



“Beyond nature and culture: relational perspectives on the Wadden Sea landscape”

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Introduction

Relational approaches offer a productive way of questioning and deconstructing prevailing ideas around nature and culture. How are nature and culture drawn together or pushed apart through spatial, social, political, administrative and cultural practices? How do nature-culture dichotomies become embedded in the landscape and how can they be challenged and overcome? What meanings, values and power structures inform these processes underlying the construction of “hybrids of nature and culture” (Latour 1993: 10)? In this case, we look at the Wadden Sea and inquire if there are any other ways of engaging with these hybrids in contexts of heritage, nature protection or management. These are just some of the questions the contributions in this special issue for *Maritime Studies* engage with. They provide theoretically stimulating, methodologically innovative and empirically saturated perspectives on what the Wadden Sea coast is beyond its framings and the practices that perform(ed) and materially constitute(d) it in the way it currently exists. First steps in this direction were made during the panel “Beyond nature and culture: relational perspectives on the Wadden Sea landscape” at the MARE People & the Sea X conference held in 2019 in Amsterdam. The panel attracted five interesting talks dealing with the various nature-cultures (Jones 2009a) of the Wadden Sea out of which the need emerged to empirically expand and conceptually deepen the research presented. Discussions following the panel at Amsterdam led to the idea to open up the discussion and include colleagues who also hold an interest in researching nature-cultures from a relational point

of view. This finally developed into the present special issue that comprises four papers presented in Amsterdam plus three additional ones from colleagues who kindly agreed to be part of our collective endeavour.

In addition to outlining the origins of this special issue, another aim of this editorial is to provide a brief introduction to the basic aspects of a relational approach to landscape and nature-culture relations. We argue that a relational understanding and relationally inspired analyses offer the opportunity for innovative approaches that help to transcend the still prevailing and well-established boundary between nature and culture at the Wadden Sea. This also concerns the current research landscape dealing with this intertidal landscape in which rich scientific analyses and the many studies on its socio-cultural dimensions have brought about an abundance of highly interesting and relevant insights. Although a small number of relational studies have previously been published (Krauß 2005; Egberts 2018; Döring and Ratter 2018; Walsh 2018, 2021a), the separated investigation of Wadden Sea natures and cultures still prevails. This has inspired the authors in this special issue to take first steps towards relational analyses of this intertidal landscape building on previous work at the Wadden Sea from across the environmental humanities and social sciences.

The relational research undertaken here is implicitly and explicitly informed by a diverse range of thinkers such as Latour (1993, 2007), Callon (2011), Law (1993), Mol (2002, 2021), Castree (2005), Whatmore (2002), Thrift (2007), Hinchliffe (2007), Murdoch (2005), Harvey (1996), Robbins (2007) and Owain and Cloke (2002), as well as more recent work on relational values in nature conservation (Stensek 2018). Stemming from different disciplines and working in various empirical fields, they converge in the fact that they conceive relational analyses of environment, nature and society as the next analytical and empirical step to be taken to adequately meet the requirements as currently set out by the Anthropocene (Horn and Bergthaller 2019). Engaging with “the livingness of [the human and non-human] world”

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(Whatmore 2006: 602) holds interesting implications and the potential to open up new perspectives on present issues and problems such as coastal protection on the German Wadden Sea coast. Here, diking is still the *ultima ratio* while a more relational approach in terms of nature-based solutions seems to be slowly gathering momentum (Walsh 2019). To blur the existing relation between nature and culture by measures such as opening the dikes to enable amphibious landscapes (Reise 2015) where nature and culture can mingle and in which coastal inhabitants could explore new ways of living with the dynamics of this landscape remains a difficult socio-technical challenge. Even more, looming climate change challenges the ‘endiked’ dichotomy between land (culture) and the mudflats (nature) as sea level rise seems to make it necessary to increase the footprint of hard coastal defences, reaching out into the territory of the protected salt marshes and mudflats. An artificial separation between spaces of ‘pure nature’ in front of the dikes and ‘spaces of culture’ behind the dikes is reinforced through conservationists’ concerns to minimise all human intervention in the landscape and a structural, engineering approach to coastal defence (Walsh 2018). Notions of nature are themselves contested in this context (MacNaghten and Urry 1998). The papers in this special issue show how relational perspectives on nature and landscape are beginning to influence policy and practice in coastal management and nature conservation at the Wadden Sea.

A further aim of this editorial is to introduce the papers published in this special issue. We situate them within the relatively broad and sometimes heterogeneous field of relational approaches while also attempting to point to convergences among them. All papers have a strong theoretical base revolving around concepts of ‘multinatural’ ontologies, situated knowledge(s) and the politics of nature (Choi 2006). Furthermore, they share a common interest in empirically exploring the potentials and methodological requirements of a relational approach, to tease out what entanglements of nature and culture go into the making of the Wadden Sea. The authors will thus illustrate the relevance of thinking the Wadden Sea relationally, and by doing so suggest that it is a valuable scope for furthering the current scholarship devoted to this compelling intertidal landscape.

In the next section, we start with an introduction to our common site of investigation. We provide an insight into the geographical, historical and cultural dimensions of the Wadden Sea and its coastal hinterland and trace some of the recent developments in this trilateral coastal landscape. We then continue with an overview of research undertaken on relationality and the concept of nature-cultures. Here, our scope is a mix of research undertaken in the fields of geography (Murdoch 2005), actor-network theory (Latour 2007), science and technology studies (Barad 2007) and non-representational theories (Thrift 1996). We then summarise the

insights provided by each paper and explore their convergences which will help us to tease out possible openings for future research to be undertaken at the Wadden Sea coast.

The Wadden Sea—a multifaceted coastal landscape

The Wadden Sea is a dynamic coastal landscape that extends over a length of 450 km from Den Helder in the Netherlands, along the full length of the German North Sea Coast to Blåvands Huk in southwest Denmark. The coastal landscape comprises sandy barrier islands, tidal mudflats, salt marshes, beaches and reclaimed marshlands (Oost et al. 2012; Schepers et al. 2021). The origins of the Wadden Sea may be traced to the early Holocene, a period of slowly rising sea levels following the last ice age, approximately 8000 years ago. It is thus relatively young. It nevertheless has had a varied history, characterised by contingent interactions between natural and human factors across multiple time scales (Reise 2014). Many larger animals such as aurochs and wild horses have been hunted to extinction on the one hand. New species, on the other hand, have arrived over the past centuries through maritime globalisation and still do so. The Wadden Sea of today is the resting place for millions of migratory birds on their annual travels from the coast of Africa to Greenland and Siberia (Boere and Piersma 2012). The tidal landscape in front of the dikes is recognised as a unique, ecologically rich ecosystem of outstanding natural value. Following decades of international cooperation and conservation efforts, the Wadden Sea was designated as a UNESCO World Heritage Site in 2009 (Reise et al. 2010; Enemark 2021). From a nature conservation perspective, it is recognised as one of the last remaining large-scale natural landscapes or areas of ‘wilderness’ in central Europe (Rösner 2018; Stock 2020) (Fig. 1).

The geomorphology of the coastal landscape has, however, been transformed over a period of more than one thousand years by dike construction practices, land reclamation and drainage as well as catastrophic storm floods (Meier et al. 2013). A storm flood dated to the 16th of January 1362 led to the loss of Rungholt, an important trading centre of its time in Northern Friesland. Occupying a similarly important place in the collective memory of the region is a storm flood in 1634, which according to historical records was responsible for the loss of almost 10,000 lives and forced the abandonment of the island of Strand to the sea (Quedens 2010). In the Christmas flood of 1717, the village of Itzendorf at the coast of Eastern Friesland was lost (Jakuboski-Tiessen 1992). In the last century, storm flood events in 1953 (the Netherlands) and 1962 (Germany) led to the loss of life and considerable damage to property and farmland along the coast. Memories of catastrophic storm surges, their impact

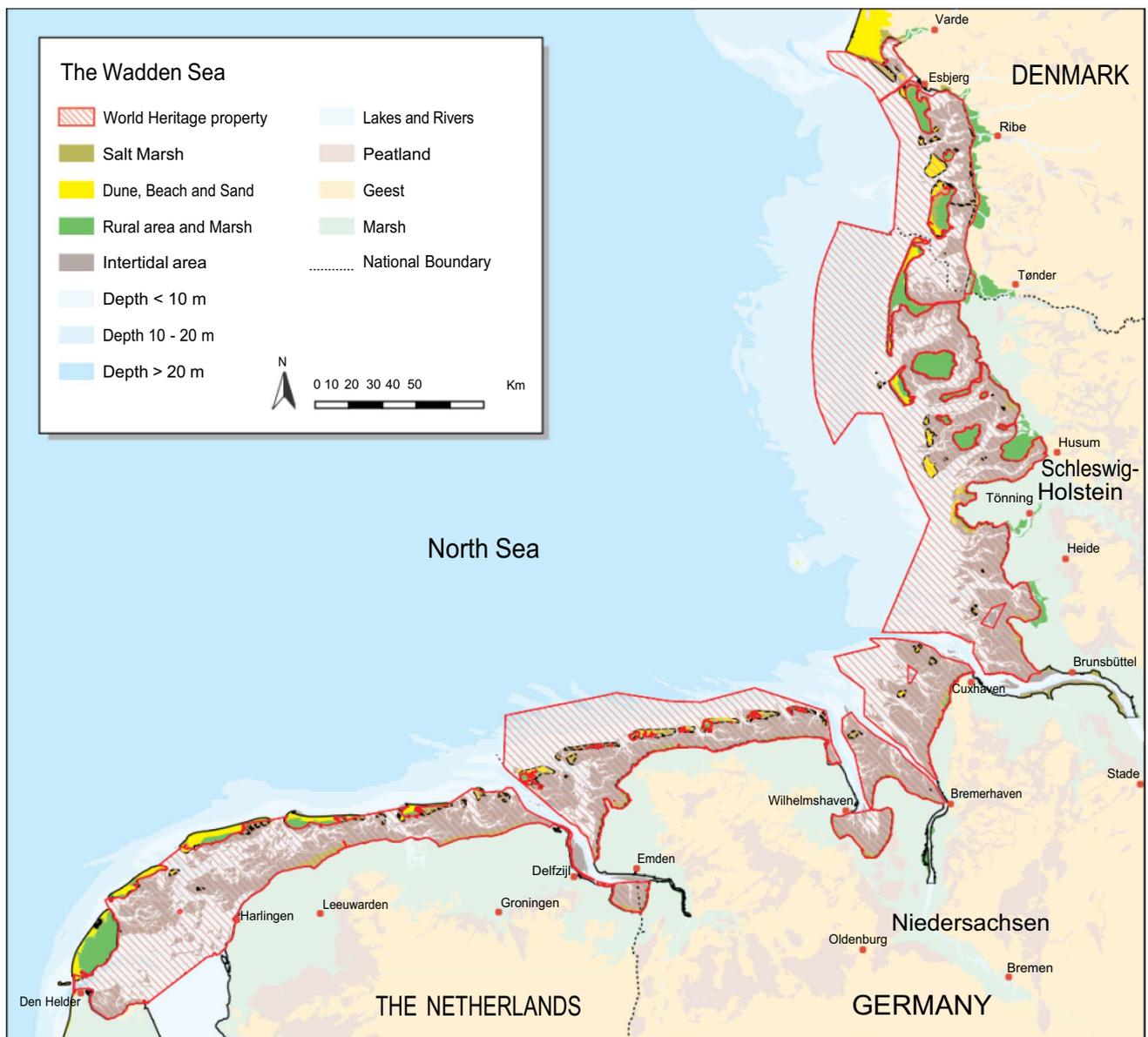


Fig. 1 The Wadden Sea coastal landscape and World Heritage Site © Common Wadden Sea Secretariat

on coastal communities and the struggle against the sea are an integral part of a common historical imaginary of the North Sea as a hazardous, unpredictable and unforgiving landscape (Ritson 2018: 26; Ratter and Walsh 2019).

In the eyes of many of those living at the coast and on the islands, the Wadden Sea is a manmade landscape with a meaningful cultural history (Steensen 2018, 2020; Walsh 2018, 2020). It is only since coastal communities began to feel secure, behind modern dikes and other hard defences that a paradigm change has occurred from the protection of the people from the wild nature of the North Sea to the protection of the vulnerable nature of the Wadden Sea ecosystem from the destructive influence of human society

(Reise 2014). In the course of the history of the North Sea (Pye 2015), the primary dike-line has taken on a symbolic meaning as a line of separation. It is thus not just a powerful material boundary separating the land from the sea but was for a long time considered the boundary between civilisation and wilderness, between a regulated and structured ‘inner world’ and a wild, unpredictable ‘outer world’ beyond the dikes (Allemeyer 2006; Fischer 2011). In the contemporary period, the dike-line continues to constitute a ‘hard boundary’, particularly in Germany and the Netherlands, through which an artificial, constructed boundary between nature and culture is maintained and reproduced (Krauß 2005; Egberts 2018; Walsh 2018, 2021a). From a

cultural-historical perspective, however, the Wadden Sea is understood as a cultural landscape, both in front and behind the dikes (Fischer 1997; Egberts and Schoor 2018).

Furthermore, the Wadden Sea constitutes a transboundary area of conservation with a long, if times turbulent, history of cooperation and knowledge exchange among scientists, policy-makers and practitioners (Enemark 2021). It is protected as an ecosystem of international importance. The close cooperation at the trilateral level, notwithstanding, it is nevertheless possible to identify diverse and, at times, divergent understandings of nature, landscape and nature-culture relations in each national and regional context (Walsh 2021a). The nature of the nature to be protected varies across the Wadden Sea, with varying emphasis on the pristine, naturalness of the landscape, the experience of openness and vastness, or the darkness of the night sky (VROM 1999). At times and in places, the focus is on the interweaving of natural and cultural heritage, while in other contexts, the undisturbed quality of the ecosystem and the minimisation of human influence are sought as the principal goal of management efforts. This overall diversity of the Wadden Sea with its various meanders between nature and culture is a fascinating topic to be analysed from a relational point of view. A conceptual overview of relational understandings of nature and culture in the next section will provide a conceptual grounding for the papers of this special issue that in most cases adopt a place-based perspective and engage with the sometimes contested and diverse nature-cultures of the Wadden Sea as situated between the local and the global (Wöbse 2017; Walsh 2020).

Relational approaches—origins and conceptual aspects

The dichotomy between nature and culture has been challenged for quite some time by various scholars such as Haraway (1985), Latour (1993), Descola (2013), Castree (2005) or Whatmore (2002), and has continued to inform current critical research in geography and beyond (Thrift 2007). Looking back on the development of relational approaches, it is interesting to see that the impulse for questioning this dichotomy seems to originate in the social sciences. However, even this story is manifold and a closer look at its research history shows that relational understandings of nature and culture were studied by scholars working in the second wave science and technology studies from the 1960s who engaged with physics (Barad 2007), medicine (Mol 2002), biology (Dupré 2021), microbiology (O'Malley 2014) and systems approaches in genomics (Döring et al. 2018). They indicated that the improved technologies revealed an enhanced understanding of exchange between complex biological systems and their surroundings

corroborating the idea that there is no unambiguous divide between “the living community of the world and its material environment” (Jones 2009b: 2). As a result, all sorts of processes of life connect and should not be conceived as independent or autonomous belonging either to nature or culture. On the contrary, both are interrelated and constituted by human and non-human interaction. Comparable aspects have also been shown by historians with regard for example to change of climate zones or extreme meteorological events (Behringer 2009). They have revealed that the interrelation between natural and social systems has always been far greater than expected. This has led landscape scholar Ingold (2005: 506) to conclude that “history is comprised by the interplay of diverse human and non-human agents in their mutual relationships.” Historian Chakrabarty (2009) has similarly argued for the need to move beyond the distinction between human and natural history. Indeed, biologist Reise (2014) has set out an explicitly relational history of the Wadden Sea, calling for attention to the contingent interactions between humans and natural processes over a period of almost 10,000 years.

As a result, emphasis in relational research has been put on characterising the manifold entanglements (Harrison et al. 2004) between the human and the non-human as being constitutive for the dwelt-in life-world (Ingold 2000): interactions are conceived as multifaceted, they work on various spatial scales and contribute to inter-emergent structures that mutually shape and reshape each other. Such a perspective rejects the idea that nature is an entity external to society and emphasises the fact that it is discursively articulated and materially entangled through vital processes (Choi 2006: 5). This yields inasmuch consequences as nature, culture, space and place should no longer be conceived as discrete entities, but as “something that is always dependent on the processes and substances” (Murdoch 2005: 19) creating them. Hence, physical, biological, social, cultural processes and substances emerge out of relations and structure them: they represent “configurations of relative ‘permanences’ [...]” (Harvey 1996: 294). In this view, nature and culture are drawn together in specific places and spaces such as the Wadden Sea and become a reservoir of semi-permanent assemblages (Müller 2015) constituted by interrelations and articulated through practices and representations (Latour 2018).

One way to study and disentangle the processes constituting these relatively permanent assemblages is to analytically foreground the hybrid ontology of nature. This hybridity results, as we have seen, from the various interactions among heterogeneous actors who co-construct and re-configure specific forms of nature-cultures. It is, furthermore, important to note that the idea of nature in this context does not represent an essentialised pre-given, but that it is a dynamic entity open to becoming something different “when the actors [involved] perform different practices that shape or

re-shape” (Choi 2006: 9) it through their practices. It is therefore important to analyse the various practices and representations that construct these hybrids of nature and to ask how they came into being and why some of them are preferred over others. In sum, for relational analyses, nature does not represent a transcendental or ontologically fixed entity, but it is a situated and specific construction or discursive articulation informing one assemblage that highlights one powerful ordering of nature (Lorimer 2015) while there are indeed multiple natures around (Mol 2002). These multiple natures are of interest here, and we will see how these are drawn together and constructed in the spaces and places of the Wadden Sea where nature protection and the sciences have managed to develop the powerful idea of what nature actually is.

Another way to relationally study the various assemblages—to be understood as an ontological framework in which entities exist but are conceived as fluid, malleable and holding various functionalities at the same time (Buchanan 2020)—of the Wadden Sea is to investigate the numerous knowledge(s) through which they are constituted. Although the dominant images and ideas of the Wadden Sea have primarily been produced through the modern scientific epistemology of scientific knowledge, local place-based forms of knowledge(s) as based on a tacit rationale (Polanyi 1966) exist as well. Such aspects have been revealed by post-structuralist and feminist scholars who challenged the rationale of an objectively accessible and universal foundation of knowledge and opted for situated and embodied understandings of knowing the natural environment. Revealing these place-based knowledges is another task of a relational approach that aims at showing that besides so-called experts non-experts such as coastal inhabitants also possess differently structured but nevertheless valuable ways of knowing the Wadden Sea. These can, for example, provide complementary biological knowledge or assist in designing management strategies for place-based climate adaptation (Döring and Ratter 2018). Recent research has furthermore helped to deconstruct the expert/layperson through greater recognition of the tensions, contradictions and inconsistencies inherent in diverse scientific and professional perspectives and of the extent to which practitioners often embody both expert and place-based experiential perspectives (Köpsel et al. 2017; Walsh 2019).

A third route to study the relational assemblages of the Wadden Sea addresses the politics of nature in the context of the environmental sciences and management. Such an analysis is devoted to the question of who has the power to relate humans and nature in what ways. Normally, this task is performed by scientists, policy-makers and other organisations such as NGOs in the context of conventional modes of environmental management (De Jong 2016; Seijger et al. 2016). Facilitating participation of individual citizens and

local communities is a more challenging task, however, and it is necessary to reflect on the balance of power among and within stakeholder groups and how particular narratives, concepts and discourses become dominant in such settings. It is thus important to study how their perspectives have or could become part of the various management and decision-making processes and whether the procedures of environmental management are characterised by an honest inclusion of non-experts (Van der Molen et al. 2016). This touches upon previous aspects asking what nature hybrids are enacted and how they structure the science-policy interface (Runhaar et al. 2016).

To sum up, in this brief overview, we have sought to provide insight into the various conceptual dimensions of relational approaches as they apply to questions of nature, landscape and environmental management. It is evident that relational approaches emphasise the co-constitution and joint entanglement of different phenomena. They are informed by research undertaken in actor-network theory (see Latour 2007), non-representational theory (see Simpson 2020), post-structural theories (see Deleuze and Guattari 2013) and science and technology studies (see Whatmore 2002), and based on the rationale that the world is not a composition of separate objects or units that interact on different levels and in distinct ways. A relational approach contradicts reification and states that things or entities only possess a meaningful existence in the interconnection between humans and non-humans. These develop into more-or-less stable or powerfully maintained assemblages through which things are composed but are also open to change. Consequently, any reductionist explanation is rejected in favour of dispersed relationalities between humans and non-humans: the focus is on how things are entangled, in what ways semi-permanent assemblages are developed and how these relations are articulated via practices and representations.

Re-assembling the Wadden Sea: a collection of entangled papers

The Wadden Sea represents a more-than-human “meeting place” (Massey 1991: 28) while also being an enabler of this special issue which consists of eight papers that draw on empirical research undertaken in the Wadden Sea region. Stemming from various disciplines such as the environmental sciences (Schepers et al. 2021), tourism research (Liburd et al. 2021), anthropology (Hörst 2021; Krauß 2021), eco-criticism (Ritson and De Smalen 2021), heritage studies (Egberts and Riesto 2021) and environmental geography (Walsh 2021b; Döring and Ratter 2021), they all engage with the various theoretical facets and methodological dimensions of a relational analysis and understanding of this intertidal landscape. Individually and collectively, the papers

aim to address how a relational perspective on the various topics investigated can contribute to see the Wadden Sea differently and what that means management- and policy-wise.

The first paper in this thematic issue, written by Mans Schepers, Erik Meijles, Jan Bakker and Theo Spek, addresses the problem of disciplinary fragmentation in science and sectoral divisions in policy-making. They show that such a division of knowledge(s) leads in practical terms to the problematic separation of cultural and natural landscapes. Based on a critical inspection of this hybrid ontology of nature, Schepers et al. reveal that nature is always constructed out of an intricate combination of disciplinary knowledge(s) and offer a holistic approach that aims to overcome these limitations. They propose the dynamic concept of an integrative analysis of geographical, biological and cultural landscape forces whose triangulation reveals that the resulting landscape is an outcome of these interconnected processes (see also the contributions by Döring and Ratter 2021 and by Krauß 2021). The visualisation of these processes holds the potential to rejig in this case the politics of landscape management and offers new ways to relate to and engage with the multiplicities of the landscape (see the papers by Walsh 2021b and Egberts and Riestro 2021).

Cormac Walsh's (2021b) contribution to this special issue reveals how national parks are rooted in local places and socio-cultural and historical contexts. Based on these insights and an in-depth analysis of the articulation and negotiation of nature-culture relations in protected area management at the Danish Wadden Sea (see also Liburd et al. 2021), he examines the role played by hybrid concepts of nature-culture relations in this contested context. He shows a pluralist, and inclusive dialogue on nature-culture relations is facilitated by the use of pluralist governance structures and flexible spatial boundaries. His reflections on the relationship between the pluralist institutional structures in Denmark and relational understandings of nature and landscape (see Döring and Ratter 2021) show how the management of this protected area exhibits a politics of nature that considerably differs from those prevalent on the Dutch and German North Sea coasts.

Linde Egberts and Svava Riestro's paper methodologically engages with the relationships between climate change, landscape and heritage. Sea level rise draws architects and spatial planners into one hybrid of nature and culture and challenges them in how they deal with heritage in the context of climate adaptation strategies (see also Hörst 2021). By analysing the Marconi dike reinforcement project in Delfzijl, they show how the natural and geological heritage of the Wadden Sea was given emphasis while the rich cultural landscape of the region was barely taken into consideration. This political division of nature and culture not only informed the diking project, but it also nestled in public perception and local policy. Planners and architects followed this established

rationale and though unconsciously neglected the cultural necessities of the project for other ways of dealing with natures. Having defined this gap, Egberts and Riestro suggest applying the heritage production model of Ashworth and Tunbridge which holds the potential to develop a more relational arrangement of nature and culture important for spatial planning in times of looming climate change.

The need for a more nuanced understanding of how people relate to nature and how this, in turn, could be aligned with the UN Sustainable Development Goal 11 (sustainable cities and communities), is investigated by Janne Liburd, Bodil Blichfeld and Eva Duedahl. They reveal, on the basis of a large number of walking interviews, the multifaceted understandings, interpretations and appreciations of nature held by inhabitants of the Danish Wadden Sea coastal region. Here, various hybrid imaginaries of nature such as not only wild, untouched or free of cultural heritage emerge and are based on embodied encounters with the landscape (see also Döring and Ratter 2021; Krauß 2021). This situated knowledge and the conceptualisations of nature(s) hold the potential to provide a more nuanced insight into the local framings of what nature is, while at the same time it can also help to advance nature conservation and the management of the Danish Wadden Sea National park (see Walsh 2021b). The suggested idea of a re-arrangement of knowledge(s) and a subsequent change of the politics of nature can assist in transcending current dichotomies and reshape the protection and management of the cultural and natural heritage. In doing so, it would also provide new dimensions to the UN Sustainable Development Goal 11 by explicitly exploring its inclusive aspects.

Katie Ritson and Eveline de Smalen explore in their paper the potentials of the Wadden Sea for re-imagining the Anthropocene. The challenge here resides in the fact that the concept of the Anthropocene merges geological time with recent historical and current events while also reaching out into various futures addressing geographical and generational implications (see also Hörst 2021). The entanglement of these different dimensions is conceptually problematic for a linear understanding of the Anthropocene but the Wadden Sea with its interactive materialisation of paradoxes and conceptual inconsistencies—the intertidal landscape as both land and sea—offers the potential of a mental provocation (see also Krauß 2021). The analysis of textual representations in literary and artistic works about the Wadden Sea reveals insight into unexpected but nevertheless plausible imaginaries which are used to provide a creative and skilful way to re-arrange prevailing hybrids of nature. In brief, these imaginaries of the Wadden Sea provide a reservoir for a productive and fresh engagement with the concept of the Anthropocene.

The Wadden Sea furthermore represents a space shared by many species as well as humans. Here, the various

relationships between humans and non-humans develop and are investigated by Doortje Hörst. Conducting participant observation in a seal rehabilitation project during seal releases, beach clean-ups and an auto-ethnographic investigation of an exhibition at a visitor's centre in the Dutch Wadden Sea, it becomes apparent how different natures are brought into being. Her site-specific investigations reveal the positions people take up while relating to the Wadden Sea. This aspect is used to unveil and analyse hybrids of nature while at the same the interactive complexities of these processes are uncovered (see also Döring and Ratter 2021). Attempts to purify nature and to powerfully enact them are analysed with regard to the impact such perspectives might have for caring about the Wadden Sea ecosystem and for seals in particular. The apparent fluid and dynamic relations formed between humans and non-humans enable multiple engagements, offering alternative ways of doing nature protection (see also Walsh 2021b as well as Liburd et al. 2021).

Martin Döring's and Beate Ratter's contribution deals with a relational study of the North Frisian coastscape (see Schepers et al. 2021). Based on relational approaches in human geography, they empirically engage with a more-than-representational understanding of landscape that challenges the dichotomy of land (nature) and landscape (culture). This approach is developed further by an 'enactivist' understanding of language, with which the livingness of coastscape-human interactions was revealed during walking interviews (see also Liburd et al. 2021; Ritson and De Smalen 2021). Their study exhibits situated knowledge(s) about the coastscape and shows how deeply humans and their coastsapes are intertwined. These emerging relations characterise a coast-multiple that hold the potential to inspire future management practices, shifting emphasis away from a purely science-informed understanding of the coast by redistributing expertise and balancing the social roles of those involved in the topic under scrutiny (see also Egberts and Riesto 2021). They state that the insight that the coast is multiple is just a start, but perhaps an entry point to manage the German Wadden Sea coastscape in a more integrated way (see also Walsh 2021b).

Finally, an autoethnographic exercise undertaken by Werner Krauß reveals the many associations and implications of the Wadden Sea while sitting for more than 10 h on a bench at the coast of Dangast in East Frisia (see also Liburd et al. 2021). The noticing work undertaken here is influenced by the rhythm of the incoming tides, by the place, the plants and the animals and many other things to which Krauß relates during his exercise. Revealing the view, the smells and sounds become an important ingredient in Krauß's stream of consciousness and develop into earthbound lines of thought (see also Döring and Ratter 2021). This human and non-human intermingling helps him to reveal so-called atmospheres that characterise places but are hard to reveal

at the same time (see also Hörst 2021). Attentive noticing and attentive writing (see also Ritson and de Smalen 2021) are depicted as ways of relating to and articulating nature-cultures of the Wadden Sea through situated knowledge(s).

Openings and further avenues for research

The previous sections provided an overview of the foundations of a relational approach and how it can be applied to analyse the nature-cultures, situated knowledge(s) and the politics of nature at the Wadden Sea. We are aware of the fact that such a perspective considerably challenges current research undertaken on the Wadden Sea specifically, and on the coast in general, but we are also convinced that it complements this scholarship. Indeed, the relational analyses undertaken here build on previous research and acknowledge that it would have not been possible to perform this type of investigation without such a solid foundation. We thus hope that this special issue with its papers is openly received and discussed among those doing research on the Wadden Sea.

Moreover, this special issue reaches out to those who are interested in conducting research on coastal areas beyond the Wadden Sea and their inherent dynamics. The human and relational interferences studied here (Ryan 2016), we hope, will provide food for thought for a type of research that avoids "the hierarchical understanding of 'the human'" (Mol 2021: 1). The theories applied in this special issue draw together a variety of engagements with the littoral and show that doings such as words, practices, routines etc. sometimes powerfully entangle and shape the articulations of coastal nature-cultures. It is of vital interest which ones are silenced while an investigation of those which get enacted is also important as it is their present materiality one has to deal with in view of tourism, the protection of nature, developing coastal defence and looming climate change. The shift away from what one might call 'human exceptionalism' towards a perspective informed by relational and multispecies scholarship might contribute to bringing forward other ways of dealing with the shifting 'materialities', 'livingness' and dynamics of the littoral.

So rather than 'concluding' this editorial, we would like to reach out and are curious as to how colleagues working on the Wadden Sea or coastal places and spaces will get involved with the research published here. It could become an opening for a future strand of research that is relationally inspired and by doing so is able to engage with the many conceptual, methodological and empirical challenges the littoral holds—a place where the land meets the sea and whose genuine state infiltrates the dichotomy of nature and culture.

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References

- Allemeyer, Marie Louisa. 2006. *Kein Land ohne Deich...!* In *Lebenswelten einer Küstengesellschaft in der frühen Neuzeit*. Göttingen: Vandenhoeck and Ruprecht.
- Barad, Karen. 2007. *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.
- Behringer, Wolfgang. 2009. *A cultural history of climate*. Cambridge: Polity.
- Boere, Gerard C., and Theunis Piersma. 2012. Flyway protection and the predicament of our migrant birds: a critical look at international conservation policies and the Dutch Wadden Sea. *Ocean and Coastal Management* 68: 157–168.
- Buchanan, Ian. 2020. *Assemblage theory and method: an introduction and guide*. London: Bloomsbury.
- Choi, Myung-Ae. 2006. More-than-human geographies of nature: towards a careful political ecology. <https://www.kgeography.or.kr/media/11/fixture/data/bbs/publishing/journal/51/05/02.pdf>. Accessed 5 August 2021)
- Callon, Michel. 2011. *Acting in an uncertain world: an essay on technological democracy*. Massachusetts: MIT Press.
- Castree, Noel. 2005. *Nature*. London: Routledge.
- Chakrabarty, Dipesh. 2009. The climate of history: four theses. *Critical Enquiry* 35: 197–222.
- Deleuze, Gilles, and Félix Guattari. 2013. *A thousand plateaus: capitalism and schizophrenia*. London: Bloomsbury.
- Descola, Philippe. 2013. *Beyond nature and culture*. Chicago: University of Chicago Press.
- Döring, Martin, and Beate Ratter. 2018. Coastal landscapes: the relevance of researching coasts for managing coastal change in North Frisia. *Area* 50: 169–176.
- Döring, Martin, Imme Petersen, Anne Brüninghaus, and Regine Kollek. 2018. *Contextualising systems biology: presuppositions and implications of a new approach in Biology*. New York: Springer.
- Döring, Martin, and Beate Ratter. 2021. “I show you my coast...”—a relational study of coasts in the North Frisian Wadden Sea. *Maritime Studies*. <https://doi.org/10.1007/s40152-021-00239-w>.
- Dupré, John. 2021. *The metaphysics of biology*. Cambridge: Cambridge University Press.
- Egberts, Linde. 2018. Moving beyond the hard boundary: overcoming the nature-culture divide in the Dutch Wadden Sea. *Cultural Heritage Management and Sustainable Development* 9: 62–73.
- Egberts, Linde, and Meindert Schoor, eds. 2018. *Waddenland outstanding. History, landscape and cultural heritage of the Wadden Sea region*. Amsterdam: Amsterdam University Press.
- Egberts, Linde, and Svava Riesto. 2021. Raise the dikes and re-use the past? Climate adaptation planning as heritage practice. *Maritime Studies*. <https://doi.org/10.1007/s40152-021-00226-1>.
- Enemark, Jens. 2021. *A model system of transboundary management. The trilateral Wadden Sea cooperation 1987-2014. A personal account*. Zuidhorn: Enemark Consulting.
- Fischer, Ludwig, ed. 1997. *Kulturlandschaft Nordseemarschen*. Westerbever: Hever Verlag.
- Fischer, Ludwig. 2011. Küste – Von der Realität eines mentalen Konzepts. In *Küstenmentalität und Klimawandel: Küstenwandel als kulturelle und soziale Herausforderung*, ed. Ludwig Fischer and Karsten Reise, 31–54. München: Oekom Verlag.
- Haraway, Donna. 1985. *Simians, cyborgs, and women: the reinvention of nature*. London: Routledge.
- Harrison, Stephan, Steve Pile, and Nigel Thrift, eds. 2004. *Patterned ground: entanglements of nature and culture*. London: Reaction Books.
- Harvey, David. 1996. *Justice, nature and the geography of difference*. Oxford: Blackwell.
- Hinchliffe, Steven. 2007. *Geographies of nature: Societies, environments, ecologies*. London: Sage.
- Hörst, Doortje. 2021. Caring for seals and the Wadden Sea: multispecies entanglements in seal rehabilitation. *Maritime Studies* 2021. <https://doi.org/10.1007/s40152-021-00235-0>.
- Horn, Eva, and Hannes Bergthaller. 2019. *The Anthropocene. Key issues for humanities*. London: Taylor and Francis.
- Ingold, Tim. 2000. *Perception of the environment: essays in livelihood, dwelling and skill*. London: Routledge.
- Ingold, Tim. 2005. Epilogue: Towards a politics of dwelling. *Conservation and Society* 3: 501–508.
- Jakuboski-Tiessen, Manfred. 1992. *Sturmflut 1717: Bewältigung einer Naturkatastrophe in der frühen Neuzeit*. Berlin: de Gruyter.
- Jones, Owain. 2009a. Nature-Culture. In *International encyclopedia of human geography, Vol. 7*, ed. Robert Kitchen and Nigel Thrift, 309–323. Oxford: Elsevier.
- Jones, Owain. 2009b. After nature: Entangled worlds. In *A companion to environmental geography*, ed. Noel Castree, David Demeritt, Dana Livermann, and Bruce Rhoads, 294–312. London: Wiley.
- Owain, Jones, and Paul Cloke. 2002. *Tree culture: the place of trees and trees in their place*. London: Bloomsbury.
- de Jong, Folkert. 2016. Ecological knowledge and the North Sea environmental policies. *Environmental Science and Policy* 55: 449–455.

- Köpsel, Vera, Cormac Walsh, and Catherine Leyshon. 2017. Landscape narratives in practice: Implications for climate change adaptation. *Geographical Journal* 183: 175–186.
- Krauß, Werner. 2005. The natural and cultural landscape heritage in Northern Friesland. *International Journal of Heritage Studies* 11: 39–52.
- Krauß, Werner. 2021. Coastal atmospheres: the peninsula of the blessed and the art of noticing. *Maritime Studies* (2021). <https://doi.org/10.1007/s40152-021-00241-2>
- Latour, Bruno. 1993. *We have never been modern*. Cambridge: Cambridge University Press.
- Latour, Bruno. 2007. *Reassembling the social: an introduction to actor-network theory*. Oxford: Oxford University Press.
- Latour, Bruno. 2018. *An inquiry into modes of existence: an anthropology of the moderns*. Harvard: Harvard University Press.
- Law, John. 1993. *Organising modernity: social ordering and social theory*. Oxford: Blackwell.
- Liburd, Janne, Bodil Blichfeldt, and Eva Duedahl. 2021. Transcending the nature/culture dichotomy: cultivated and cultured World Heritage nature. *Maritime Studies* 2021. <https://doi.org/10.1007/s40152-021-00229-y>.
- Lorimer, Jamie. 2015. *Wildlife in the Anthropocene Conservation after nature*. Minneapolis: University of Minnesota Press.
- MacNaghten, Phil, and John Urry. 1998. *Contested Natures*. London: Sage.
- Massey, Doreen. 1991. A global sense of place. *Marxism Today*, June: 24–29.
- Meier, Dirk, Hans Joachim Kühn, and Guus J. Borger. 2013. *Der Küstenatlas: Das Schleswig-holsteinische Wattenmeer in Vergangenheit und Gegenwart*. Heide: Boyens.
- Mol, Annemarie. 2002. *The body multiple: ontology in medical practice*. Durham: Duke University Press.
- Mol, Annemarie. 2021. *Eating in Theory*. Durham: Duke University Press.
- van der Molen, Franke, Henny van der Windt, and Jaques Zwart. 2016. The interplay between knowledge and governance: insights from the governance of recreational boating in the Dutch Wadden Sea area, 1981–2014. *Environmental Science and Policy* 55: 436–448.
- Müller, Martin. 2015. Assemblages and actor-networks: rethinking socio-material power, politics and spaces. *Geography Compass* 9: 27–41.
- Murdoch, Jonathan. 2005. *Post-structuralist geography: a guide to relational space*. London: Sage.
- Oost, Albert Peter, Piet Hoekstra, Ane P. Wiersma, Burghard Flemming, Evert Jan Lammerts, Morten Pejrup, Jacobus L.A. Hofstede, Bert van der Valk, Patrick Kiden, Jesper Bartholdy, M.W. van der Berg, Peter C. Vos, Steven de Vries, and Z.B. Wang. 2012. Barrier island management: lessons from the past and directions for the future. *Ocean & Coastal Management* 68: 18–38.
- O'Malley, Maureen. 2014. *Philosophy of microbiology*. Cambridge: Cambridge University Press.
- Polanyi, Michael. 1966. *The tacit dimension*. London: Routledge.
- Pye, Michael. 2015. *The edge of the world: how the North Sea made us who we are*. London: Penguin.
- Quedens, Georg. 2010. *Nordsee – Mordsee*. Hamburg: Ellert & Richter Verlag.
- Ratter, Beate, and Cormac Walsh. 2019. Küstenlandschaften. In *Olaf Kühne, Florian Weber, Karsten Berr, and Corinna Jenal*, ed. *Handbuch Landschaft*, 699–710. Wiesbaden: Springer Verlag.
- Reise, Karsten. 2014. *A natural history of the Wadden Sea: riddled by contingencies*. Wilhelmshaven: Common Wadden Sea Secretariat.
- Reise, Karsten. 2015. *Kurswechsel Küste*. In *Was tun, wenn die Nordsee steigt?* Kiel: Wachholz.
- Reise, Karsten, Martin Baptist, Peter Burbridge, Norbert Dankers, Ludwig Fischer, Burkhard Flemming, Albert Oost, and Cor Smit. 2010. The Wadden Sea – a universally outstanding tidal wetland. *Wadden Sea Ecosystem* 29: 7–24.
- Ritson, Katie. 2018. *The shifting sands of the North Sea lowlands: literary and historical imaginaries*. London: Routledge.
- Ritson, Katie, and Eveline de Smalen. 2021. Imagining the Anthropocene with the Wadden Sea. *Maritime Studies*. <https://doi.org/10.1007/s40152-021-00230-5>.
- Robbins, Paul. 2007. *Lawn people: how grasses, weeds, and chemical makes us who we are*. Philadelphia: Temple University Press.
- Rösner, Hans-Ulrich. 2018. The Wadden Sea: a natural landscape outside the dikes. In *Waddenland Outstanding. History, Landscape, and the Cultural Heritage of the Wadden Sea Region*, ed. Linde Egberts and Meindert Schoor, 81–94. Amsterdam: Amsterdam University Press.
- Runhaar, Hens, Henny van der Windt, and Jan van Tatenhove. 2016. Productive science-policy interactions for sustainable coastal management: conclusions from the Wadden Sea area. *Environmental Science and Policy* 55: 467–471.
- Ryan, Anna. 2016. *Where land meets sea: coastal explorations of landscape, representation and spatial experience*. London: Routledge.
- Schepers, Mans, Erik Meijles, Jan Bakker, and Theo Spek. 2021. A diachronic triangular perspective on landscapes: a conceptual tool for research and management applied to Wadden Sea salt marshes. *Maritime Studies* 2021. <https://doi.org/10.1007/s40152-021-00215-4>.
- Seijger, Chris, Henriëtte Otter, Jan van Tatenhove, and Geert de Wulf. 2016. Socially robust knowledge in coastal projects. *Environmental Science and Policy* 55: 393–407.
- Simpson, Paul. 2020. *Non-representational theory*. London: Routledge.
- Steenen, Thomas. 2018. The North Frisians and the Wadden Sea. In *Waddenland outstanding: history, landscape and cultural heritage of the Wadden Sea region*, ed. Linde Egberts and Meindert Schroor, 95–118. Amsterdam: Amsterdam University Press.
- Steenen, Thomas. 2020. *Die Friesen: Menschen am Meer. Geschichte, Landschaft, Kultur und Sprache*. Kiel: Wachholz.
- Stenseke, Marie. 2018. Connecting relational values and relational landscape approaches. *Current Opinion in Environmental Sustainability* 35: 82–88.
- Stock, Martin. 2020. *Meerlandschaften im Rhythmus der Gezeiten*. Hamburg: Klaas Jarchow Media Buchverlag.
- Thrift, Nigel. 1996. *Spatial Formations*. London: Sage.
- Thrift, Nigel. 2007. *Non-representational theory: space, politics, affect*. London: Routledge.
- VROM. 1999. *Planologische Kernbeslissing Derde Nota Waddenzee*. Den Haag: Ministry of Housing, Spatial Planning and Environmental Management (VROM).
- Walsh, Cormac. 2018. Metageographies of coastal management: negotiating spaces of nature and culture at the Wadden Sea. *Area* 50: 177–185.
- Walsh, Cormac. 2019. Integration of expertise or collaborative practice? Coastal management and climate adaptation at the Wadden Sea. *Ocean and Coastal Management* 167: 78–86.
- Walsh, Cormac. 2020. Landscape imaginaries and the protection of dynamic nature at the Wadden Sea. *Rural Landscapes: Society, Environment, History* 7. <https://doi.org/10.16993/rl.55>
- Walsh, Cormac. 2021a. Zwischen, Ruhe und, Unberührtheit: Landschaftsbilder am Wattenmeer im internationalen Vergleich. In *Landschaftsbilder und Landschaftsverständnisse in Politik und*

- Praxis*, eds. Cormac Walsh, Gisela Kangler, and Markus Schaffert, 33–58. Wiesbaden: Springer VS.
- Walsh, Cormac. 2021b. Protected area management in a post-natural world: negotiated governance at the Danish Wadden Sea. *Maritime Studies*. <https://doi.org/10.1007/s40152-021-00225-2>.
- Whatmore, Sarah. 2002. *Hybrid geographies*. London: Sage.
- Whatmore, Sarah. 2006. Materialist returns: practising cultural geography in and for a more-than-human world. *Cultural Geographies* 13: 600–609.
- Wöbse, Anna-Katharina. 2017. Space, place, land, and sea: the ecological ‘discovery’ of the global Wadden Sea. In *Spatialising the history of ecology. Sites, journey, mappings*, ed. Raf de Bond and Jens Lachmund, 204–222. London: Routledge.

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