PLANNING

**Seeking to Coordinate the Use of Marine Space**

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Introduction

Amongst the recent developments in understanding human interaction with the coasts, seas and oceans, one of the approaches giving most explicit attention to the spatial dimensions of this interaction has been marine spatial planning (MSP). In fact, MSP seeks not so much to *understand* as to *govern* marine space, as MSP is practiced by planners seeking to address problems such as rising pressures on resources, potential user conflicts and resulting environmental damage, connected to major global challenges. It does this by introducing to the sea processes of spatial planning that have long been established on land; this is usually being undertaken by government bodies with planning or marine responsibilities working closely with relevant stakeholders.

The rise of MSP raises questions about the kind of spatiality that it is bringing to bear. To what extent is ‘MSP spatiality’ being shaped by the spatialities of terrestrial planning, for instance? And how much adaptation is taking place in response to the characteristics of the marine environment and maritime activities? What influence are other disciplines and professions engaged in this exercise having on the ways that MSP conceives of and handles marine space? This chapter explores these questions, ,firstly, by presenting an overview of the emergence of MSP, its international uptake and broad principles and practices. Secondly, a number of MSP processes are described, particularly with reference to their underlying spatiality, which range from physically-deterministic to conditional and exploratory understandings. Thirdly, the potential for MSP to demonstrate greater adaptation to marine characteristics is discussed.

The emergence of marine spatial planning

Marine spatial planning (also known as maritime spatial planning, ocean planning and similar terms) is a relatively new approach to marine management. It is intended to help coastal nations manage more sustainably their internal and territorial waters and in many cases, their extensive Exclusive Economic Zones (EEZ) and continental shelf areas (Ehler et al., 2019). As its name suggests, the idea is that the practice of terrestrial, or land-use, planning should be extended to the sea. This is based on the assumption that the uses of the seas are increasing to the point that they are coming into conflict with each other and leading to further environmental damage. Moreover, MSP is driven by a recognition that there is insufficient coordination of sea uses by government. Proponents of MSP argue that these problems can be addressed by a system of planning that guides the arrangement of activities and introduces better inter-sectoral regulation. MSP thus represents a ‘spatial turn’ in marine management that could optimise the sustainable use of the seas (Douvere, 2008; Gilliland and Laffoley, 2008).

The idea and practice of MSP have spread internationally over recent years. Its origins lie in a zoning exercise for the Great Barrier Reef Marine Park, Australia, in the early 1980s (Day, 2002). China also played an innovating role, implementing a system of marine functional zoning in some Chinese waters from the late 1980s (Fang et al., 2011). Other early experience was gained in North America, with environmentally-led initiatives. However, most progress has been made since the early 2000s, largely driven by an MSP programme of UNESCO’s Intergovernmental Oceanographic Commission and other scientific and international policy initiatives. Take-up has been greatest in Europe, with individual nations and the European Union promoting the concept and setting up mechanisms for implementing MSP (CEC, 2008; Douvere and Ehler, 2009). This led to the adoption in 2014 of the EU’s ‘Maritime Spatial Planning Directive’, which required all coastal Member States to prepare cross-sectoral maritime spatial plans by 2021 (EPC, 2014). Many European nations now have official plans in place or in preparation, focusing on their key maritime activities, including both traditional uses such as shipping and fishing, and new uses, such as offshore renewable energy and aquaculture. In the USA, some states have made plans for their coastal waters, with some federal support (Bates, 2017). MSP is also being rolled out in other parts of the world, including in the Global South, although these initiatives tend to be at an earlier stage of development; they are generally focused on environmental concerns. The EU and UNESCO are now collaborating in a global MSP initiative (UNESCO, online).

As part of this international momentum, broad, guiding principles for MSP have gained consensus. These include such things as: taking an ecosystem-based approach, effective stakeholder engagement, cross-border cooperation, using good quality data and adaptive management (Kidd et al., 2011; Long et al., 2015). MSP processes have also been developed, including one recommended by UNESCO (Ehler and Douvere, 2009). However, despite some efforts at standardisation, MSP is being carried out in a wide variety of ways, reflecting different national and sub-national contexts. At sea, just as on land, planning is subject to different planning traditions and legal and administrative frameworks. Practice is also shaped by the particular characteristics of the environment and human activities of the area in question, and by the social and political priorities of the day. Moreover, not all MSP processes are officially recognised; many, especially in a start-up phase, or in less developed countries, are voluntary initiatives, sometimes funded by research bodies or NGOs. Increasingly, however, MSP is in the hands of authorities producing plans with statutory weight. The variety of MSP practices and outputs is now coming to light through comparative studies of MSP processes around the world (Blau and Green, 2015; Rodriguez, 2017).

Nonetheless, there are common features in MSP processes (Foley et al, 2010). Typically, there are preparatory steps, such as deciding on the geographical range of the plan and defining its overall objectives. Following this, spatial data is collected, relating to existing conditions and activities; this includes information about many aspects of the natural environment and the main maritime activities, according to the availability of information. This data is generally managed in a geodatabase and exported to a geographic information system (GIS), which provides the key visual resource for developing the plan. This may be made publicly available via a web portal (Campbell et al., 2020). This visualisation leads to an analysis of key issues and pressures, including possible areas of conflict, and an exploration of preferred future spatial arrangements. In some MSP systems, this culminates in formal allocation of discrete areas for specified uses, possibly in a comprehensive zoning exercise. In other systems, the emphasis is more upon setting criteria for future use, taking into account what is now known about the area. Other measures may also be set out in the plan to control activities, such as environmental management measures. Most MSP processes involve a greater or lesser degree of public and stakeholder engagement, and require political approval before a plan comes into force.

The spatialities of MSP in practice

MSP discourse and practice emphasise the spatial distribution of maritime activities and their inter-relation with the marine environment, not least through the prominence of GIS mapping in MSP processes and the resources dedicated to this (see also Chapter Six). This invites reflection on the understandings of spatiality that are at work. At first sight, a fairly conventional, physically absolutist understanding of space predominates (Jay, 2012). This is expressed in references to ‘the allocation of space’. A mosaic model is presented, whereby the sea is subdivided into bounded units for different uses, such as conservation, wind energy and shipping (Douvere, 2008). In MSP undertaken from this perspective, the language is particularly stark in the arguments for ocean zoning, with comparisons drawn with the seemingly fixed boundaries and zones of terrestrial planning. This passage from Doherty’s *Ocean Zoning* is exemplifies this perspective: “Ocean zoning is similar to land-use zoning wherein specific areas are designated for particular uses. On land, for example, we separate residential and commercial areas and separate incompatible uses, so that playgrounds are not located next to city dumps… Similarly, we wouldn’t want dragging to occur in areas with sensitive benthic habitats” (Doherty, 2003, p. 2). GIS comes to the fore here, as the tool that can enable a satisfactory spatial geometry to be drawn (St. Martin & Hall-Arber, 2008). A range of related, and sometimes elaborate, decision-support tools are also promoted in order to optimise the spatial design needed to achieve selected objectives (Stelzenmüller et al., 2013).

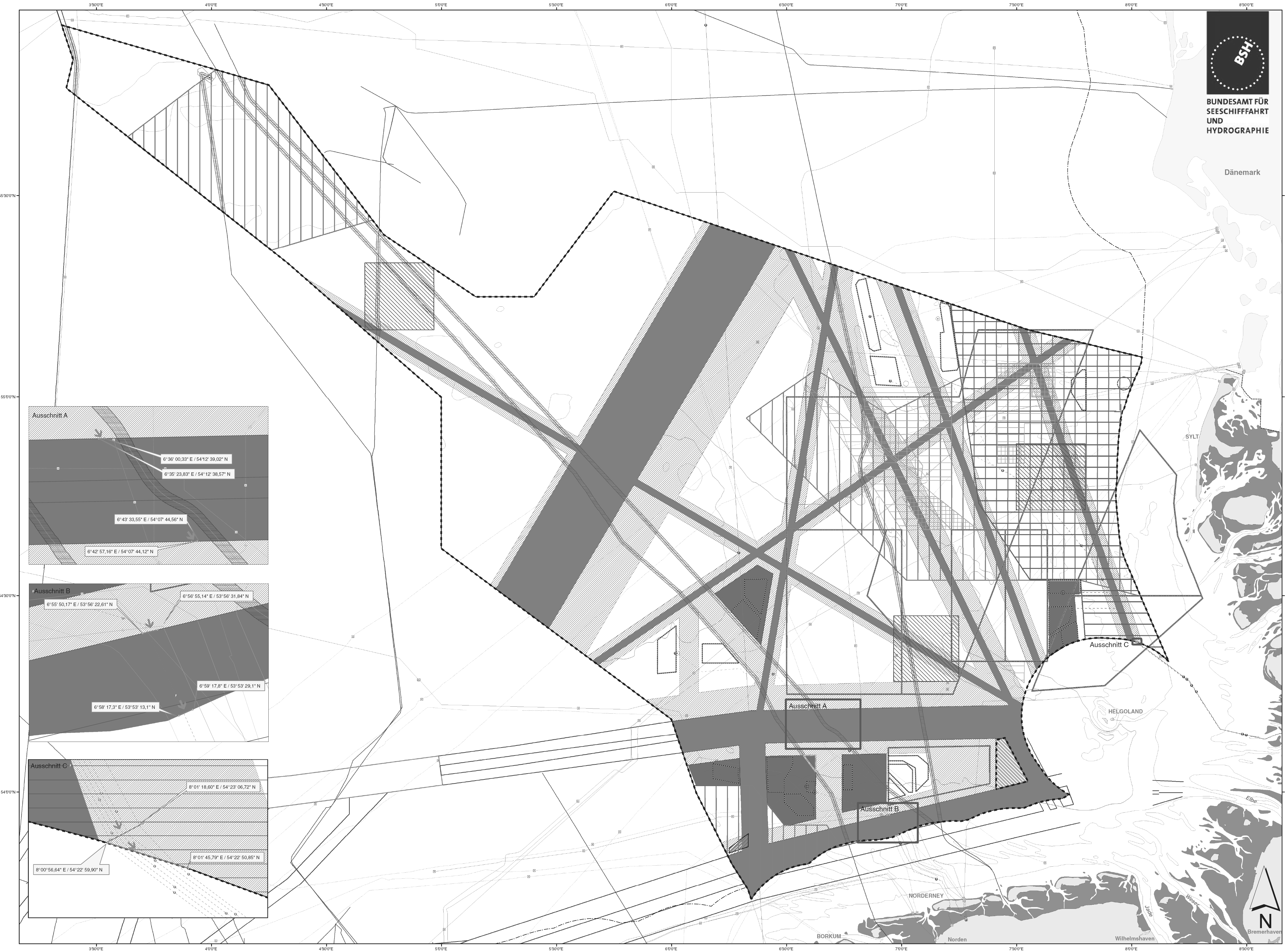
This logic is not unreasonable. Terrestrial planning does have its origins in the physical space of traditional architecture, extended into the public realm and writ city-large. And some planning systems have resulted in comprehensive zoning, whereby clearly defined areas are exclusively designated for certain types of development, with strict criteria regarding things like the size and spacing of buildings (Stach, 1987). Interestingly, the zoning exercise for the Great Barrier Reef Marine Park (GBRMP) referred to above emulates one classic example of urban zoning, that for the village of Euclid, Ohio in the USA. In the 1920s, the municipality established a zoning system restricting the type of development that could take place within its territory, in an attempt to protect itself from the industrial expansion of nearby Cleveland. A series of zones was defined, with varying degrees of restriction. This can be described as a pyramidical system, with the type of zone with the greatest number of restrictions at the top, slightly fewer restrictions in the type below, and so on. Euclid’s system rose to fame by surviving a legal challenge, thus establishing the right for other municipalities to follow suit (Cullingworth and Caves, 2003). There are notable parallels with the GBRMP. Firstly, zoning in the GBRMP was also a defence against an external threat; here, it was the spectre of oil exploration and limestone mining moving in, as well as growing pressures from tourism and fishing (Kenchington and Day, 2011). Likewise, zoning was promoted in an effort to preserve environmental quality (although natural, in the case of the Great Barrier Reef, rather than residential, in the case of Euclid). Secondly, as in Euclid, a pyramidical system was introduced for the GBRMP; different types of fishing and shipping were increasingly prohibited as one moved up the sequence of six types of colour-coded zone, from ‘general use zone’ to ‘preservation zone’ (Figure 7.1) (Australian Government, online; Day, 2002). Thirdly, the GBRMP has also achieved a landmark status, by pioneering this form of control at sea; like Euclid, the GBRMP now holds a hallowed place in the history of planning, or at least that of MSP.

[Insert Figure 7.1 here]

In some of the more recent examples of MSP, conservation-oriented zoning still predominates. For example, a series of (non-statutory) plans produced for Canada’s North Pacific coast includes maps in which the whole of the plan area is divided into coloured zones (MaPP, online). There are General Management, Special Management and Protection Management Zones, with increasing emphasis on conservation through the range of zones. The latter are further divided into low, medium and high levels of protection, following internationally-recognised conservation categories. However, overlaying this contouring of environmental importance are areas of economic potential; the Special Management Zones are so designated because of their potential for activities such as shellfish aquaculture, marine renewable energy and tourism. Whereas the GBRMP zoning system permits certain uses in some locations, the North Pacific plans actively promote them in selected areas. And overlaying the whole system are two high-level discourses. Firstly, an ecosystem-based framework is repeatedly referred to, such that all uses are conditional on good environmental management. Secondly, partnership between the provincial government (British Colombia) and First Nations is stressed, recognising First Nations’ values and territorial rights in the region (Jones et al., 2010). The plans set out detailed proposals for economic opportunities, such as for community-based fishing and marine renewable energy, with constant regard to these principles. The spatiality of the plans is expressed not just in mapping, but also in finely-worded reasoning that is not simply related to the zones; extended sections of text introduce more expansive understandings of spatiality, with notions of environment and society, and all their political underpinning, infusing the GIS-dominated representation of knowledge and connecting explicitly to wider rationales. This is generally true of MSP as a whole. Even the GBRMP system extends beyond strict zoning, by including wider management initiatives, such as public education and engagement, best practice codes and industry partnerships (Kenchington and Day, 2011).

In other examples, the concept of zoning has been taken up, but in a more partial and selective way. This can be seen, for instance, in the plans for Germany’s federally-governed EEZ in the North and Baltic Seas. These are amongst the earliest national European plans to be completed (BSH, online). Here, clearly defined areas are designated for just a few key uses: shipping, offshore wind energy, cables and pipelines, and research (Figure 7.2). Zoning does not cover the entire EEZ, but just those expanses considered necessary to protect or facilitate these activities. In fact, the designated areas fall into two categories: priority areas, in which the specified use has priority over other uses, and a lesser class of reservation areas, in which special consideration is given to the specified use. In this MSP system, the act of mapping, along with government approval, grants these designations legal status (the document as a whole is a legal ordinance). In addition to these special areas, other areas are shown, for nature conservation, mineral and aggregate extraction and military training, but these are by way of information only; they are not a product of the plans, but were already established through other official processes. There is a great deal of overlap between these various areas; for instance, some shipping areas are superimposed on conservation areas. However, there are also segments of the EEZ that are completely void. This is very different to the zoning examples described above, in which there is a complete mosaic, with no overlapping and no gaps.

[Insert Figure 7.2 here]



The German EEZ plans set out a legal spatial hierarchy, in which uses that are reckoned to need the plans’ attention gain legal protection from any other uses that are deemed incompatible. Notably, these are mostly resource-centred activities, exploiting and importing the sea’s energy resources and transporting goods to and from Germany’s ports. Moreover, these uses, especially shipping, are granted vast portions of space. These plans are far removed from the conservation-led plans of the previous two examples; they are driven by other political and economic priorities, arguably reflecting the pre-existing shipping and offshore renewable energy responsibilities of the authority charged with producing the plans. Other uses have no legal status accorded by the plans, but are shown in the background on the maps, simply by way of information (and this was only after lobbying by their representatives during the plan-making process). Moreover, one of the longest-standing uses, fishing, is notably absent from the maps, in part because fishers refused to identify the areas of the EEZ that they considered to be most important. The absence of fisheries on the maps may also reflect the declining economic significance of fisheries. In short, the German EEZ plans present a very different spatiality to that of the zoning ideal; national policy priorities for certain sectors find favour and are given choice areas, with no attempt to comprehensively allocate all of the plans’ territory to the range of competing interests (Jay et al., 2012).

Even further away from the ideal of comprehensive zoning are those MSP processes that are policy-centred, intended simply to guide the development of future activities without prescribing exact locations. This approach is illustrated by the United Kingdom’s marine spatial plans. Although these are quite diverse, reflecting the devolution of MSP to sub-national authorities, they have a broadly common approach (Defra, 2009). They do not contain maps indicating strict allocation of uses, but instead establish a decision-making framework that is intended to help proponents to bring forward acceptable proposals. The plans contain extended text setting out development criteria, expressed in policy statements with supporting justification and information. They do include maps that provide information about existing conditions and activities, and possibly indicate broad areas where certain uses may be appropriate, but this is far from the designation of specific areas for particular uses. For example, the East plans, which cover part of the North Sea, are like the German EEZ plans in that they support the development of offshore wind energy. However, they do so simply through statements such as: “Policy WIND2: Proposals for Offshore Wind Farms inside Round 3 zones, including relevant supporting projects and infrastructure, should be supported” (HM Government, 2014: 121). The ‘Round 3 zones’ referred to here are large, strategic areas considered suitable for the next major expansion of the industry( drawn up through an exercise separate to that of the MSP process itself).

This reflects the UK approach to planning on land, in which plans do not define the exact details of development but instead set out preferred terms of development. This is often characterised as a ‘discretionary’ system, in which planners have far more freedom when considering development proposals than in more ‘regulatory’ systems, where plans are more decisive and there is less room for manoeuvre (Booth, 1999). This distinction is being played out at sea as well as on land. The German EEZ plans, following national tradition (Booth, 1996), clearly belong in the regulatory camp, such that a developer who proposes a wind farm in one of the offshore wind priority areas can be confident of success; the space already bears the legal stamp for this use. But a developer proposing a wind farm in the territory of the UK’s East plans will need to negotiate more fully with authorities to arrive at a location and specifications within a broadly acceptable area; here, marine space remains more open to exploration and deliberation.

The variety of approach expressed in these examples from Australia, Canada, Germany, and the UK illustrates the very different forms of expression that MSP is finding as it is being put into practice, despite the rather monolithic model that was presented in the founding arguments for MSP. This calls into question the assumption that the end point of an MSP process is the allocation of space. This is no more universally the case at sea than on land; diverse traditions of planning, and their associated spatialities, are carried offshore too (Kidd and Ellis, 2012). The physically-deterministic model of space only partially holds sway, in MSP as in wider planning practice. The UK presents a particularly striking example of a different approach. In this MSP system, it is the text, rather than maps, that plays the main role in shaping possible spatial outcomes. Moreover, the text does not describe in detail intended outcomes, but provides material to work with when it comes to developing and implementing specific initiatives. The plans therefore present a more provisional and conditional spatiality than that expressed in designated areas or zones. The spatial reality is yet to be determined, and the plans are yet to play their role in helping to determine that reality (Beauregard, 2015). Conditionality is taken even further in this system by the allowance that the plan is unlikely to be the only source upon which decisions are based; other ‘material considerations’ may come into play, and may even override the carefully thought-out position of the plan (Defra, 2007, 4.86).

This conditionality is in fact an underlying feature of MSP in general, though often in a less obvious manner. Even when MSP processes result in maps with clear allocation of marine uses, many of the mapped activities still await realisation; developers still need to come forward with their investment decisions, and conservation measures still need to be implemented. Maps indicate a desired reality, and the production of maps may help to bring about this reality, but much will still depend on actors and mechanisms beyond the control of the MSP process (see also Chapter Six, ‘Mapping’). Moreover, this will be an approximate and continuing process, in which spatial realities may gradually converge with the mapped intentions, or may take a different turn and disrupt the plan’s intentions. Maps in MSP therefore tend to represent a desired end, the achievement of which is far from certain, and so run the risk of presenting an illusory spatiality. It is perhaps a strength of textual, policy-centred approaches to MSP that they avoid the over-confidence that may come with drawing polygons for different uses. The sea and all its unknowns and dynamisms does not lend itself to such human certainty; a more openly provisional approach to planning may match more closely the characteristics of the sea and our tentative relationship with it (Boelens & de Roo, 2015).

Edging Towards New Approaches

It is a fitting coincidence that the village of Euclid, referred to above, was named after the classical Greek mathematician who is associated with the geometric spatiality of which zoning is an example *par excellence*. Euclidean space is now frequently critiqued as an overly limiting material with which to work in the spatial disciplines and professions. It presents a physical, ‘container’ view of space that fails to allow, on the one hand, for social dimensions in the production of space, and on the other hand, for relational dynamics that transcend juxtaposed units (Davoudi and Strange, 2009). Indeed, the practice of urban zoning has received repeated criticism for its simplistic approach, leading to monotonous, exclusionary neighbourhoods and failing to address wider regional issues (Haar and Kayden, 1989; Jacobs, 1961). Morevoer, it failed to protect Euclid in the way intended, as the village was eventually overrun by the expansion of Cleveland. The Great Barrier Reef Marine Park mirrors this experience too; zoning has proved powerless in the face of large-scale forces such as deteriorating water quality (partly due to coastal development), and increasing water temperature and acidification, which have wreaked havoc on the coral ecosystem (Hassan and Alam, 2019).

However, as shown above, MSP has not confined itself to the narrowness of zoning, nor even to less rigorous variants of spatial allocation. More generalised policy has also taken central place, sometimes alongside a spatial allocation system of one type or another. This is being expressed through background information, planning criteria, formal policy statements, proposed management measures and so on. Most marine spatial plans are in fact dominated by text, not maps (though the maps may grab the most attention). Typically, the text is the result of lengthy fact-finding, consultation, cross-sectoral and wider policy framework considerations, alignment with objectives and development of management options. Through the text, nuanced arguments are made in which different, frequently competing, interests are balanced and judgements made about their relative importance. Actual spatial solutions are often deferred to an ‘implementation’ phase of planning, when decisions will be reached on the basis of a plan, but will also take into account continuing accumulation of knowledge, strengthening or changing policy agendas and emerging opportunities. But even then, planning never reaches the point of completion; progress is always incremental, decisions are open to reconsideration and revision, players are subject to shifting priorities, and new initiatives are always on the horizon.

Arguably, understanding and going about planning in this way is more attuned to the uncertain trajectories of human interaction with the sea than the pretended certainties of zoning (Jay, 2013; Retzlaff and LeBleu, 2018). And even though this approach has much in common with terrestrial planning, the marine realm calls for greater contingency of this kind. Indeed, there is plenty of recognition in the MSP literature that the sea is not the land, and that planning needs to adapt to its distinctiveness, especially its less controllable characteristics (Jay, 2018).

The first and most obvious difference between planning at sea and at land is the sea’s physical and biological character, including its three-dimensional nature, its complex temporal variations and fluid materiality. These characteristics are reflected in the range of activities that exploit different parts of the water column, the seabed and atmosphere, often with seasonal and tidal variations, and they create a complex spatial and temporal pattern of human use and interaction with the ocean’s surroundings. MSP generally recognises this complexity, but struggles to accommodate it. For instance, the static, 2-dimensional representations of sea use, as offered by GIS, and which are part and parcel of zoning, have serious shortcomings here. To date, there has been little uptake in MSP practice of more mobile and 3-dimenstional graphical representations of sea use, or of models for exploring more dynamically interacting arrangements of activities. One of the obstacles to this is the tradition, often buttressed by regulatory requirements, of producing a paper document that is ‘the plan’. There have been calls for more adaptable representations, such as vertical zoning, but there is little evidence of take-up within MSP processes. At present, it is the text of plans that offers more opportunity to grapple with these complexities. So, for example, although the German maps present 2-dimensional representations of the German EEZ, the accompanying text refers to the interrelations of seabed pipelines and cables and shipping lanes in any one (vertical) place.

Secondly, and linked to these natural characteristics, is the much weaker human ‘hold’ on the sea. Compared to the land, the sea has a short history of state control, and what jurisdiction has been gained is limited, receding in effect from the coastline. Similarly, there are weak forms of ownership of offshore territory and resources, especially by private interests. There are also greater difficulties when it comes to marking out definitive areas, monitoring human activities and enforcing rules about those activities. This changes the context of planning radically, as planning on land is typically implemented in an environment of clearly delineated units of land and strong frameworks of land and property ownership, development rights and policing of activities. Although the marine environment is seeing a trend in which governance is being strengthened, and resource, if not territorial, rights are being allocated to certain players, this remains far from the much more settled situation on land, and MSP needs more supple ways of engaging with this administratively weak context. This supports the case for MSP being less ambitious and more indicative, with plans restricted to setting out possibilities for future use rather than trying to emulate the clear-cut parameters of land-use planning. There is a strong argument for MSP to incorporate visioning and scenario-building exercises, in which alternatives for the long-term future of the seas can be explored, relating to such things as sustainable energy production, ecosystem recovery and health, and increasing international cooperation (McGowan et al., 2019). In fact, the relative weakness of human control presents an opportunity for wider-reaching preferences to be set before options are foreclosed.

Thirdly, and connected to all these features, human presence is much less dominant at sea than on land. The sea is not well populated by people; human ‘settlement’ is mostly fleeting and marginal to society as a whole, and the sea remains distant and risk-laden for most people. Vessel-based activities are mobile and transitory, and fixed installations are thinly dispersed, generally remote and temporarily occupied. This is in no way equivalent to the ‘built environment’ on land. This presents challenges for MSP, not least because public representation is a key feature of most planning systems. In MSP, stakeholder interests tend to be well-represented (though not equally) through industry and government and NGOs. But wider public voices are largely absent, except perhaps coastal communities expressing concerns about local issues. There is potential for more open forms of public engagement, using, for example, online participation in assembling views about possible futures for the seas and exploring what is desirable in terms of resource use, conservation and cultural dimensions of the sea. A related issue is that marine activities are relatively limited in their scope, restricted largely to functional or industrial uses such as transport and resource exploitation, and these sit uneasily alongside growing concerns for the sea’s ecological well-being and the cultural assets that it holds. MSP finds itself at the heart of the growing tension between these competing sets of interest, and has the task of mediating a wide range of societal views, heightened by current global-scale concerns about climate change and pollution, and their impact upon the oceans and their role in helping to regulate natural systems (Ntona & Morgera, 2018).

Conclusions

MSP introduces notions of spatiality to our understanding of the seas and oceans that are drawn from the wider practice of spatial planning. Initially, this has been through the rather conventional contribution of perceiving space in physically deterministic ways, expressed through zoning and other forms of spatial allocation, as represented by 2-dimensional mapping. However, it has also introduced more agile spatial thinking through the more discursive tools of planning, such as policy development, by which varying spatial claims are considered and prioritised, and complex conditions for development are set out. This can be traced back to the traditions of planning as practiced on land, which are generally being inherited by MSP along the lines of varying national planning cultures and systems.

At the same time, MSP is introducing complementary ways of understanding the specific spatiality of the seas and oceans. It spurs planners to be cognisant of the differences between land and sea, highlighting the stark differences in the manner and extent of human occupancy and development and the particular ways that planning could adapt to the physical and social characteristics of the sea. But this remains at a very preliminary stage; MSP is generally aware of these challenges, but is not yet developing particularly innovative means of dealing with marine realities. To do so may mean the more radical insertion into MSP thinking and practice of spatial ontologies that attempt to embody the relationality and liveliness of the sea and human interaction with it (Boucquey et al, 2016). This may involve, for example, re-conceptualising the space-being-planned as bio-physically flexing, teeming with actants, constituted by relations, and having a tendency to forming complex interactions that are themselves continuously reforming. Moreover, MSP must find ways of sharing such dynamics in its own engagement with this space (Jay, 2018, 2020).