The Ontological Politics of Marine Spatial Planning: Assembling the Ocean and Shaping the Capacities of ‘Community’ and ‘Environment.’

Introduction

“The strategy of ontological politics is never forgetting about [the] performances that go into reality.” (Carolan 2004, 512)

“Assemblages are always works in progress. They involve invention, labour, politics and struggle.” (McCann 2011, p.145)

Around the globe, unprecedented levels of scientific, governance, and private resources are turning toward ocean space—and how to characterize, divide, share, rent, or preserve it (Campbell et al. 2013; Silver et al. 2015; Silver 2013). This ‘turn’ includes a host of governance and technoscience initiatives designed to quell the controversies—‘hot’ situations (Callon 1998) that emerged from the limits of historic attempts at ocean management (e.g. events of fisheries collapses, unresolved debates over energy development, pollution and plastics, etc.). These far-reaching controversies are to be addressed by an equally sweeping and ambitious solution called Marine Spatial Planning (MSP). In the evolving outcomes of this solution there is much at stake- who and what count as citizens of the ocean? What capacities might environments and human communities develop in conjunction with it? Will MSP amount to an ‘ocean grab’ by the most well-represented, data-rich actors, or could it be a mechanism that helps constitute greater socio-natural well-being?

In this paper we examine the ontological politics of MSP—the real “conditions of possibility” (Mol 1999, p.74) as they are being shaped through the narratives and practices of emerging MSP projects. In doing so, we recognize that governance projects to measure and organize socio-natural spaces have often resulted in the marginalization of human communities (e.g., as with national parks) or in the destruction of environmental resources (e.g., as with mining in the American West or oil leases in the Gulf of Mexico). The movement toward MSP could therefore be viewed through a lens that examines this process as a neoliberalization of nature, (Heynen et al. 2007; Castree 2008) where a macro-structure (Callon and Latour 1981; Collier 2012) engages in a process of enclosure and exploitation. And indeed there are some signs of MSP developing along these lines, for instance in its drive to comprehensively map and parse ocean spaces for particular uses and (human or nonhuman) users, setting up the potential for ocean enclosures to privilege the most powerful actors.

While acknowledging this trajectory, however, we also respond affirmatively to Ferguson’s (2009, 169) question about whether we can engage with “new configurations of governmental power in a way that goes beyond the politics of denunciation, the politics of the ‘anti.’” Rooted in our ethical concern for the well-

being of human and ecological communities, we do not ignore signs of territorialization or enclosure, but we also insist on identifying where MSP governance is being (or could be) performed differently.

With this goal, we employ the idea of assemblage to assist in examining the ontological politics of MSP practices. More specifically, we use assemblage to explore how communities and environments are being constituted by—and through—their association with MSP and its key conceptual frameworks (e.g., ecosystem-based management) and operational tools (e.g., geospatial databases). We trace how the ontological formations of MSP—people, places, technologies, and organisms—are being actively assembled in concurrent processes of stabilization and disruption through narratives and processes of inscription (Ingold 2000; McFarlane 2011) that create new political-spatial imaginaries and relationships. We show that while some emerging MSP ontologies restrict the capacities of environment and community—for instance in the language of ‘salvation’ and in the organization of certain geospatial databases—other practices offer space to expand the capacities of community and environmental actors (for example in participatory mapping projects and in the aspirations of many practitioners themselves).

Our analysis contributes to a growing engagement with the idea of assemblage in geography (Allen 2011; B. Anderson and McFarlane 2011; B. Anderson et al. 2012b; McFarlane 2009; McFarlane 2011; Rossiter et al. 2015), and shows how the concept can serve to reveal variety in forms of power at work and to highlight potential spaces for intervention (Mol 1999) in the ontological politics of socio-natural systems. Rooted in a strong empirical case, this effort furthers theoretical conversations about the uses of the assemblage concept in working toward ‘arts of government’ that support greater socio-natural well-being (Ferguson 2009). Further, this research responds to calls for more relational approaches to ocean geographies (Spence 2014) and engagement by human geographers with ocean spaces more generally (J. Anderson and Peters 2014; Bear 2013). Finally, this analysis offers insights into the role of ‘calculative infrastructures’—in this case geospatial databases—in shaping political and material engagements with the world around us (Mennicken and Miller 2012).

Ontological Politics and Assemblage in Conversation

Ontological Politics and Assemblage

Here we seek to combine insights from scholarship in ontological politics and assemblage to better analyze the complex, shifting, and power-full world of MSP, and to highlight what we feel is fertile theoretical ground for further exploration. Though ontological politics has been productively linked with a variety of theory in anthropology, sociology, and geography (including Actor-Network Theory (ANT), cultural studies, and Science and Technology Studies) (Bear and Eden 2011; Blaser 2009a; John Law and Lien 2012; van Heur, Leydesdorff, and Wyatt 2012), it has

rarely been explicitly linked to assemblage (though see Carolan 2004; Mol 1999), something we aim to do in this work.

In “Slippery: Field Notes on Empirical Ontology” Law & Lien (2012, p.371) exhort their readers to “take any practice. Ask about its choreography. Ask how it weaves its relations and enacts its objects.” Though their focus is primarily on the ontological component, such questions are also central to ontological *politics*. With roots in ANT and Science and Technology Studies (STS), at the heart of ontological politics is the notion that reality is multiple- that the reality of X is the multiple performances of X (Carolan 2004; John Law and Benschop 1997; Mol 1999). If reality is multiple, moreover, it is also political (Carolan 2004; Mol 1999), since “the conditions of reality are not given” but rather are part of differing (political) enactments (Robins 2012, 188). This implies for scholars of ontological politics that the metaphors “of intervention and performance” are most appropriate to work with (as opposed to social construction for instance), as “these suggest a reality that is *done* and *enacted* rather than observed” (Mol 1999, p.77, emphasis original).

The emphasis in ontological politics on intervention, performance, and possibility complements key elements of assemblage thinking. Drawing on diverse theoretical origins including ANT (Callon 1986; Latour 2005; J. Law 1992), Deleuzian philosophy (Dewsbury 2011; Deleuze and Guattari 2004), and Foucauldian notions of governmentality (Foucault, Burchell, and Gordon 1991), the concept of assemblage emphasizes the active performance of relationships between human and non-human actors mediated by information, ideas, work, and uneven, shifting power relations (e.g., Bennett 2005; McCann 2011; Robbins and Marks 2009). Ideally, researchers might use ‘assemblage thinking’ to trace how human and nonhuman elements, ideas, and practices come together; how particular configurations are maintained or dissolved; and (more normatively), how diverse possibilities might exist for assemblages to be performed differently (B. Anderson et al. 2012a).

The term assemblage is frequently used to denote both ‘objects in the world’ (e.g., material actors and relationships) as well as a theoretical approach to highlighting the ongoing efforts involved in maintaining particular relationships and the political, social, and spatial products or consequences of those efforts (Bear 2013; Bennett 2005; McFarlane 2011). Ontological politics similarly has implications for both actual relations-in-the-world and for those studying such relations. As Blaser (Blaser 2009a, p.877) highlights,

‘political ontology’ connotes two inter-related meanings. On the one hand, it refers to the politics involved in the practices that shape a particular world or ontology. On the other hand, it refers to a field of study that focuses on the conflicts that ensue as different worlds or ontologies strive to sustain their own existence as they interact and mingle with each other.

Both assemblage and ontological politics thus emphasize our interest in processes-in-motion, and the political implications of such processes. They open up questions about where agency lies in human and nonhuman relationships, and how and why particular performances are enacted.

The diversity of intellectual threads leading to assemblage means that it is a messy concept, with some significant tensions and debates. Anderson and McFarlane (B. Anderson and McFarlane 2011) outline assemblage as variously used by scholars as a descriptor, concept, and ethos, which are sometimes but not always complementary. If solely used as a descriptor, they argue, assemblage loses much of its power as a unique lens through which to examine the shifting and multiple relationships between people, ideas, and nonhuman elements that form the core of an assemblage approach. They emphasize the usefulness of assemblage in highlighting interrelated processes, including coherence and dispersion, provisionality, and emergence (B. Anderson and McFarlane 2011, p.125). In a sympathetic critique, Allen (2012, p.190) pushes back against their focus on external relations in assemblage and suggests the idea of ‘topological entanglements’ as a productive way to move past arguments about the existence or effects of internal versus external relations.

Our own approach follows largely from Anderson et al’s (2012a, p.212) conceptualization of assemblage as “a style of analysis that traces processes of composition, accounts for durabilities and diagnoses possibilities” which we use to examine the (multiple, political) ontologies of MSP. What excites us about assemblage—and ontological politics, for that matter—is its potential to emphasize that entities are “made up of powers that have the potential to be actualized differently” (Allen 2012, p.191).

Both assemblage and ontological politics remind us that particular systems—even those that appear stable—are always in the process of being maintained, altered, or resisted. Assemblage asks us to “capture a sense of the uncertainty, nonlinearity and contingency of change” in the systems we attend to (McFarlane and Anderson 2011, p.162). This is helpful for the study of ontological politics, which suggests “an active mode of doing reality” (Robins 2012, p.188). A focus of analysis then becomes on how and why particular assemblages emerge and function as they do (Murdoch 1997). This may be addressed in part though attending to the “ontological politics of space” which focuses on how entities relate to each other through space and through particular conceptualizations or depictions of space and spatial relationships (Joronen 2013, p.628).

In this vein, one way to examine how particular assemblages are actively being formed is to ask how (human) actors are themselves ‘narrativising’ the assemblage—what stories do people tell about the actual working of the assemblage, its actors and spaces, as well as the potential or hoped-for functioning of it? (McFarlane 2009). Probing the “multiplicity of stories-so-far” (Massey 2005, 189) emphasizes the contingent, shifting nature of any assemblage and may be especially pertinent to understanding newly-emerging assemblages such as MSP. As an ‘art of government’ to evaluate for its potential (Ferguson 2009), the MSP assemblage is associated with multiple ontologies—it is being practiced in “coordinated multiple performances” (Robins 2012, p.188). Stories depicting such

performances can reveal the types of ontological assumptions being made about MSP actors and the spaces they use and create (Blaser 2009b). Using assemblage and ontological politics to explore the “play of the actual and the possible” (McFarlane 2011, p.652) in these narratives can help identify both how MSP is being imagined and the actual relationships within it at a particular moment in time.

Oceanic Ontologies and Assemblages

Recent work in geography and anthropology has engaged specifically with oceanic socionatures, asking how the materiality of ocean spaces might also complicate and advance our theories of human-environment relationships (Bear 2013; Bear and Eden 2008; Helmreich 2011; Steinberg 2013; Steinberg and Peters 2015).

Helmreich (Helmreich 2011, p.132) chronicles early conceptualizations of (sea)water as a ‘theory machine,’ noting that:

Water oscillates between natural and cultural substance...Water as nature appears as that flowing substance that culture may be mobilized to channel... Water as culture, meanwhile, can materialize as a medium of pleasure, sustenance, travel, poison, and disaster.

He argues for working ‘athwart theory,’ in a way that avoids reifying water as a theory machine while acknowledging the useful ways in which water’s properties can spark new ideas in social theory.

Steinberg and Peters (2015, p.2) offer guidance as to what working ‘athwart theory’ with seawater might look like. They propose a ‘wet ontology’

... not merely to endorse the perspective of a world of flows, connections, liquidities, and becomings, but also to propose a means by which the sea’s material and phenomenological distinctiveness can facilitate the reimagining and reenlivening of a world ever on the move.

They argue that the sea’s properties, including “its material reformation, mobile churning, and nonlinear temporality” create a potential for thinking more provocatively about the meanings of time, space, and power (Steinberg and Peters 2015, p.14). Providing further evidence for the complementarity between ontological and assemblage thinking, from a wet ontology Steinberg and Peters propose assemblage “as a starting point for thinking with water...in which mobile human and nonhuman (including molecular) elements and affects are...imagined, encountered, and produced” (Steinberg and Peters 2015, p.10). The combination of a wet ontology and assemblage thinking leads Steinberg and Peters to an emphasis on the capacity for new and different relationships and realities to emerge amongst entities encountering the marine realm in some way.

In considering marine-space assemblages from a more applied perspective, Rossiter et al. (2015, p.4) argue that conceptualizing marine relationships as assemblages offers greater possibilities for approaching policymaking with fishing communities in creative ways. In their work with fishers in the Gulf of Mexico, for instance, they find the concept of assemblage useful to emphasize that

...what needs to be understood are not essential components or closed characterizations (e.g., stakeholder, habitat, ecosystem), but how different entities—human and more than human—(be)come together in different combinatorials to continually produce and sustain capacities.

Adding another dimension to the study of assemblages-at-sea, they also argue that “to discuss assemblages is to discuss affect,” insofar as affect is critical for understanding the human component of shifting relationships (Rossiter et al. 2015, p.6).

Using ontological politics and assemblage to study marine spatial planning

Both ontological politics and assemblage draw attention to how power is wielded in the particular performances that shape reality. Indeed, “the territory staked out for ontological politics is marked by the way power is produced and reproduced in the technoscientific performances of realities” (Landstrom 2000, p.477). Assemblage also emphasizes that power is a function of association- of people, animals, things, and spaces with other actors (Latour 2005). How do some actors become associated with other actors (and discourses)? Here the idea of ‘inscription’ is useful, described by Latour (1999, p.306) as “types of transformations through which an entity becomes materialized into a sign, an archive, a document...a trace.” Probing inscriptions for how key words, places, and groups of human and nonhuman actors come to be associated with one another can offer clues as to the relative power of different actors. With MSP, inscriptions are most clearly occurring in the data-gathering and map-making activities that form central parts of the project.

In using these concepts to examine MSP, we remember that “the promise of assemblage thinking...[is] in its emphasis on the chance that new social-spatial relations and forms may emerge” (McFarlane and Anderson 2011, p.163). These have also been referred to as *capacities*— those possibilities of what could be as a result of particular coming-togethers of actors in an assemblage (B. Anderson et al. 2012b). Thus while many studies employing assemblage have examined how particular policies or practices have emerged in the sense of come-to-be (e.g., Bennett 2005; Braun 2006; Harrison and Popke 2011), the MSP case offers the opportunity to examine this ongoing emergence of what is, *along with* an analysis of the potential ways of being (capacities) that the assemblage affords. This is closely related to the insistence in ontological politics on the multiplicity of realities, and to key questions about “where the options are” in a particular system or practice, what “reality effects” are being performed, and how such options and effects impact real relationships (Mol 1999, p.80).

Finally, employing assemblage with ontological politics for these purposes is especially appropriate given the challenges of governing marine space. Marine spatial planning has been described as a ‘wicked’ problem that has to contend with highly complex systems (Jentoft and Knol 2014, p.13). In part because of this complexity, geospatial databases have become a key forum where information about marine space is collected, where existing and future conditions are mapped,

and where regulatory options are described (St. Martin and Hall-Arber 2008). In this sense, Ingold's (2000, p.219) observation that "places exist...as nodes in a matrix of movement" is an apt description of the way constantly shifting marine spaces and places are beginning to be inscribed as particular data points in data portals. A major concern stemming from this process, however, is the general lack of a spatial component to social information about ocean use (Le Cornu et al. 2014) and hence a 'missing layer' of human community information in databases used for planning purposes (St. Martin and Hall-Arber 2008). In using these concepts to study processes of inscription further, we highlight more precisely some of these challenges and possibilities for overcoming them.

Community and Environment as 'Matters of Concern': A short history and current snapshot of the US MSP assemblage

Complexities in environment and community

Ocean spaces have been a longstanding governance concern in the US. In terms of biological resources, fisheries management and protections for marine mammals and other charismatic species have been key manifestations of this concern (Hanna et al. 2000; Roman et al. 2013). In terms of energy resources, oil and gas drilling has been a focus for more than a century, and offshore wind development is currently adding a new dimension to managing ocean space (Firestone et al. 2004; Firestone, Kempton, and Krueger 2009). Add to these transportation, recreation, defense and research activities, and there are myriad reasons for governing marine spaces. Historically each of these concerns has been managed separately, and governing efforts have struggled to take into account connections and interdependence between social and environmental components of ocean systems (Clay and Olson 2008; Douvère 2008; St. Martin 2006).

The case of fisheries management illustrates some of the reasons environment and community came to be contested concepts in ocean governance. After the 1976 Fishery Conservation and Management Act (MSA¹), federal fisheries management began a shift toward species-specific regulation (Abbott-Jamieson and Clay 2010). This shift coincided with international movements toward claiming state territories and exclusive economic zones (EEZs). Though this political-economic territorialization of ocean space was intended in part to protect fisheries from over-exploitation by foreign fleets, government programs to expand domestic fishing infrastructure led to overcapitalization and declines in fish stocks (Mansfield 2004; Mansfield 2001).

Over the past 30 years, these declines led to increasingly stringent regulations as managers tried—and often failed—to rebuild fish stocks. Among the general public, concern about fish populations combined with news about oil spills, floating trash

¹ Subsequently known as the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

islands, coastal water contamination, and dolphins dying in fishing nets. Upset with these perceived governance failures, environmental activists, NGOs, and foundations² have increasingly pushed for further fishing restrictions along with legislation protecting marine mammals (16 U.S.C. § 1361-1423h) and establishing marine protected areas (MPAs). Broader narratives about fragility in ocean ecology have continued as the media has followed climate change concerns about polar bears and coral bleaching, hypoxic dead zones in the Gulf of Mexico, and the aftermath of the 2010 Deepwater Horizon oil spill. Together, these events, movements, and dialogues have made ‘the environment’ a difficult subject for ocean governance—a controversy or ‘matter of concern’ in the language of Latour.

Meanwhile, the positioning of human communities within this milieu has been shifting and contested. As a term that refers to always-heterogeneous groups of people or people-in-places, community is a difficult and imprecise concept (Agrawal and Gibson 2001). Nevertheless, both geographic and interest-based communities are ‘real’ in the sense that they comprise part of the lived experience of people and can affect ecological, social, and political conditions. In the realm of ocean fisheries, the idea of community has been constructed as troublesome for governance efforts. Since Gordon (1954), along with Scott (1955) and later Hardin (1968), originally set forth fishers—and other common-pool resource users—as individual, rational economic actors who would inevitably degrade resources, communities have largely been absent from the ‘bioeconomic discourse’ of fisheries management agencies (Mansfield 2004; St. Martin 2001).

The disappearance of community from ocean resource management has increasingly been contested since the 1980s (Mansfield 2004). Noting community management successes, common-property scholars argued against the Hardin model (e.g., Ostrom 1990) and other social scientists highlighted the complex relationships between coastal communities and fishing, tourism, cultural identities, regional resilience, and local and global food networks (Abbott-Jamieson and Clay 2010; Clay and Olson 2008; Maiolo 2004; McCay 2004; St. Martin et al. 2007; Rossiter et al. 2015). The 1996 reauthorization of the MSA acknowledged communities but painted them as largely stationary (16 U.S.C. § 1851(a)(8)), and in practice management has focused on economic activities while ignoring the complex ways fishing communities are socially and emotionally integrated with marine spaces (Olson 2010; Rossiter et al. 2015).

That environment and community have emerged as controversial speaks to the inability of existing ocean governance frameworks to sufficiently address interactions, overlapping concerns, and conflicts among social and environmental actors. Continued ecological challenges combined with arguments over future energy development and ongoing cultural and economic struggles in coastal

² Such as the Ocean Conservancy, PEW Environment, The Nature Conservancy, The Packard Foundation, and the Moore Foundation.

communities indicate an unsettled situation ripe for the narratives and practices of new proposed solutions.

The beginnings of an MSP assemblage

Though diverse in origin internationally (Douvere 2008; Ehler and Douvere 2009; Gilliland and Laffoley 2008), narratives of MSP in the US arose in response to these perceived problems of sector-based management of ocean uses. Documents prepared by the National Ocean Council explained that

... traditional management approaches [were] historically designed to manage single activities and sectors...Today there is a need to consider human uses through a broader lens that more accurately reflects the connectivity and diversity of marine resources. To that end, an ecosystem-based approach to management is required, and an effective way to advance such an approach is through [MSP] (National Ocean Council 2012, p.85).

In identifying MSP as a tool for implementing a holistic ecosystem-based management (EBM) (L. Crowder and Norse 2008), calls for MSP have resembled a 'salvation narrative' (Campbell, Gray, and Meletis 2008). In this particular salvation narrative, the myriad problems of managing ocean spaces, species, and human activities are to be addressed through a regional system of marine spatial plans.

Following President Obama's July 2010 executive order (The White House 2010) and aided by funding from NGOs, a governing infrastructure for MSP began to take shape. A National Ocean Council was established, which 'encourages' nine marine planning regions³ to form regional planning bodies (RPBs) for MSP with official representation from states, federal agencies (such as NOAA and BOEM)⁴, Native American tribes, and the regional Fishery Management Councils (National Ocean Council 2013). These RPBs are tasked with producing marine spatial plans that can inform existing management issues or "describe future desired conditions" (National Ocean Council 2013, p.21). In this paper, we focus on activities along the East Coast of the US at the beginning of the MSP movement between 2010-2013.

The three RPBs on the East Coast (the Northeast, Mid-Atlantic, and South Atlantic⁵ RPBs) are only parts of the overall emerging MSP assemblage. They are built with the assistance of regional organizations formed in the mid-2000s to facilitate interstate cooperation regarding coastal and ocean management questions. Along the East Coast these are the Northeast Regional Ocean Council (NROC), the Mid-Atlantic Regional Council on Oceans (MARCO), and the Governors' South Atlantic

³ Alaska/Arctic, Pacific Islands, West Coast, Gulf of Mexico, Northeast, Mid-Atlantic, South Atlantic, Caribbean, and Great Lakes.

⁴ The National Oceanic and Atmospheric Agency and the Bureau of Ocean Energy Management

⁵ The South Atlantic RPB currently has only a draft charter.

Alliance (GSAA). The regional organizations each maintain their own ocean data portal, though much of the information in these portals are from the same database, the federal Multipurpose Marine Cadastre (MMC).

Methods

We employ assemblage and ontological politics to frame and interpret the results of our analysis of key MSP documents and interviews with 42 MSP practitioners⁶. Documents include those produced by the federal government (e.g., National Ocean Policy reports, frameworks, and implementation plans) and by the Northeast, Mid-Atlantic, and South Atlantic planning regions (e.g., regional work plans). Interviewees include federal agency employees, state employees in each of the East Coast regions, mapping and GIS professionals, and members of academia and non-government organizations involved in the initial stages of constructing MSP. Interviews and documents were analyzed through a grounded theory approach (Charmaz 1983; Charmaz 2006) combined with an explicit attention to how community and environmental actors were being constituted via narrative and practice.

Though we acknowledge the global character of the MSP movement, our focus on the US East Coast allows us to consider how ideas and practices borrowed from the global discourse are operationalized in a regional context. Potential limitations of our regional approach include a somewhat artificial bounding of the relationships we are exploring as part of the US MSP assemblage, and a narrowed perspective regarding transnational human and non-human MSP actors (e.g., whales, NGO activities). For this particular study, however, we feel that the levels of detail we are able to obtain by focusing on a regional context are worth the tradeoff. We also value the opportunity to develop sustained engagement with our research sites, which we continue to do with this work.

We wrestle with the tensions inherent in our desire to attend to the role of non-human actors in a meaningful way, and the reality of our research datasets primarily consisting of various manifestations of human narratives. We are sensitive to the critique that assemblage scholars have not gone far enough in considering the agency of non-human actors, particularly within ocean spaces (Bear 2013; Lambert, Martins, and Ogborn 2006). We also argue, however, that there is much to learn about the role of the non-human in MSP assemblages through discursive data. Indeed ontologies “manifest as ‘stories’” that reveal the objects and relationships central to particular worldviews; and though it is critical to follow how such stories are “embodied and enacted,” these actions too can often be gleaned from the remembrances and desires expressed in interview data (Blaser 2009a, p.877). Further, since to represent something *is* to perform a politics of ontology (John Law

⁶ We use the term ‘practitioners’ broadly here to indicate anyone whose work regularly brings them in contact with MSP ideas and/or practices. This includes state and federal employees, members of environmental NGOs, and academics.

and Benschop 1997), examining how (human and non-human) actors are represented in documents and narratives enables us to consider the potential agency of non-human actors in the MSP assemblage.

Assembling marine spatial planning: Salvation through stabilization?

To carry out MSP, federal guiding documents propose “a broad program...of scientific research, mapping, monitoring, observation and assessment” in order to ensure that “policies are based on sound science” (White House Council on Environmental Quality 2009, p.31). Thus there are two interrelated projects—of governance and (spatial) information management—that are emerging as the primary arenas where MSP is being done.

Most practitioners also envision MSP as a tool or method through which to achieve ‘better’ or more comprehensive ocean management. For some, it is primarily about “doing this spatial analysis of what’s going on and trying to figure out where there might be conflicts” (Int. 17). In avoiding conflicts, visualizing activities within ocean spaces is key to “helping coastal managers make wise decisions” (Int. 33). In this way, MSP is envisioned as a method for making visible human-environment relationships that exist within ocean space.

In founding documents and in the language of practitioners, there is thus a ‘salvation narrative’ that promotes stabilization, categorization, and organization as a road to better ocean management. In tandem with this narrative are burgeoning practices of inscription in the form of cataloguing and mapping spatial information. At the same time—and sometimes within the same practitioners—alternative narratives and practices question and de-stabilize the salvation narrative and resist inscription. Both represent ways that the MSP assemblage is being performed, and in both are new capacities for ocean governance as well as concerns about how political power is employed. In these sections we attend to the ‘emerging reality’ of MSP today as reflected in these narratives and practices.

Making sense of ocean environments

Practitioners constructing a ‘salvation’ narrative for ocean environments describe the relationship between MSP and EBM as a close one, in order to align MSP with the vision for scientifically-informed management. Some envision MSP as a tool in service to EBM, while others characterize both MSP and EBM as tools aimed at the same end goal:

I have always looked at [MSP] as a tool, to achieve what we want...and I view [EBM] the same way...in other words what we want is healthy, productive, and resilient ecosystems (Int. 42).

In intertwining MSP closely with EBM, practitioners lay the foundation for characterizing ocean environments in the language of ecosystem-based

management. The terms ecosystems, species, habitats, and populations all become part of the vocabulary of MSP. This vocabulary in turn shapes the performance of data collection and inscription.

The language of EBM helps fuel a sense that there are many ‘data gaps’ regarding ocean ecosystems and species that need filling. Given interest in offshore wind energy development, one prominent ‘missing’ cluster of ecosystem information concerns bird activity. In trying to overcome this avian data gap, practitioners are developing models to help predict the locations of birds. Their efforts to do so demonstrate how the MSP-as-salvation narrative begins to manifest in processes of inscription:

All we have for sea bird data is some old observations...But, the NOAA biogeography branch [has] created sort of a model, they take that old observation data and then tie it to known habitat information...we know where we saw birds in the past, and what were they keying on...and then we look at the current distribution of fish or chlorophyll or whatever and say, well, today this is probably where the birds are (Int. 28).

In filling their bird data gaps with these types of models, practitioners ‘stabilize’ ecosystem information while at the same time make real the MSP imaginary that envisions a comprehensive place of reference for ocean ecosystems. The models serve to extend the ‘known’ bird information into the unknown, territorializing the blank spaces in data portal viewers and reducing a perceived uncertainty in the ocean environment. The multiplicity of reality—the ways seabird concentrations and migrations might be differently experienced by biologists, fishermen, or the birds themselves—is reduced twice, through the model and via the portal itself. Further, the mediums of seabird life—air and water—become an irrelevant blue background in the data portals, an irony for a process that in its very name evokes both elements. Far from exhibiting ‘co-relationality’ (Bear and Eden 2011), the actual relationships indicated by seabird activities grow more difficult to discern the more neat and stabilized marine environments become.

In assembling databases of ecosystem information and providing a way to see how different parts of the system relate to each other—and to activities occurring on and in the water—practitioners hope to facilitate a future in which people are able to ‘take everything into account’ when making ocean management decisions. At the same time, practitioners often create datasets for particular needs, then downplay their own roles in the assembled products. As one practitioner described regarding wind energy projects,

In order to site renewable energy in suitable areas, you have to know what else exists in the region [such as] navigation, marine mammals, jurisdictional areas...The whole goal is to look at what’s out there and use the information as screening level information to say, ‘ok this may not be an appropriate area to investigate for wind energy development’...Our role isn’t to make

decisions; it's to put the data out there so other people can make the decisions (Int. 15).

Together these examples illustrate a gap in the salvation narrative about the work—the politics—that is done to transform particular pieces of information about ocean ecosystems into the spatial representations deemed necessary for decision-making. Though practitioners make reference to creating certain datasets, maps, or 'data viewers,' to serve particular needs, exactly how ecosystem data is curated remains one of the more hidden aspects of the MSP assemblage.

Some practitioners do articulate how they believe data *should* be processed. As one person noted, their organization wants to

...bring the multiple stakeholders together and work on a process that vets the data... so that everyone is clear on where the data came from, how it was collected and analyzed (Int. 37).

This idea is also incorporated into the broader salvation vision for MSP. For instance, the practitioner continues:

Fishermen have been arguing that the NMFS data is flawed for decades. Now...if that data was presented to the fishing industry early on and it was explained to them how it was collected and analyzed, maybe you wouldn't have this constant battle...Now, if the science is vetted through the process, you can no longer attack the science (Int. 37).

Though this is a particularly idealistic vision—as many have pointed out (e.g., Bocking 2005; Weeks 1995), clarifying science rarely contributes to solving social-political disagreements—it reflects a more general desire amongst practitioners to use the data portals to de-mystify the 'ecosystem inscription' process. At the same time, the vision preserves existing power imbalances (fishermen are 'shown' and 'presented to'). This underscores the importance of inscription processes to the way environments and communities are being constituted and the (often unrecognized) ontological politics involved. In particular, if "the ontological politics of space...is based on the monopolization of the spatial revealing" (Joronen 2013, p.628) the actions of data portal practitioners are of critical political importance in shaping ideas about ocean spaces and resources given their control over the 'spatial revealing.'

Community engagement and ocean stakeholders

In MSP planning documents, human communities are characterized as vulnerable to climate change, sea level rise, and economic losses from ecosystem decline. Through MSP, communities are expected to improve their resilience to these threats (National Ocean Council 2013; White House Council on Environmental Quality 2009). MSP is anticipated to benefit a variety of 'stakeholders' as well:

Recreational fishermen and boaters will benefit from actions that advance conservation programs... Commercial fishermen will be better equipped...through improved science that supports increased sustainable fishing opportunity...Offshore energy industries will benefit from...more efficient leasing and permitting processes (National Ocean Council 2013, p.3).

In this salvation vision, uncertainties about how different geographical or interest-based communities might engage with MSP are sidelined as groups are enumerated in a vision of informed stakeholders making use of improved data.

In deciding how to incorporate and display data for different human activities, practitioners highlight that it is an ongoing challenge to 'make sense' of data for management purposes. As a practitioner in the Mid-Atlantic noted, they spoke on a panel about data portals shortly after the national ocean policy was introduced, and

I talked about how we struggled about what data layers we did and didn't want...knowing that people get lost so quickly in these portals...we really tried to make that decision- should it go on or not, through that filter of, is this important for planning purposes? (Int. 28).

Practitioners' labor in creating 'useful' portals illustrates some of the ways that the messy concepts of community and stakeholder are being simplified and made 'more certain' through their naming and organization. The assemblage concept encourages attention to these processes of "assembling and reassembling material practices" (B. Anderson and McFarlane 2011, p.124), and reminds us that entities are always composed of a variety of powers, which can be 'actualized' in different ways (Allen 2012). As a newly assembling entity, MSP does not yet have well-trodden paths of specific power relationships, but it is certainly wielding power.

An ongoing question is how the cultivated representations in data portals should portray shifting relationships and new information. Practitioners demonstrate concern about the quality and authority of the data contained within their portals, and want it to be trusted and validated by stakeholders. In outlining the provisional nature of the portals, practitioners emphasize ongoing engagement with stakeholders:

We can't take a bunch of maps that somebody produces in a laboratory or in a department and then put it out there and say 'okay we got it, and everybody is going to follow it,' because that's not going to work. People who are going to be affected by decisions have to be involved in that decision making process (Int. 34).

While working to stabilize information about human activities, practitioners' concern with trust, validation, and iterative processes provides some capacity for

people to engage and help shape the images that represent them in data portals. There is space, in other words, for intervention here, for multiple ontologies to be displayed (Mol 1999). Practitioners working directly with the data portals, however, are the ones shaping the terms of engagement. These terms are designed to simplify the complexity of human data in line with the vision of data portals as comprehensive—and comprehensible—support tools for a smoothly-functioning MSP system. In doing so, they also work to maintain an imbalance of power between planners and stakeholders. Stakeholders (and sometimes ambiguously-identified ‘communities’) can respond to images of their activities, but have little opportunity to initiate particular self-characterizations or to suggest different modes of representation. Further, there is little consideration of the power differentials being created by practitioners themselves via their choices in data collection, inclusion or exclusion of data fields in the portals, categories and terms used to describe human activities, or the way interactions between users is (or isn’t) portrayed.

Assembling marine spatial planning: De-stabilizing and re-imagining MSP

At the same time as the ‘salvation and stabilization’ narrative—and associated practices of inscription—is active in shaping the MSP assemblage, there are also counter-narratives and practices that work to de-stabilize the salvation vision or re-imagine it with different types of relationships.

Counter-narrativising the assemblage: Identifying difference & exploring new capacities

In some ways, the emerging political structure of the new MSP policy (e.g., the formation of RPBs) is facilitating practitioners’ ability to speak in new terms about what they might do with MSP. The representation of new actors in the RPBs—created within the outlines of the salvation vision—sometimes serves to destabilize the policy process in ways practitioners did not expect. One practitioner’s account of a meeting that included the officially-recognized Native American tribes in the Northeast highlights some of the unexpected tensions and opportunities involved in having ‘new dialogues’:

It’s been a very steep learning curve, and fascinating and very worthwhile... they weren’t here to derail it thank goodness...they are grounding us in ways you can’t even imagine in our discussions around conflict- asking why do we focus on conflict, this is about common need...So in one sense, it has slowed the process way down. I mean you have [a state representative] sitting there talking about how to proceed. Then you have these tribes saying, ‘whoa, wait a minute, what is stakeholder, what is that, I don’t understand that term. Let me tell you about my tribe’s relationship with the ocean’ (Int. 10).

In confronting this expression of difference in practice and vocabulary, the practitioner reveals their own mixed reaction— acknowledging the value of having new perspectives in the discussion, but also expressing frustration with the speed of

the process. That the tribes themselves are uncomfortable with the term stakeholder raises questions about stakeholder definition and whether other groups might also see their interactions with ocean spaces in ways that are more multifaceted than the term suggests. This exchange also highlights that different communities of people indeed have different relationships with the ocean itself and the organisms within it, something not considered by the salvation narrative beyond the superficial categories of commercial or recreational users. Practitioners have not fully recognized that the sea is “not simply an affective force for those at sea; but also those beyond the sea” (Peters 2012, p.1252). Thinking of MSP as an assemblage would allow practitioners to recognize that human and nonhuman actors move back and forth through wet and dry worlds, which “are not merely passively consumed but imagined, encountered, and produced” (Steinberg and Peters 2015, p.10).

Some practitioners also express a desire to re-imagine the stakeholder participation process. In doing so, they critique business-as-usual and promote greater openness:

This is a little lofty, but the transparency early. You know, how- what is this going to mean? We couch [our practices as] ‘We’re just collecting data. It’s going to fuel knowledge.’ And really, basically what you need to be saying is, “This will potentially close fishing areas and it may take away your beach use” (Int. 16).

With this sentiment, this practitioner moves away from the salvation idea that MSP will be a boon for everyone, and imagines a more honest conversation between practitioners and stakeholders. Recognizing that the people who collect stakeholder information are not necessarily the same people making decisions about ocean uses, this practitioner also envisioned more engagement by decision-makers and stakeholders alike:

What I’d really like...is to see the planners engaged in this process too, so that once we’ve finished data collection, they can capitalize on this same sort of process to do the planning. So to bring people together using the participatory tools, not just to map where our ocean uses are, but to look onto how different scenarios for planning are going to play out and the perspective that the community feels (Int. 16).

In this vision, new and different relationships between decision-makers, data practitioners, and ocean stakeholders are imagined. The idea is less ‘collect and comment’ and more long-term collaboration between all parties. Viewed through the lens of ontological politics, this practitioner is suggesting there are key “sites and situations” in the MPS assemblage that are ripe “for interfering” and creating different practices (Mol 1999, p.74).

Though most of the ways the MSP assemblage is re-imagined by practitioners are not radically dissimilar from the salvation vision, they contain important differences in the types of relationships imagined and in the agency accorded to key actors.

Participation, in these visions, is a more open, sustained, and knowingly ‘messy’ process. These differences highlight the capacity for power to be wielded otherwise in the assemblage, and for interventions in policy or practice to shift MSP’s trajectory.

Resisting and revising inscription: Material complications & social concerns

There are disruptions to the stabilization narrative in the ways that environments and communities are translated and inscribed into geospatial databases. While the stabilization narrative recognizes shortcomings in the data portals, these are often related to the amount or type of information being inputted, and take the role of the portals (e.g., to provide the basis for MSP decision-making) for granted. In contrast, some practitioners—including those working directly with the portals as well as others—articulate doubts and highlight issues of political and social concern that paint the portal construction process as still very unsettled.

In illustrating the evolving forms of both MSP governance and data portals, the process of constructing regional portals presents many challenges:

A part of our challenge all along has been being ahead of the political process and really trying to...envision what managers, government actors are going to want and need, because we are designing a system to support a process that hasn’t even been invented yet (Int. 35).

This scenario demonstrates the provisional character of intertwined governance and data inscription processes and reveals the real human work involved in carrying out the ‘arts of government’ (Ferguson 2009) as they apply to MSP. With this revelation the salvation narrative becomes less monolithic, and instead speaks to potential room for negotiation regarding the ontologies of MSP. While the practitioner separates their own work with the portals from ‘the political process,’ in fact they are performing a politics of ontology on a daily basis. Their expert knowledge shapes myriad decisions about how living and nonliving oceanic actors are portrayed *to be*, and as portals take shape, we might expect that such knowledge claims and “the technologies through which these become hardwired into the working practices of industry and government [will] manifest themselves in...the sociomaterial environments we inhabit” (Whatmore 2009, p.588). Nevertheless, this is still a moment of ‘ontological disturbance’ (Whatmore 2013) where practitioners themselves are still debating how to imagine, portray, and explain oceanic actors and spaces.

Practitioners also critique each other in terms of the drive for ever-increasing data. They worry that a cult of information will replace the central concerns—like environment and communities—of the MSP process:

We have decided that this is about information and let’s get information, and that’s planning. And information isn’t planning. Just because I know how

much you weigh and what your height is doesn't mean I know who you are and how that affects how you interact with other people (Int. 1).

At the same time as some lament the quest for more and more data, others voice concern about the human groups being left out of the data collection process. As one practitioner noted,

...those who are data-rich are going to get over-represented in data portals...where are the poor communities? Where is the subsistence fishing taking place? Where are immigrant fishing communities in urban areas getting food and do we have any sense of that? (Int. 29).

These perspectives help illustrate the social and political complexity of a data collection process that is fraught with questions of power, representation, and purpose. They also highlight that decisions about what data goes 'in' or are kept 'out' of the data portals are part of 'reality-practices' that work to discriminate between objects and relationships that 'fit' and those that do not (John Law and Lien 2012). That the framework for distinguishing what types of information are accepted as reality is still very much unsettled suggests that perhaps space exists for a movement toward more mindful data collection practices that take into account core concerns for environmental and human community well-being.

The marine environment itself represents a destabilizing source of material complication to the salvation narrative. The unpredictability of marine ecosystems, particularly within a context of climate change, is one of the largest challenges to representing such systems in narrative or map form. Practitioners reflect this uncertainty by expressing anxiety over the implications of MSP for the future health of the oceans. As one explained, a major challenge is

...trying to impose some kind of order in terms of lines on the water...on a system that is inherently dynamic and noisy in terms of shifting around, particularly with climate change...we have to create an MSP framework and adaptive approach to it that accommodates the dynamic nature of the ocean (Int. 35).

Through its complex material properties, ocean space resists inscription. The difficulties portal practitioners experience is related to geographers' own challenges in recognizing "volume, matter, and emergence" when theorizing relationships in the world around us (Steinberg and Peters 2015, p.2). For MSP practitioners who largely want to take environmental well-being into account, a challenge will be learning how to embrace a 'wet ontology' that "endorse[s] the perspective of a world of flows, connections, liquidities, and becomings" (Steinberg and Peters 2015, p.1) while employing data portals that favor more static representation. Indeed the question of how far "cartographic boundaries [might] demarcate and control" activities within ocean spaces while dealing with their "essential fluidity" remains very unsettled (Bear and Eden 2008, p.488).

In terms of representing human-use information, practitioners are re-imagining inscription processes. In addition to holding traditional meetings and conducting surveys, practitioners have recently deployed 'participatory GIS' to collect stakeholder information. The Mid-Atlantic region has embraced the process, hosting participatory GIS workshops with recreational fishers and other ocean users:

We have a laptop offering GIS that hooks up to a projector... the participants in the groups come up to the map and draw right on the map with the stylus...What you end up mapping is...only the areas where a majority of [participants] mapped the use. So it has a consensus to it as well...(Int. 17).

In these workshops, on-the-water recreational activities (as translated through the memories of participants) are actively and instantly being inscribed and 'rendered technical' (Murray Li 2007). Many practitioners are excited about its potential for engaging with stakeholders and collecting new knowledge. As one explained, after their experience working with participatory mapping, "I'm realizing that, as much as the data are important, the blessing of the data by communities and the constituency is much more important" (Int. 16). Though discussions about participatory GIS often fall into the salvation narrative, and the practice of populating portals in this way helps to territorialize ocean space for some stakeholders and not others, at the same time the practice is a movement toward experimentation in data collection. Such activities can perhaps be productively linked to the ethos of the assemblage concept itself, which "experiments with methodological and presentational practices in order to attend to a lively world of differences" (B. Anderson and McFarlane 2011, p.126). Experimentation with participatory GIS could be encouraged as a way to attend to more of the differences and realities in diverse ocean users and encounters.

Discussion and Conclusions

The assemblage of MSP has "reality effects" (Mol 1999) that make a difference in the ways that 'community' and 'environment' are performed, but at the same time the properties of that reality are multifaceted and (could be) contested. We have employed the concept of assemblage in analyzing emerging MSP activities because it encourages a focus on *both* the properties and capacities of ever-changing networks of socionatural actors (B. Anderson et al. 2012b; McFarlane 2011). Since this involves attending "to matter and practice," it inevitably involves us in ontological politics as well (Moser 2008, p.99). This orientation has enabled us to analyze how narratives and practices of inscription (properties of the assemblage) support salvation/stabilization visions while simultaneously disrupting those visions and suggesting new capacities.

The assemblage concept's orientation toward future possibility "opens up a moment of indetermination" (B. Anderson et al. 2012b, p.179) in our analysis, and discourages any totalizing narrative about what the MSP assemblage is doing in

relation to ocean environments, communities, and spaces. Instead, assemblage enables us to focus on a key question of ontological politics; namely “where options are” in a thing or practice (Mol 1999, p.80). In this way, both concepts are particularly well-suited to our desire as researchers to use critique, but also to move beyond it in asking how new ‘arts of government’ (Ferguson 2009) can address ethical challenges. As researchers, we also recognize that we are a part of the MSP assemblage, with a particular ‘angle of vision’ on it (McFarlane 2009; Murray Li 2007). Acknowledging our ethical concerns, we have acted strategically in focusing our analysis on practices within the assemblage as they relate to the simultaneous contraction and expansion of capacities for marine environmental and community well-being.

The relationships between groups of people and ocean spaces are a key point of tension in the MSP assemblage. The ‘missing layer’ of human activity in the marine environment (St. Martin and Hall-Arber 2008) is largely still missing from the data portals. Though data on broad ‘areas of use’ for commercial fishers, recreational fishers, aquaculturists, shippers and others is being collected, discussions or depictions of the internal and interrelated complexities of human activities is lacking. Indeed, while ‘*extensive*’ spaces-of-use are inscribed into data portals, the “*intensive* spaces of the affectual and emotional elements of everyday life” (Rossiter et al. 2015, p.5, emphasis added) and the socio-natural relationships—the lived experiences—that embody such spaces are not captured in the current MSP assemblage.

At the same time, we ask- are there signs in the assemblage that reveal capacities for acknowledging greater human-environment complexity? Several promising signs are revealed in the counter-narratives to the salvation vision. In recognizing the flexibility of MSP, in relating excitement and uncertainty over new partnerships, and in detailing new lines of communication, practitioners belie the sense of order and inevitability in the salvation narrative. Challenges from Native Americans, aquaculturists, and other ‘new’ groups in ocean management also have the potential to change conversations toward more relational discussions of human uses of ocean space. Further, some practitioners describe a deep desire for longer-term, more honest collaborations with community groups which, if realized, could in itself go a long way toward a greater understanding of “how different entities...(be)come together...to continually produce and sustain capacities” for well-being (Rossiter et al. 2015, p.5).

The way actors and processes are inscribed in the materials of communication in an assemblage have the potential “to influence the terms of debate within that assemblage” and reshape how the assemblage functions (McFarlane 2011, p.661). For this reason, the geospatial data portals are key nodes of activity and loci of power in regard to both human and non-human elements of the MSP assemblage. As “contemporary calculative infrastructures” the data portals have both administrative and political power (Mennicken and Miller 2012, p.5), and are deeply intertwined with the narratives that support them as pillars of MSP governance. For

practitioners, data portals are a way to 'see' ocean environments and social activities. But in "extracting from the messiness of the social world" (Murray Li 2007, p.265), what is rendered comparable are specific activities (kayaking, commercial fishing) in specific two-dimensional spaces. In other words, qualities (of interlinked socio-natural ocean systems) are being rendered as quantities (square miles of ocean space, numbers of users) (Mennicken and Miller 2012), potentially reducing the capacity for adaptive MSP governance (as well as the resilience of the system itself).

At the same time, it is worth recalling that "a particular instrument remains marginal until there exists...a collective assemblage that is capable of animating it" (Mennicken and Miller 2012, p.20), and that there are practitioners who aspire to 'animate' the data portals to produce greater socio-ecological well-being. In the aspirations of practitioners to 'de-mystify' data collection and representation there are possibilities for 'commoning' (Bear 2013), introducing difference, and de-territorializing practices of inscription into the data portals. The participatory GIS mapping efforts, for instance, are one activity that, while still wrestling with issues of uneven power and representation, have potential to be a source of greater diversity in thought and practice. As practitioners revealed, there is much labor involved in creating the portals—they are a site of performance in the assemblage (McFarlane 2009)—and while there is power in this labor, there are also uncertainties, instabilities, and contingencies that make outcomes far from predetermined.

Despite some aspects of environment and community being fixed in data portals, it is clear that no single, stable understanding of environment, community, or MSP itself actually exists within this assemblage's 'stories-so-far' (Massey 2005). Our investigation confirms, however, that the higher the ontological order of a thing (its complexity and epistemological distance from everyday life), the more translation of its reality occurs through technological means (Carolan 2004). We observe that "moments of ontological disturbance render [the] infrastructure of mediations a familiar subject of political (dis)ordering, governance and dissent" (Whatmore 2013, p.37). As a constantly shifting ontological space—in its material characteristics and in the multiple ways these are understood and experienced—the ocean itself is especially predisposed to ontological politics. Further, as 'infrastructures of mediation,' spaces as mundane as GIS data layers therefore have great ontological and political import- they are battlegrounds for socio-ecological futures.

Employing an assemblage framework to guide our analysis of the ontological politics of MSP has also resulted in new questions about its ongoing performance. If particular realities "are being done in practice[s]," they can only be as settled as such practices (John Law and Lien 2012, p.366) and we wish to know more about the interactions and instabilities created by the (human and nonhuman) actors involved in MSP. For instance, how exactly are data portal practitioners curating the information that appears in it? What criteria are they using to make decisions about

the information allowed in or out, and how it will be displayed? How will complexities in human-environment relationships be represented (or not)? How will tensions between language and practice, between ideal visions and lived realities, and between desires for organization and control and desires for democratic planning be resolved? And how will the material properties of oceans further affect the assemblage? In an evolving ontological politics of MSP, there is much left to explore.

In moving beyond the “politics of ‘anti-’,” we have aimed here to engage with MSP as a ‘configuration of governmental power’ that is multifaceted and open-ended in terms of its emerging capacities (Ferguson 2009, 169). Entering the assemblage via the ‘matters of concern’ of community and environment has provided a way to examine specific narratives and practices of inscription. We have seen that MSP is beginning to be enacted in particular ways and that in these enactments there are ontological politics happening. Much remains to be investigated in the “play of the actual and the possible” (McFarlane 2011, 652), but we hope we have illustrated that there are indeed openings where, with effort, the trajectory of MSP can be guided toward processes that expand rather than contract the capacity for greater socio-natural well-being in ocean spaces.

Acknowledgements [Draft]

We thank the National Science Foundation (NSF) for supporting this research (Award No. 1155484). We also thank the MSP practitioners we interviewed for their generous contributions of time and thought. Two anonymous reviewers provided detailed and constructive feedback on this manuscript, for which we are grateful.

References

- Abbott-Jamieson, Susan, and Patricia M. Clay. 2010. “The Long Voyage to Including Sociocultural Analysis in NOAA’s National Marine Fisheries Service.” *Marine Fisheries Review* 72 (2): 14–33.
- Agrawal, A., and C. C. Gibson. 2001. “The Role of Community in Natural Resource Conservation.” *Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation*, 1–31.
- Allen, John. 2011. “Powerful Assemblages?” *Area* 43 (2): 154–157. doi:10.1111/j.1475-4762.2011.01005.x.
- . 2012. “A More than Relational Geography?” *Dialogues in Human Geography* 2 (2): 190–93. doi:10.1177/2043820612449295.
- Anderson, Ben, Matthew Kearnes, Colin McFarlane, and Dan Swanton. 2012a. “Materialism and the Politics of Assemblage.” *Dialogues in Human Geography* 2 (2): 212–215.
- . 2012b. “On Assemblages and Geography.” *Dialogues in Human Geography* 2 (2): 171–189.

- Anderson, Ben, and Colin McFarlane. 2011. "Assemblage and Geography." *Area* 43 (2): 124–127. doi:10.1111/j.1475-4762.2011.01004.x.
- Anderson, Jon, and Kimberley Peters, eds. 2014. *Water Worlds: Human Geographies of the Ocean*. Ashgate Publishing, Ltd.
- Bear, Christopher. 2013. "Assembling the Sea: Materiality, Movement and Regulatory Practices in the Cardigan Bay Scallop Fishery." *Cultural Geographies* 20 (1): 21–41. doi:10.1177/1474474012463665.
- Bear, Christopher, and Sally Eden. 2008. "Making Space for Fish: The Regional, Network and Fluid Spaces of Fisheries Certification." *Social & Cultural Geography* 9 (5): 487–504.
- . 2011. "Thinking like a Fish? Engaging with Nonhuman Difference through Recreational Angling." *Environment and Planning-Part D* 29 (2): 336.
- Bennett, Jane. 2005. "The Agency of Assemblages and the North American Blackout." *Public Culture* 17 (3): 445.
- Blaser, Mario. 2009a. "POLITICAL ONTOLOGY: Cultural Studies without 'cultures'?" *Cultural Studies* 23 (5–6): 873–896.
- . 2009b. "The Threat of the Yrmo: The Political Ontology of a Sustainable Hunting Program." *American Anthropologist* 111 (1): 10–20.
- Bocking, Stephen. 2005. "Protecting the Rain Barrel: Discourses and the Roles of Science in a Suburban Environmental Controversy." *Environmental Politics* 14 (5): 611–628.
- Braun, Bruce. 2006. "Environmental Issues: Global Natures in the Space of Assemblage." *Progress in Human Geography* 30 (5): 644.
- Callon, Michel. 1986. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St. Brieuc Bay." In *Power, Action and Belief: A New Sociology of Knowledge?*, 196–223. London: Routledge.
- . 1998. "An Essay on Framing and Overflowing: Economic Externalities Revisited by Sociology." *The Sociological Review* 46 (S1): 244–269.
- Callon, Michel, and Bruno Latour. 1981. "Unscrewing the Big Leviathan: How Actors Macro-Structure Reality and How Sociologists Help Them to Do so." In *Advances in Social Theory and Methodology: Toward an Integration of Micro and Macro-Sociologies*, edited by K. Knorr-Cetina and A.V. Cicourel, 277–303. London: Routledge.
- Campbell, Lisa M., Noella J. Gray, Luke W. Fairbanks, Jennifer J. Silver, and Rebecca L. Gruby. 2013. "Oceans at Rio+ 20." *Conservation Letters* 6 (6): 439–447.
- Campbell, Lisa M., Noella J. Gray, and Zoë A. Meletis. 2008. "Political Ecology Perspectives on Ecotourism to Parks and Protected Areas." In *Transforming Parks and Protected Areas: Policy and Governance in a Changing World*, edited by Kevin S. Hanna, Douglas A. Clark, and D. Scott Slocombe, 200–221.
- Carolan, Michael S. 2004. "Ontological Politics: Mapping a Complex Environmental Problem." *Environmental Values*, 497–522.
- Castree, Noel. 2008. "Neoliberalising Nature: Processes, Effects, and Evaluations." *Environment and Planning. A* 40 (1): 153.
- Charmaz, K. 1983. "The Grounded Theory Method: An Explication and Interpretation." *Contemporary Field Research*, 109–26.
- . 2006. *Constructing Grounded Theory*. Sage Publications.

- Clay, P. M., and J. Olson. 2008. "Defining "Fishing Communities": Vulnerability and the Magnuson-Stevens Fishery Conservation and Management Act." *Human Ecology Review* 15 (2): 143.
- Collier, Stephen J. 2012. "Neoliberalism as Big Leviathan, or ... ? A Response to Wacquant and Hilgers." *Social Anthropology* 20 (2): 186–95.
doi:10.1111/j.1469-8676.2012.00195.x.
- Crowder, Larry B., Gail Osherenko, Oran R. Young, Satie Aïramé, Elliott A. Norse, Nancy Baron, John C. Day, Fanny Douvère, Charles N. Ehler, and Benjamin S. Halpern. 2006. "Resolving Mismatches in US Ocean Governance." *Science* 313 (5787): 617.
- Crowder, Larry, and Elliott Norse. 2008. "Essential Ecological Insights for Marine Ecosystem-Based Management and Marine Spatial Planning." *Marine Policy* 32 (5): 772–778.
- Deleuze, Gilles, and Félix Guattari. 2004. *A Thousand Plateaus*. Continuum International Publishing Group.
- Dewsbury, J-D. 2011. "The Deleuze-Guattarian Assemblage: Plastic Habits." *Area* 43 (2): 148–153. doi:10.1111/j.1475-4762.2011.01006.x.
- Douvère, Fanny. 2008. "The Importance of Marine Spatial Planning in Advancing Ecosystem-Based Sea Use Management." *Marine Policy* 32 (5): 762–771.
- Ehler, Charles, and Fanny Douvère. 2009. "Marine Spatial Planning, a Step-by-Step Approach towards Ecosystem-Based Management."
<http://www.oceandocs.net/handle/1834/4475>.
- Ferguson, James. 2009. "The Uses of Neoliberalism." *Antipode* 41: 166–84.
doi:10.1111/j.1467-8330.2009.00721.x.
- Firestone, Jeremy, Willett Kempton, and Andrew Krueger. 2009. "Public Acceptance of Offshore Wind Power Projects in the USA." *Wind Energy* 12 (2): 183–202.
- Firestone, Jeremy, Willett Kempton, Andrew Krueger, and Christen E. Loper. 2004. "Regulating Offshore Wind Power and Aquaculture: Messages from Land and Sea." *Cornell JL & Pub. Pol'y* 14: 71.
- Foucault, Michel, Graham Burchell, and Colin Gordon. 1991. *The Foucault Effect: Studies in Governmentality*. Chicago: University of Chicago Press.
- Gilliland, Paul M., and Dan Laffoley. 2008. "Key Elements and Steps in the Process of Developing Ecosystem-Based Marine Spatial Planning." *Marine Policy* 32 (5): 787–796.
- Gordon, H. Scott. 1954. "The Economic Theory of a Common Property Resource: The Fishery." *Journal of Political Economy* 62 (2): 124–42.
- Hanna, Susan, Heather Blough, Richard Allen, Suzanne Iudicello, Gary Matlock, and Bonnie McCay. 2000. *Fishing Grounds: Defining a New Era for American Fisheries Management*. Washington, D.C.: Island Press.
- Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162: 1243–48.
- Harrison, Conor, and Jeff Popke. 2011. "'Because You Got to Have Heat': The Networked Assemblage of Energy Poverty in Eastern North Carolina." *Annals of the Association of American Geographers* 101 (4): 949–961.
- Helmreich, Stefan. 2011. "Nature/culture/seawater." *American Anthropologist* 113 (1): 132–144.

- Heynen, Nik, James McCarthy, Scott Prudham, and Paul Robbins. 2007. *Neoliberal Environments: False Promises and Unnatural Consequences*. Routledge.
- Ingold, Tim. 2000. *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. Psychology Press.
- Jentoft, Svein, and Maaïke Knol. 2014. "Marine Spatial Planning: Risk or Opportunity for Fisheries in the North Sea?" *Maritime Studies* 12 (1): 1–16. doi:10.1186/2212-9790-12-13.
- Joronen, Mikko. 2013. "Heidegger, Event and the Ontological Politics of the Site." *Transactions of the Institute of British Geographers* 38 (4): 627–638.
- Lambert, David, Luciana Martins, and Miles Ogborn. 2006. "Currents, Visions and Voyages: Historical Geographies of the Sea." *Journal of Historical Geography* 32 (3): 479–493.
- Landstrom, Catharina. 2000. "Review: The Ontological Politics of Staying True to Complexity." *Social Studies of Science* 30 (3): 475–80.
- Latour, Bruno. 1999. *Pandora's Hope: Essays on the Reality of Science Studies*. Harvard University Press.
- . 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford University Press, USA.
- Law, J. 1992. "Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity." *Systemic Practice and Action Research* 5 (4): 379–93.
- Law, John, and Ruth Benschop. 1997. "Resisting Pictures: Representation, Distribution and Ontological Politics." *The Sociological Review* 45 (S1): 158–182.
- Law, John, and Marianne Lien. 2012. "Slippery: Field Notes on Empirical Ontology." *Social Studies of Science* 43 (3): 363–78.
- Le Cornu, Elodie, John N. Kittinger, J. Zachary Koehn, Elena M. Finkbeiner, and Larry B. Crowder. 2014. "Current Practice and Future Prospects for Social Data in Coastal and Ocean Planning." *Conservation Biology* 28 (4): 902–911.
- Maiolo, John R. 2004. *Hard Times and a Nickel a Bucket: Struggle and Survival in North Carolina's Shrimp Industry*. Chapel Hill: Chapel Hill Press, Inc.
- Mansfield, B. 2001. "Thinking through Scale: The Role of State Governance in Globalizing North Pacific Fisheries." *Environment and Planning A* 33 (10): 1807–28.
- . 2004. "Neoliberalism in the Oceans: 'rationalization,' Property Rights, and the Commons Question." *Geoforum* 35 (3): 313–26.
- Massey, Doreen. 2005. *For Space*. SAGE.
- McCann, Eugene. 2011. "Veritable Inventions: Cities, Policies and Assemblage." *Area* 43 (2): 143–147. doi:10.1111/j.1475-4762.2011.01011.x.
- McCay, B. J. 2004. "ITQs and Community: An Essay on Environmental Governance." *Agricultural and Resource Economics Review* 33 (2): 162–70.
- McFarlane, Colin. 2009. "Translocal Assemblages: Space, Power and Social Movements." *Geoforum* 40 (4): 561–567.
- . 2011. "The City as Assemblage: Dwelling and Urban Space." *Environment and Planning-Part D* 29 (4): 649.
- McFarlane, Colin, and Ben Anderson. 2011. "Thinking with Assemblage." *Area* 43 (2): 162–164. doi:10.1111/j.1475-4762.2011.01012.x.

- Mennicken, Andrea, and Peter Miller. 2012. "Accounting, Territorialization and Power." *Foucault Studies*, no. 13: 4–24.
- Mol, Annemarie. 1999. "Ontological Politics. A Word and Some Questions." *The Sociological Review* 47 (S1): 74–89.
- Moser, Ingunn. 2008. "Making Alzheimer's Disease Matter. Enacting, Interfering and Doing Politics of Nature." *Geoforum*, Environmental Economic Geography, 39 (1): 98–110. doi:10.1016/j.geoforum.2006.12.007.
- Murdoch, Jonathan. 1997. "Towards a Geography of Heterogeneous Associations." *Progress in Human Geography* 21 (3): 321–37. doi:10.1191/030913297668007261.
- Murray Li, Tania. 2007. "Practices of Assemblage and Community Forest Management." *Economy and Society* 36 (2): 263–293.
- National Ocean Council. 2012. "Draft National Ocean Policy Implementation Plan." ———. 2013. "National Ocean Policy Implementation Plan."
- Olson, Julia. 2010. "Seeding Nature, Ceding Culture: Redefining the Boundaries of the Marine Commons through Spatial Management and GIS." *Geoforum* 41 (2): 293–303. doi:10.1016/j.geoforum.2009.10.008.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge university press. https://books.google.com/books?hl=en&lr=&id=4xg6oUobMz4C&oi=fnd&pg=PR11&dq=ostrom+commons&ots=aN6ryJjG2f&sig=h5aKrcBBgiM99hYZz6ea_fVmv1Y.
- Peters, Kimberley. 2012. "Manipulating Material Hydro-Worlds: Rethinking Human and More-Than-Human Relationality through Offshore Radio Piracy." *Environment and Planning A* 44 (5): 1241–54. doi:10.1068/a444413.
- Pomeroy, Robert, and Fanny Douvere. 2008. "The Engagement of Stakeholders in the Marine Spatial Planning Process." *Marine Policy* 32 (5): 816–822.
- Robbins, Paul, and Brian Marks. 2009. "Assemblage Geographies." In *The SAGE Handbook of Social Geographies*, edited by S.J. Smith, S. Smith, R. Pain, J.P. Jones, and S.A. Marston, 176–194. SAGE.
- Robins, Rosemary. 2012. "The Controversy over GM Canola in Australia as an Ontological Politics." *Environmental Values* 21 (2): 185–208.
- Roman, Joe, Irit Altman, Meagan M. Dunphy-Daly, Caitlin Campbell, Michael Jasny, and Andrew J. Read. 2013. "The Marine Mammal Protection Act at 40: Status, Recovery, and Future of US Marine Mammals." *Annals of the New York Academy of Sciences* 1286 (1): 29–49.
- Rossiter, Jaime Speed, Giorgio Hadi Curti, Christopher M. Moreno, and David Lopéz-Carr. 2015. "Marine-Space Assemblages: Towards a Different Praxis of Fisheries Policy and Management." *Applied Geography*. <http://www.sciencedirect.com/science/article/pii/S0143622814002999>.
- Scott, Anthony. 1955. "The Fishery: The Objectives of Sole Ownership." *The Journal of Political Economy* 63 (2): 116–24.
- Silver, Jennifer J. 2013. "Neoliberalizing Coastal Space and Subjects: On Shellfish Aquaculture Projections, Interventions and Outcomes in British Columbia, Canada." *Journal of Rural Studies* 32 (October): 430–38. doi:10.1016/j.jrurstud.2013.10.003.

- Silver, Jennifer J., Noella J. Gray, Lisa M. Campbell, Luke W. Fairbanks, and Rebecca L. Gruby. 2015. "Blue Economy and Competing Discourses in International Oceans Governance." *The Journal of Environment & Development*, 1070496515580797.
- Spence, Emma. 2014. "Towards a More-than-Sea Geography: Exploring the Relational Geographies of Superrich Mobility between Sea, Superyacht and Shore in the Cote d'Azur." *Area* 46 (2): 203–9. doi:10.1111/area.12101.
- St. Martin, Kevin. 2001. "Making Space for Community Resource Management in Fisheries." *Annals of the Association of American Geographers* 91 (1): 122–42.
- . 2006. "The Impact of 'community' on Fisheries Management in the US Northeast." *Geoforum* 37 (2): 169–84.
- St. Martin, Kevin, and Madeleine Hall-Arber. 2008. "The Missing Layer: Geo-Technologies, Communities, and Implications for Marine Spatial Planning." *Marine Policy, The Role of Marine Spatial Planning in Implementing Ecosystem-based, Sea Use Management*, 32 (5): 779–86. doi:10.1016/j.marpol.2008.03.015.
- St. Martin, Kevin, B. J. McCay, G. D. Murray, and T. R. Johnson. 2007. "Communities, Knowledge and Fisheries of the Future." *International Journal of Global Environmental Issues* 7 (2): 221–39.
- Steinberg, Philip. 2013. "Of Other Seas: Metaphors and Materialities in Maritime Regions." *Atlantic Studies* 10 (2): 156–169.
- Steinberg, Philip, and Kimberley Peters. 2015. "Wet Ontologies, Fluid Spaces: Giving Depth to Volume through Oceanic Thinking." *Environment and Planning D: Society and Space* 33: 247–264.
- The White House, Office of the Press Secretary. 2010. "Executive Order--Stewardship of the Ocean, Our Coasts, and the Great Lakes." July 19. <http://www.whitehouse.gov/the-press-office/executive-order-stewardship-ocean-our-coasts-and-great-lakes>.
- U.S. Commission on Ocean Policy. 2004. "An Ocean Blueprint for the 21st Century, Final Report." Washington, DC: ISBN #0-9759462-0-X. <http://www.oceancommission.gov>.
- van Heur, Bas, Loet Leydesdorff, and Sally Wyatt. 2012. "Turning to Ontology in STS? Turning to STS through 'ontology.'" *Social Studies of Science*, 306312712458144.
- Weeks, Priscilla. 1995. "Fisher Scientists: The Reconstruction of Scientific Discourse." *Human Organization* 54 (4): 429–36.
- Whatmore, Sarah J. 2009. "Mapping Knowledge Controversies: Science, Democracy and the Redistribution of Expertise." *Progress in Human Geography* 33 (5): 587–98. doi:10.1177/0309132509339841.
- . 2013. "Earthly Powers and Affective Environments: An Ontological Politics of Flood Risk." *Theory, Culture & Society*, 263276413480949.
- White House Council on Environmental Quality. 2009. "Interim Report of the Interagency Ocean Policy Task Force." Washington, DC: Executive Office of the President of the United States, White House Council on Environmental Quality.