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The Missing Layers: Integrating Sociocultural Values Into Marine Spatial Planning

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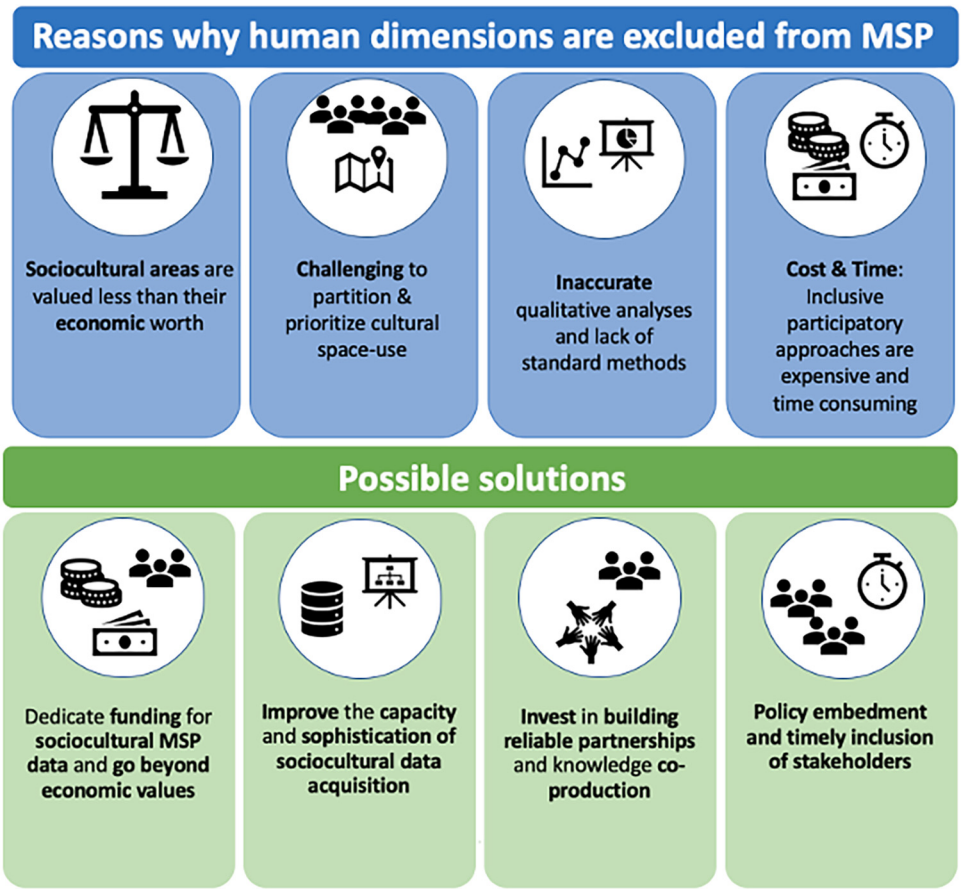
Marine Spatial Planning (MSP) is a relatively new approach to ocean management and has been widely implemented worldwide. Ideally, MSP should be established as a public process that analyzes and distributes human activities across space and time to achieve ecological, economic and social goals, which historically have been accomplished exclusively in the political arena. However, in most cases MSP seems to be driven primarily by economic interests rather than by sociocultural goals. In this paper, we discuss how integrating the missing sociocultural layers into MSP can help to reduce governance rigidity, promote adaptability in decision-making, support environmental justice, and improve MSP acceptance and uptake. In particular, we focus on identifying possible points of connection between MSP and frameworks based on social-ecological system theory, including co-management and other democratic and empowering alternatives. We conclude by proposing a new definition of the MSP process that is more inclusive, and mindful of users' rights and sociocultural objectives. If we bridge the gap between the dominant economic rhetoric and a *de facto* sociocultural-ecological system approach, we are likely to improve the chances of the MSP process succeeding on both the human and nature fronts.

Keywords: ecosystem based management, human dimension, Marine Spatial Planning, stakeholder participation, sociocultural values, inclusive process

PAST AND CURRENT MARINE SPATIAL PLANNING PRACTICES

Marine Spatial Planning (MSP) has rapidly gained popularity and become one of the most endorsed alternatives for the sustainable management of ocean space. In some places, MSP has even become a requirement for some public lenders to ensure the sustainable use of ocean spaces (Smith and Jentoft, 2017). The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines MSP as a "public process of analyzing and allocating the spatial and temporal distribution



GRAPHICAL ABSTRACT

of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process" (Douvere, 2008). Therefore, MSP is a process that seeks to mediate conflicts among marine resource users (e.g., fisheries, aquaculture, shipping, tourism, marine mining, energy production). In opposition to a sectoral approach, MSP also potentially allows seeing cumulative impacts of all these activities (Flannery et al., 2016). MSP recognizes the legal, political, economic and ecological complexity of ocean governance (Ehler and Douvere, 2009). The operationalization of MSP can be done through a cyclical and iterative process that includes continuous monitoring, evaluation, and revision of goals, data and results. Thus, MSP is supposed to incorporate new information over time and adapt its objectives and measures according to the evolution of the socio-ecological system (**Figure 1**).

Marine Spatial Planning has also been described as the spatial component of ecosystem-based management (EBM) (Ehler and Douvere, 2009). Although EBM encompasses a broad range of tools that are not traditionally labeled as "spatial" (e.g., fishing gear modification, and landing control, etc., Gilman et al., 2019), ultimately the application of every "non-spatial" tool could have spatial boundaries dictated by the limits of maritime jurisdictions (Dunstan et al., 2016). In this context, MSP is designed to offer countries an operational framework where spatial and non-spatial needs of biodiversity conservation and sustainable development can be balanced. Ehler and Douvere (2009) suggest that achieving this balance is one of the key components of any EBM approach.

The origins of MSP can be traced back to the 1980s, in the context of marine conservation planning (Day et al., 2002; Santos et al., 2019). Indeed, the Great Barrier Reef Marine Park in Australia is commonly viewed as a "pioneering example" of MSP (Jay et al., 2013). Currently, over 70 countries are developing MSP initiatives, with approximately 70% of them still in an early development phase (Santos et al., 2019; **Figure 2**). In 22 countries, MSP initiatives have already been approved by the government and are in force, representing almost 27% of the world's exclusive economic zones (EEZs) (Claus et al., 2017). These include cases in which MSP covers the majority of the domestic waters of Belgium, Germany, the Netherlands, Norway, China, and Belize, but also where MSP only covers a small region under national jurisdiction, such as the United States, Canada, and Croatia (IOC-UNESCO, 2020)[1].

[1]A complete list of countries using MSP can be accessed at http://msp.ioc-unesco.org/world-applications/overview/

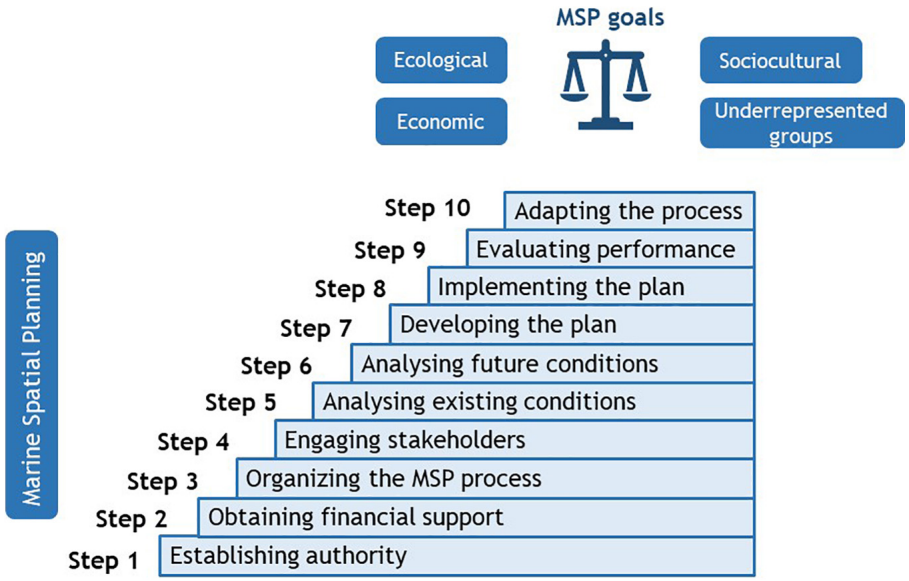


FIGURE 1 | A schematic representation of the Marine spatial planning implementation process. The missing layers must be addressed in all steps.

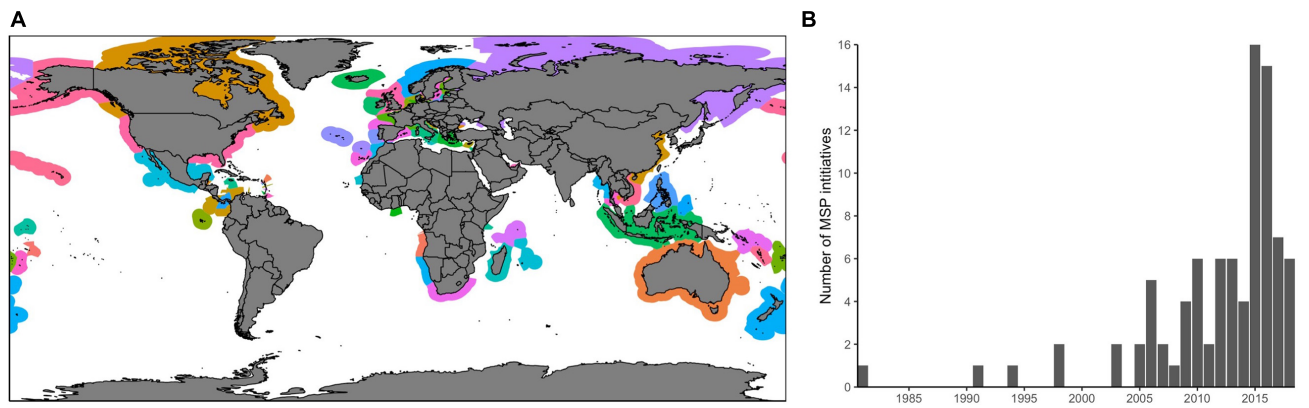


FIGURE 2 | (A) Map of countries exclusive economic zones (color) that have implemented MSP initiatives. Note that MSP does not cover the entire extent of EEZs shown. **(B)** Number of MSP initiatives per year. Data from http://msp.ioc-unesco.org/, accessed October 2020. Year is considered the first year mentioned in the comments section of the IOC-UNESCO MSP inventory, which can be the first year a draft plan was submitted or the year an MSP plan was passed by the government.

Throughout the MSP process, the responsible authorities should incorporate input from all stakeholders and community members, seeking a final zoning design that would minimize negative impacts on livelihoods and earn broad community support. Establishing legal zones without proper representation of local communities (e.g., indigenous fishers) can lead to strong opposition and/or inefficient management. Local communities may simply perceive MSP as a strategy to prevent their access to resources upon which their livelihoods depend (Johnson et al., 2020). Nevertheless, addressing lack of representativity is not an easy task for planners because spatial data that reflect the social and cultural dimensions (or more generally human dimensions; here the two terms are used interchangeably) of a given site are not easily produced. For example, MSP assumes that spatial layers containing the value of each location within an area for traditional communities must be developed and incorporated into the analysis. Yet, non-monetary values are not easily quantifiable and can be easily misinterpreted (Outeiro et al., 2019). The use of proper qualitative methodologies and a longer drafting stage could help to integrate sociocultural missing layers and underrepresented groups' rights in the MSP process (discussed below).

This perspective piece is a product of the Marine Spatial Planning Workshop "Balancing social, economic, cultural and ecological objectives" organized by the Interdisciplinary Marine Early Career Network (IMECaN). The lack of balance among

MSP objectives was a common theme identified across multiple examples in the 3-day workshop.

THE MISSING LAYERS: SOCIOCULTURAL VALUES AND UNDERREPRESENTED GROUPS RIGHTS

Marine Spatial Planning initiatives are supposed to integrate and seek optimal trade-offs between different economic, social, political and ecological goals, following its main overarching conceptual framework. However, in reality many of these initiatives have been driven primarily by one specific objective, often economic or ecological, such as meeting renewable energy targets or establishing marine protected areas (MPAs). The prioritization of one objective over the other is often case-specific but overall economic or ecological values often dominate over other aspects.

A recent study by Jones et al. (2016) analyzed in detail 12 European MSP initiatives and concluded that: (1) Blue growth was often the main priority, prioritizing specific sector objectives over strategic plans at national levels; (2) MSP case studies tended to be fragmented (e.g., pilot projects) and developed *ad hoc*, rather than as dynamic and adaptive processes as prescribed in the conceptual framework; and (3) overall MSP tended to have a top-down approach, and while participatory platforms did exist they were usually disconnected from executive decision making. In such a prioritized, fragmented and hierarchical framework, the exclusion of social and cultural values has been a common pattern.

The poor inclusion of social and cultural heritage values in MSP initiatives (Domínguez-Tejo et al., 2016) undermines the MSP process and its original defining objective. One of the real risks of adopting MSP without the proper consideration of social and cultural aspects involves its distributive impacts, which can simply reflect the existing power structures where the more powerful stakeholders have more of a say. By feeling left behind, the less powerful stakeholders might question the point of engaging in MSP processes at all (Flannery and Cinnéide, 2012). Also, when some stakeholders are given prominence over others, MSP is no different from previous top-down marine management approaches (Katikiro et al., 2015), except that powerful non-governmental users are likely to be the ones who will decide on how best to share and use the space.

Initiatives such as community-based management and participatory governance, among others, are alternatives to support more inclusive MSP (Berkes, 2003). The meaningful inclusion of indigenous and local communities in MSP not only decreases the odds of system sabotage (Msomphora, 2016; Metcalfe et al., 2018), but also allows the exchange of information and acceptance of new knowledge systems and distinct worldviews (Armitage et al., 2011). The effectiveness of conservation or any regulation is contingent on compliance (Arias et al., 2015), as clearly demonstrated in fisheries in general and in the assessment of the ecological performance of marine protected areas (Bergseth et al., 2015; Muhl et al., 2020). By promoting engagement, responsibility sharing and empowerment of all stakeholders in decision-making, greater compliance, lower surveillance costs (Freitas et al., 2020), and changes in the levels and types of information and knowledge exchanged are expected. Diversity (of stakeholders, gender, ethnicity, etc.) is a source of different points of view, solutions and knowledge base and can greatly contribute to improve creativity and problem-solving skills in otherwise homogenous groups (van Knippenberg et al., 2004). Additionally, the inclusion of different types of knowledge, such as those held by traditional and indigenous societies (Armitage et al., 2011), can not only point to overlooked problems and solutions, but it can also fill important scientific gaps (e.g., from species occurrence to changes in food webs) (Lopes et al., 2019; Cavole et al., 2020).

It is well recognized that successful MSP implementation depends on identifying and understanding the expectations and interests of various stakeholders (Pomeroy and Douvere, 2008; Mannan et al., 2020). Stakeholder engagement can lead to increased knowledge, institutional learning and adaptive co-management (Berkes, 2011), which are key processes to MSP. However, practical issues such as poor communication between science and policy, the perception that user's involvement is only included when the spatial plan is already in place, and fragmented governance contribute to the non- or limited engagement of stakeholders by raising questions about legitimacy, inclusiveness and social equity of the MSP process (Flannery et al., 2018). Without fair engagement to ensure that human livelihood security and social-ecological outcomes of MSP are not undermined, then there is a risk of MSP constituting "ocean grabbing"[2] (Bennett et al., 2015). With grabbing, resources are expropriated for the use of a minority (Corson et al., 2013), who tend to be either outsiders or the local elite, thus leading to the concentration of power, the displacement of local populations, and accentuated poverty in areas where social vulnerabilities can often be already high (Green and Adams, 2015).

CHALLENGES TO INCLUDE THE MISSING LAYERS

In a dynamic and iterative process like MSP there should always be room for establishing mechanisms for the inclusion of sociocultural aspects, underrepresented group voices, and their relationships with the marine environment (McKinley et al., 2019). Despite international objectives and increasing emphasis on the importance of considering human dimensions in environmental governance, it is clear that a lack of understanding of the flows and impact paths between sociocultural dimensions and MSP remain (St. Martin and Hall-Arber, 2008; Flannery et al., 2016). Below, we identify plausible reasons for why human dimensions are often excluded from MSP initiatives:

[2]Ocean grabbing refers to acts of dispossession or appropriation of marine resources or spaces.

Inclusive Participatory Approaches Are Expensive and Time Consuming

People have sociocultural relations with the sea, thus identifying sociocultural significant areas is crucial, although not easily done (Gee et al., 2017). Such highly intensive participatory steps may make MSP processes more time-consuming and expensive, requiring social science skills and cultural sensitivity.

Delineation of Spatial Activities and Potential Conflicts

Marine Spatial Planning often involves the spatial delineation of areas, for purposes such as restricting/promoting specific activities in particular zones. The ability to spatially delineate socioculturally significant areas may facilitate their inclusion in the MSP process. However, some sociocultural meanings may be difficult to articulate and delineate, and defining hard boundaries between areas considered significant and others that are not may find resistance.

A Worth Beyond the Economic Value

Identification and codification of sociocultural values associated with sea areas is complex, case-specific, and often include layers not associated with monetary value, making their inclusion and subsequent evaluation difficult in the MSP context.

Inaccurate Inclusion of Qualitative Aspects

Qualitative studies are usually used to collect data on sociocultural values and they are difficult to generalize beyond the context in which they were developed (McKinley et al., 2019). The lack of standardized methods and approaches for using qualitative data within MSP is likely prohibitive to addressing sociocultural voices.

POTENTIAL SOLUTIONS

Different aspects could be improved in order to achieve a more inclusive MSP that takes into account the mentioned missing layers.

Dedicate Funding for Sociocultural MSP Data

To date, limited funds are dedicated to the collection and incorporation of sociocultural data in MSP, including information on cultural ecosystem services, and local socio-ecological links (Le Cornu et al., 2014). We advise more efficient use of financial resources to understand sociocultural values and to improve stakeholder engagement and communication.

Improve the Capacity and Sophistication of Sociocultural Data Acquisition

Marine Spatial Planning initiatives should recognize both people's inherent differences and preferences along with the spatial-temporal distribution of their activities and interactions with the environment as well as factors that influence them (St. Martin and Hall-Arber, 2008; Dalton et al., 2010; Strickland-Munro et al., 2016). For that, a comprehensive approach that considers the complex and fine-scale interactions between people and their environment may be necessary (Dalton et al., 2010). Examples include the use of Bayesian network analyses to include stakeholder preferences into the MSP decision-making process (Coccoli et al., 2018; Laurila-Pant et al., 2019; Phan et al., 2019; Alexander et al., 2021). These techniques may help find an optimal compromise in the presence of potentially conflicting objectives (Laurila-Pant et al., 2019). Moreover, the codification and evaluation of cultural values and criteria for mapping and valuing/monetizing culturally significant areas should be more consistent. Standard methods for studies to address sociocultural values in MSP (e.g., heatmaps for each traditional activity, calculated using data from interviews as spatial access priority (SAP) per km2) should be developed and implemented (Johnson et al., 2020). For instance, maps of fishing areas that take into account financial, subsistence and culturally relevant areas may be produced (Outeiro et al., 2019).

Invest in Building Reliable Partnerships and Knowledge Co-production

This step requires an iterative and continual process of building mutually beneficial, respectful ongoing arrangements between users and holders of traditional knowledge, in order to build trust, good relations, mutual understanding, intercultural spaces, knowledge exchange, knowledge co-production and reconciliation (Ntona and Morgera, 2018). Giving traditional stakeholders a voice in relevant decision-making processes, understanding and addressing their views and preferences in that context is not a one-off exercise (Breckwoldt et al., 2021). It will be necessary to create more inclusive negotiation spaces where people's differences are acknowledged and included in the conversation at different stages, and where differences are opportunities for creative and accommodating solutions. Developing and implementing "equal opportunity" policies to ensure those differences are acknowledged should be a priority.

Policy Embedment and Timely Inclusion of Stakeholders

Timely and efficient stakeholder participation is an essential aspect of MSP and is also a legal requirement of several different international tools [e.g., Rio Declaration on Environment and Development (1992), Convention on Biological Diversity (CBD)]. However, the degree and scope of stakeholder participation can vary considerably between countries, and will largely depend on the existing local political or legal requirements for participation (Twomey and O'Mahony, 2019). Supporting policy embedment to truly involve stakeholders in MSP initiatives can ensure that all stakeholders are not only being informed or being used as information providers, but are also essential partners in collaboration and decision-making. Shifting a historical trajectory of persistent inequities will require embedded policies, strong leadership, inclusive governance and long-term planning that starts with a commitment to equity as

integral to a sustainable ocean economy and relationships within and across nations (Österblom et al., 2020).

Go Beyond Economic Values

Perhaps one of the shortfalls of MSP is that it has been increasingly associated to the concept of Blue Growth (Santos et al., 2014), which may find no resonance in traditional communities that share relational values that are hard or impossible to monetize, as their place attachment and place identities (Himes and Muraca, 2018). There is a chance to reconcile different worldviews in how the oceans should be managed and used if MSP can also partner with alternative and more inclusive concepts. One such concept is the idea of de-growth (Hickel, 2020), which is based on the inclusion of values, such as enjoying and promoting humanistic values, maintaining/decreasing the carrying capacity, reducing the north-south discrepancies, along with not seeing nature as a commodity (Martínez-Alier et al., 2010).

CONCLUSION

This perspective article provides a pragmatic view for connecting sociocultural values and underrepresented groups into the MSP process. It argues that bridging the gap between dominant economic rhetoric and a *de facto* approach to the sociocultural-ecological system is the first step in making the MSP process successful on both the human and the natural fronts.

Therefore, we propose to revise the traditional well-known definition of the MSP process in order to be more comprehensive as "*an inclusive political process of analyzing and allocating users activities and rights in the ocean to make informed and coordinated decisions on the spatiotemporal sustainable use of marine resources while achieving balanced ecological, economic, sociocultural objectives.*"

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

MP initially conceived the idea for the workshop, counting with the contribution of all authors to its execution. MP wrote the first draft of this manuscript, and all authors equally contributed to the subsequent versions of the manuscript. MP, SB, and KO-C generated the figures.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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