (members) and external (citizen) stakeholders.

These ideal-typical dimensions constitute the bases for a model of sustainable ocean self-governance, i.e. coordination and control of organizations in order to tackle ocean problems, such as overfishing or underwater noise pollution.

5. Discussion

In ocean resource management, problems often result from fragmentation and mismatches in governance (Crowder et al., 2006). The diversity of players involved in marine resource management, and the complex, diverse and multi-scale problems they confront, from biodiversity to human rights of local communities, from underwater acoustic pollution to acidification of oceans, call for new innovative forms of governance.

In this paper, we draw on recent MO theory and empirical cases to bring new insights to ocean governance. The objective was to identify organizational forms, and their boundary conditions, to foster effective cross-sectoral, multi-stakeholder collaborations to tackle concrete multi-level problems. We also outlined ideal-typical dimensions, i.e. a multi-

stakeholder, spatially embedded, addressable governing-MO, for an ocean governance model.

5.1. Theoretical contributions

Our paper contributes to the literature on MO by providing a conceptualization of ‘governing meta-organizations’ geared towards ocean governance. Reviewing the recent scholarly works on the topic, we unpack seven key MO characteristics that are particularly significant for governance: being a formal organization, that is organization-based, and a partial organization, but is also acting as an inter-organizational space among members, thus enabling cooptation and facilitating regulatory intermediation. Further, we conceptualize ‘governing-MO’ and move beyond recent fragmented efforts to define MO as partial organization (Ahrne et al., 2016, 2016, 2019), as an inter-organizational space (Berkowitz, 2018) or as cooptation enabler (Chiambaretto & Dumez, 2016). By identifying observable elements for each key concept, we operationalize these ‘governing MO’ characteristics. We provide an analytical tool that can be used to study and compare not only governing-MO among themselves, but also MO and other formal or informal governance devices. Ultimately, we contribute to recent scholarly efforts to refine our understanding of the variations in forms of MO (Garaudel, 2020; Spillman, 2017) and the boundary conditions of sustainability transitions relying on MO (Berkowitz & Bor, 2018).

These theoretical contributions nonetheless have their limitations, which also offer research opportunities. The main limit lies in the comparative case study and the model development, which does not offer an in-depth understanding of the concrete functioning of governing-MO. Therefore, future studies could investigate the operability of our model. First, it could be fruitful to follow the development and decision-making processes in specific cases like the SCCWRP and CMC, which provided the empirical bases for our model. Second, it would be crucial to theoretically and empirically assess

the effects of MO membership diversity. For instance, CMC constitutes a unique case of high membership diversity, with scientific, political, social and economic references. So this raises the question, to what extent can ‘governing-MO’ with high membership diversity be efficient and be transferable to other problems?

Ultimately, due to difficulties in assessing MSMO’s effectiveness, this paper has only focused on certain evidence of success. MSMO and ‘governing-MO’ also present organizational weaknesses, in particular in terms of monitoring and sanctions. More research is needed on MSMO to 1) better assess their effectiveness compared to non-multi-stakeholder MO, and to 2) identify potential venues for enhancement of our model. To do so, it would be crucial to further develop tools assessing positive or negative effects of MO governance on not only marine resources and more generally sustainability levels, but also on MO members and nonmembers.

5.2. Policy implications

In a recent paper, Xu and Ramanathan (2017) develop climate risk scenarios, showing that there is a 5% probability of “being fully in the unknown risk category, which also includes existential threats for everyone” (p. 4). This definition of a new risk category as existential for humanity, shows the urgency of taking collective action to address grand challenges like climate change or biodiversity loss. But current governance frameworks and devices have rarely succeeded in fostering the cross-sectoral collective action that is necessary, or fast enough to provide solutions to local and global problems.

Our ideal type of MSMO governance may facilitate the management of emerging or long-standing sectoral or cross-sectoral ocean issues. This may include underwater noise pollution, a problem which concerns various sectors from oil and gas to shipping or renewable marine energies (Paxton et al., 2017). Other examples of topics that would benefit from governance through MO may include marine invasive species (Malpica-

Cruz et al., 2016) or sand overexploitation for the construction industry (Torres et al., 2017). Bringing businesses, scientists, civil society and local administrations into the governance of such issues could hold a key to collectively solving these problems.

If governance cannot engage the right sectors, the right organizations, including businesses and NGOs, it cannot be effective at solving major problems that our societies are facing, like island nations threatened with submergence due to sea level rise. Or communities poorly prepared for deeper droughts, more intense hurricanes or wildfires associated with climate change. Despite the urgency, organizations, and larger sectors, but also disciplines in science, fight for their narrow interests when the need for collaboration and interdisciplinarity has never been greater. Our paper highlights a promising way to organize collective action for ocean challenges through multi-stakeholder governing-meta-organizations that gather actors from different sectors or spheres of the society, that are locally embedded and that take responsibility for their collective decisions.

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