



Land-sea interactions and coastal development: An evolutionary governance perspective

Achim Schlüter^{a,b,*}, Kristof Van Assche^c, Anna-Katharina Hornidge^{a,d}, Nataşa Văidianu^{e,f}

^a Leibniz Centre for Tropical Marine Research (Bremen), Germany

^b Jacobs University (Bremen), Germany

^c University of Alberta, Canada

^d University of Bremen, Germany

^e University of Bucharest, Romania

^f Ovidius University of Constanta, Romania

A B S T R A C T

Coasts are changing at an impressive speed. Therewith come changes in and challenges to governance that require an empirically-based understanding in order to foster sustainability transitions. New challenges are often not adequately met, so a host of problems arise. The papers in this special issue speak to these problems and consider which governance approaches might be worth exploring. The authors look at a diverse set of governance practices and changes, using the lens of Evolutionary Governance Theory (EGT). This theoretical approach is chosen, because EGT offers a perspective on governance which gives central place to co-evolution. EGT integrates a broad range of theoretical notions, drawing on evolutionary and system theories, institutional economics and versions of post-structuralism. EGT is put to use to analyse what is called in the framing paper 'the coastal condition'. It is argued that governing land-sea interactions and the coastal zones is particularly prone to problems of observation (between land and sea, between centre and coastal margin) and complex interdependencies (between social and ecological systems, between actors managing risk). Governing land-sea interactions requires multi-level governance and new forms of policy integration, which means, an explicitly coastal governance arena, semi-autonomous yet subjected to the checks and balances of a multi-level system. The various papers develop these insights by highlighting problems of coordination in coastal governance, issues of inclusion/exclusion, diverse knowledges and observations. They illustrate how the coastal condition engenders risk and uncertainty, and how it renders policy integration more important, while simultaneously making it harder to achieve.

1. Introduction

Society is living in the age of blue growth. Economic boundaries expand more and more into the marine realm. Seas are becoming integrated in the global economy, while they are not fully integrated into global governance. The coast, where land and sea interact is the place where many developments amalgamate. More and more people are moving towards the coast. More and more economic activities of increasingly diverse kinds are developing. Use intensity and therewith scarcities, potential conflicts increase and institutionalisation of those uses becomes more urgent. The use of the sea intensifies, and so does the use of coastal areas, both as a result of tightening couplings thus busier traffic in the global economy and because coasts serve as staging areas for emerging marine economies. Meanwhile, in much of the world, land based activities are not reducing their environmental impact (yet), which places an additional burden on coastal areas. Therefore, it seems plausible that new institutions, as rules of the game, and new embedding governance structures will need to be established. Coastal governance

needs to change, adapting to the new needs of society and associated governance challenges. In short: while one most likely will observe an evolution of governance in this particular space (as predicted by EGT), there is a real need to manage and accelerate governance adaptation. The governance gaps affecting land-sea interactions currently (see Van Assche et al., 2019, the framing paper of this special issue) make it unlikely that a sustainable form of governance of those interactions will come about 'organically', i.e. through the existing set of co-evolutions, the adaptive mechanisms present in the governance system. The contributors to this special issue point out that any managed transformation of coastal governance nevertheless needs to take stock of these existing adaptive mechanisms. A return to good old modernist social engineering and institutional design from scratch is out of the question as well; their track record has been disastrous in many respects.

A wealth of literature has developed on governance processes, structures and practices in recent years, most of it with a land based focus [1–5]. The concept of 'governance' itself, especially in its later theoretical iterations was helpful in overcoming older dichotomies

* Corresponding author. Leibniz Centre for Tropical Marine Research (Bremen), Germany.

E-mail address: achim.schlueter@leibniz-zmt.de (A. Schlüter).

plaguering the study of collective action and decision-making: government vs citizen, public vs private, top-down vs grassroots, formal vs informal. All of these distinctions retain a value and use, yet they do not define different realms of governance which can then be evaluated in general. Each existing governance configuration leans on informality, requires some degree of self-organization, gathers governmental and other actors, operates through decision-making in segmented and layered fashion (through delineation of levels and domains). Institutional perspectives often developed into governance perspectives, and governance theories tended to embrace notions of institutionalism. While initially, normative governance theories dominated (prescribing particular forms of governance as panacea), they are now accompanied by less normative relatives.

One of these relatives is the aforementioned Evolutionary Governance Theory (EGT), the red thread for this special issue. A more detailed exposition of EGT can be found in the framing paper, but an introduction to this special issue needs at least a first introduction to the theory. For EGT, governance is always evolving, more particularly as a result of co-evolution. Even without any steering attempt, governance transforms itself through ongoing interactions between its elements, most notably actors and institutions. Actors change through the interplay with other actors, and through the production, use, discussion of institutions. Institutions are the tools for coordination between actors, ranging from simple rules to the more complex composite formalities of policies, plans and laws, which coexist with informal institutions, as parallel coordination mechanisms. Actors are no pre-programmed robots, but change themselves and their strategies through interaction with actors and institutions, but also through discursive means. Which means: they understand themselves and the world through discourse, through knowledge and narratives which enable them to strategize, and to persuade. Discourse also represents a limit to strategizing, as actors cannot understand themselves and their goals outside discourse, and as institutions exert effect through inclusion of and reinterpretation through discourse. In this game of strategic and routine interaction, governance evolution and adaptation comes about. Adaptive capacities develop, modes of path creation, yet also rigidities in evolution, which EGT labels as 'dependencies'. Dependencies can stem from the governance environment, and they can be introduced from the outside, from society and the material environment.

In the marine realm resource-related governance concepts have been developed [6], but mutual inspiration and integration between theories of land and sea so far remains low [7]. Due to the immense changes at the coast outlined above, it is worthwhile to reflect on this lack of theoretical integration and possibly adapt governance theories to the changing situation at the coast, the physical meeting place of land and sea. A coastal theory of governance might help to understand coastal transformation and land-sea interactions together and which might assist in developing a governance structure that allows for a sustainable transformation of the coast, both for its own sake (its own environmental quality and quality of life) and for enhanced management of land-sea interactions.

This special issue has to be considered a first step in that direction. It draws, as mentioned already, on Evolutionary Governance Theory (EGT) [8–12]. EGT offers a promising lens to analyse the development of coastal governance, because of its attention to both possibilities and limits of steering and intervention, and its flexible conceptual framework, open to many theories, enabling a crossing of disciplines and an incorporation of new concepts reflecting the unique nature of coastal social-ecological systems. EGT offers a perspective on governance which gives central place to co-evolution and in this case, the co-evolution between governance for land and sea, between local coastal governance and higher levels of decision-making, between governance configurations and their physical environment that warrant close inspection. Therefore, EGT was chosen as a point of departure for aiming to understand the changes in governance, both the observed ones and the desirable ones, for coastal areas.

A second aim of this special issue, besides the application of theory, is the further development of the theoretical discussion. How to shape a theory of evolutionary governance which is tailored to coastal conditions? A particular adaptation of theory might be necessary for rethinking adaptive governance of a particular kind of space. An increasingly voiced concern by social scientists working on the ocean, coastal waters and coastal transformation processes globally indeed points to the pressing need for conceptual discussions and theoretical advancements based on the empirical realities of oceanic and coastal life. This call for deterritorialising the academy [13] is indeed heard. This special issue offers a step into that direction. Therefore, the call for papers for this special issue was as open as possible and asked for contributions to take any governance challenge of the coastal zone and to look at it from an EGT perspective, adding on, where deemed necessary other perspectives. Very heterogeneous contributions, though all talking about governance processes in the coastal zone, were received. This diversity was not reduced by the fact that most contributions in this issue stem from the Land-Sea Interaction Working Group of the Cost Governance for Sustainability Network (OceanGov). Such a diversity of cases was a good precondition for finding out if there is something like a unifying set of 'coastal conditions' which would call for a distinct theory of governance evolution at the land-sea interface. There are endless possible configurations of governance and trajectories of change at the coast. From this perspective there will never be *the* theory of governance evolution or sustainability (let alone perfection) at the land-sea interface, at least in the sense of a normative theory prescribing one ideal governance configuration or preferable path. However, the analysis of the various cases helps to shed light on the particularities of governance changes at the coast and can help to tailor a theory with greater analytic acuity for this topic, and with some normative implications (the final shape of which will be context-dependent again).

The next section of this introduction starts first with a brief summary of the conceptual paper written by the editors of this special issue. It outlines in particular the features of the so-called coastal condition (or, if one prefers: a set of conditions) that is thought to characterise coastal governance, and expected to inform a theory of governance of the coast. Then it summaries the various papers, for finally linking them to what is called the coastal condition of the framing paper. The papers are subdivided in three categories having distinct foci. The first set takes as a starting point a particular coastal ecosystem. The next group puts a focus on climate change and its resulting effects on coastal governance. A last set of papers does not take physical conditions as a starting point, but various aspects of coastal governance as such.

2. The various contributions

2.1. The framework paper

The paper by **Kristof Van Assche, Anna-Katharina Hornidge, Achim Schlüter and Nataša Văidianu** [10] provides the general frame for the entire issue. It looks at land-sea interaction and the governance of coasts, using an Environmental Governance Theory (EGT) perspective and spells out features of coastal governance which together define 'the coastal condition'. The exercise serves to lay the groundwork for a context-sensitive understanding of *coastal governance* as governance for coastal area *and* for land-sea interactions. Coastal governance has to acquire the double identity and double task of governance of coastal space for the benefit of locals, and governance of land-sea relations, for the benefit of all. A brief mirroring discussion of Integrated Coastal Zone Management (ICZM), a slightly older proposal for coastal governance professing the same goals, shows how difficult it is to achieve an 'integrated' character, and how a problematic understanding of power/knowledge relations in governance makes both efficacy and adoption of the approach difficult. The editors argue that underlying observation problems require a more thorough thematization: observation of 'sea problems' from land and of marine effects of land problems is hard,

because of entwined discursive, institutional and material obstacles. Tackling problems is harder because the structure of observation is reinforced by historically evolved governance boundaries.

The first identified coastal condition is the ubiquity of *interdependencies*. On the material level this is certainly intuitively understood. Due to the fluidity of water and basically the drainage of the land towards the sea those material interdependencies seem more pronounced in the coastal environment in comparison to any other social-ecological system [14,15]. They also stem from the fact that the coastal zone is a zone of fluid and changing boundaries, boundaries between the land and the sea, between jurisdictions, activities, communities, etc. This shows the central importance of dependencies under coastal conditions moving far beyond their material interdependencies. Closely linked to the condition of interdependency, and partly resulting from it, is the simultaneous marginality and centrality of the coast requiring more often than not *multilevel governance structures*. Whether they emerge is a different question. Coastal areas tend towards a combination of centrality and marginality which often leads to strong focus on ports of significance for the central regime, sometimes military installations when the national border is not secure. The point not being that coastal areas are on average over- or under-represented in the centre of power, but rather that they come with high potential for both importance (cf borders, ports) and marginality (cf literal marginality and complexity given the environment). Certain past polities, such as Venice, or the Greek network of colonies, can be described as entirely coastal, a choice of identity which enabled them to refine risk calculation, simplify the governance problem mentioned above, and optimally exploit the coastal environment, all by not having a land-based centre and by making the web of sea connections the core of what was to be governed. For most modern nation states, due to the particularly high intersectionality of social and ecological boundaries in the coastal zone, coastal governance tends to spur new governance complexity, including multi-level governance systems which can never resolve the observation problem mentioned (as new obstacles are raised).

Out of this particular requirement of multilevel governance results the third coastal condition: the trade-off between the need for and the obstacles towards required policy *integration*. On the one hand, local coastal governance is reasonable because of the ever specific conditions in a particular coastal space. It can manage the problem of observation better, due to increased relevance of local knowledge and it can enhance local coordination because of local interdependencies between actors managing risk. On the other hand, integration into multi-level governance is required due to the ubiquitous interdependencies between the manifold social-ecological systems at the coast and beyond. Such embedding can import knowledge, a broader perspective, encourage checks and balances, and local integration of policies (e.g. in plans and strategies). Coastal governance thus leans on the internal complexity of multi-level systems, while it creates new observation and adaptation problems. Acknowledging the essential non-resolvability of this issue, and the persistence of trade-offs, the authors argue for a truly coastal governance arena (enhancing observation and policy integration), semi-autonomous yet subjected to the checks and balances of a multi-level system.

Scholars looking at land-based governance might argue that those conditions can be found in any environmental governance system and they have a point. It is argued however, that due to the material characteristics of this zone of land-sea interaction, in combination with contingent institutional evolutions and further because of inherent design problems of institutional structures (e.g. the always imperfect balance between levels of governance, modes of observation, forms of knowledge), the 'coastal condition' becomes real.

2.2. Contributions focussing on ecosystems

Katherine Daniell, Roel Plant, Victoria Pilbeam et al. [16] focus on the evolution of *estuarine* governance, using three case studies from

different places in the world, namely Australia, France and New Caledonia. The co-authors have worked and analysed those places as researchers or practitioners for many years. Providing a very detailed account, the authors organise and cluster their particular data according to their framework which was influenced, among others, by Evolutionary Governance Theory. However, the iterative process of this analysis and the framework were theoretically open and allowed for emphasising the emerging themes and various explanations. They found one commonality among those three cases, which is very particular to the land-sea interaction and this is the fluidity and constant contestations of boundaries, which particularly stresses the aspect of interdependencies. What is the boundary between land and sea? What is the boundary between different agencies and actor groups being responsible for any particular governance in the marine realm? Boundaries are difficult to define due to fluidity and constant change, change in the ecological, but also the social environment.

This feature of the environment leads to contestations and renegotiations and therefore evolution in governance [17]. Interdependence, change and fluidity of boundaries appear here as different, yet entwined factors, together driving governance adaptation, thus evolution. Their co-occurrence marks coastal social-ecological systems and is linked to another observed driver of governance change, i.e. risk and more specifically risk of disruptive shocks. Shocks can *force* adaptation. Sudden material events [18] lead to shocks in the governance system, unexpected economic shifts, but there is also the intended incitement by key actors pushing forward any particular theme and discourse, where they believe collective action and therewith governance change should happen. The authors emphasize the forms of co-evolution observed, the importance of discourse (as power/knowledge carrier) and the possibility and value of more intense collaboration between complex sets of actors.

Petruța Teampău [19] also looks at an *estuarine* ecosystem. Estuarine or delta systems push the interdependence within and between systems further, as the river adds to the connections and mutual influences (sea and hinterland, fresh and saltwater) in the social-ecological system. Teampău takes a look at the evolution of governance in the Danube Delta, particularly the village of Sulina, over the last 150 years. Over such a period of time the ecosystem is changing, especially in the dynamic delta environment, and all the more so because the spit of land between river, sea, dunes and marshes that accommodates Sulina, has been drastically re-engineered. However, the social system surrounding the Danube Delta has also changed dramatically. The fascinating story she tells us about the place and its people is mainly about dependencies of various kinds. The European Commission of the Danube (CED) dating from days prior to the First World War has left its footprints, as did the communist regime, in the minds and discourses of people. After communism the town lost much of its coordinated planning, so path dependencies became more central than in the CED and communist periods, where goal dependencies could dominate because the past was largely erased and the power of higher level governments was exerted locally. Teampău shows us that materiality creates interdependencies with the governance system. However, social or societal changes are of utmost importance and those factors jointly shape the discourses about the place. A succession of regimes comes with new actors, institutions, and new power/knowledge configurations. Changing understandings of the relation between town and environment produce new forms of management of that relation.

The paper also illustrates how understandings of self, place and history mutually articulate each other and co-evolve. In this co-evolution new objects and subjects are created. For example, 'the Delta' was largely a creation of a recent, conservation-based governance regime, which emphasized wetlands over sea, ecological over social systems. Land-sea interactions that were historically central moved to the background in community and governance discourse. Under the CED Sulina, being near the Romanian and European border, was perceived (and developed) as the port of Europe. Through the CED influence,

ideas, structures, and things from all over could travel to and from Sulina, while the Delta was not in the picture. The relation was between Sulina and Europe, with the Black Sea being a portal to Europe, whereas for the fishermen before, the interaction between land and sea, sea and river, river and wetlands, were all part of discourse and of livelihoods. A post-socialist focus on nature conservation and on regional governance, turned Sulina into a double margin, where local influence over the governance of land-sea interactions dwindled and European regulations and actors further restricted local action in more complex multi-level governance.

Stefan Partelow and Katie Nelson [20] analyse a local, mainly informal, extremely dynamic and accelerated evolution of a governance system. Gili Trawangan, a small island near Lombok Indonesia used to be home to a few fishermen, but then Western travellers realised the dive tourism potential of this island and developed it within two to three decades into a major hub for divers in South East Asia, of worldwide significance. Gili Trawangan is an exceptional case for studying governance evolution, because highly accelerated economic expansion necessitated coordination, thus a process of governance emergence. Until recently this happened with hardly any role of the state. A small group of actors wanted to create economic activities, heavily dependent on a well-functioning (marine) environment. Immediately they observed this dependency; they observed problems of collective action in relation to their environmental resources, including the protection of coral reefs, water and waste management. Material interdependencies become obvious. However, Partelow and Nelson focus their attention on actor interdependencies. Using social network analysis, they can show, how networks between key actors result in path dependencies in the evolution of solutions of their fundamental governance problems. Key actors were able to create solutions from within their system, based on a perception of shared interest (asset protection), shared values and a refined observation of land-sea interactions and causalities, due to their familiarity through diving.

However, problems are growing more complex and it is difficult to find internally defined and mostly informal governance solutions. Also the state wants to get in, wants to see the place flourishing for the benefit of the state. New actors are coming to the fore and a more complex multi-layered system seems to appear at the horizon.

Achim Schlüter, Colin Vance and Sebastian Ferse [21] look at the evolution of governance in relation to *coral reefs*. Coral reefs are identified as being trapped in what they call a global land and sea based dilemma. Fighting the coral crisis requires, as they show, solving various governance challenges at the global level – CO₂ emissions leading to acidification and ocean warming and unregulated life reef fish trade. Regional and local challenges have to be dealt with, like eutrophication due to expanded economic activity in the hinterland and overfishing, pointing out the need for multilevel governance as a feature of the coastal condition. This requirement is due to the strong material interdependencies among the various actors either relying but more often not relying on coral reefs at all, but just influencing them negatively. This obviously leads to the fundamental need for policy integration. Activities (and policies affecting them) at different scales tangle in their effects at the local scale, and different activities (regulated in different policy domains) affect each other.

The often small and often coastal object of the coral reef forms a perfect illustration of the coast as a sink, as a place affected by many and not affecting so many (with a presence in the governance system). That is, in the power/knowledge configurations of the affecting governance systems, neither the effects on coral, nor the relevance of those effects are visible. The object of the reef is not present, as it is submerged in the already invisible object of the sea, and effectively protecting it is hardly possible given the problems of boundaries and governance gaps discussed in the framing paper. These issues cannot be resolved by a simple call for policy integration. The authors identify a key obstacle for this integration in the case of coral reefs, but quite possibly an omnipresent obstacle: the coast often faces unidirectional dependencies on the

coastal commons. The more this problem becomes severe, the more one moves out to the ocean (water does not flow uphill, only certain fishes swim uphill). The coral reefs point again at the utility of a truly coastal governance arena as a site of enhanced observation and policy integration. The case adds the point that such a new arena may serve as a starting point for rethinking and renegotiating policies at other levels.

2.3. Coastal exposure to climate change

Jeff Birchall [22] looks at a particularly important and currently prominent characteristic of the coast, which is the strong exposure to weather and climate impacts that are characterised by extreme variability. This feature is particularly pronounced in the time of rapid climate changes, which requires many institutions to adapt. He selected Homer, a community in Alaska, a particularly extreme case affected by rapid climate change, due to its arctic location. In particular, he draws on the three foci of EGT which are actor institution interactions, the close relationship between power and knowledge and the clear observation of path and goal dependencies in the process.

Birchall analysed how not only adaptation to climate change remained low on the agenda, but also the building of adaptive capacity. Institutionally engrained habits and forms of knowledge geared towards mitigation, including expert knowledge (engineering-focused) and narratives on climate change as a remote threat. These narratives pervaded both local politics and administration, and they made it harder to make a persuasive case towards the rest of the community that long term planning and policy for adaptation is a necessity. They also rendered documents, new institutions, that were aimed at adaptation useless, in the political competition and the competition between actors within administration. Power/knowledge in the form of discourse, and in the sense of actors espousing discourse created path dependencies of several sorts, from pervasive small government and low taxation rhetoric over narratives of remoteness, individuality and toughness, to resistance to any form of comprehensive planning. While institutional legacies further diminished the chances of robust climate adaptation institutions, they certainly strongly the plans. The focus on emission targets is therefore not hard to understand, while this choice introduced new goal dependencies, as rigidities in governance evolution making a path towards adaptation planning (and adaptive capacity in general) even less likely.

Risk calculations are integrated into the system of governance, and trigger costly mitigation measures (attesting to considerable coordinative capacity), but the dominance of other values and goals, in combination with the mentioned disbelief in climate change *now* affect both the calculation and evaluation of risk. Homer is coastal, but the lack of belief in comprehensive planning and design creates a variety of blind spots in the observation of the land-sea interface and of adaptation options there. It seems the privatization of risk added to the rigidity in governance responses, with insurance companies and individual owners taking on the burden of risk, while local knowledge of land-sea interactions seems restricted to perceptions of the marine realm as a threat.

The combination of path and goal dependencies are also of importance in the case of **Rapti Siriwardane-de Zoysa [23]**. In the Bay of Manila (Philippines) new policy discourses on coastal protection by dyking (so new goals) enter local governance from national and international arenas. Discourses of coastal protection (i.e. the sea as enemy, the coast as hard boundary) are adopted and used by local and national elites, at the expense of existing understandings of the coast as a fluid border zone, and existing livelihoods straddling the line are rendered virtually impossible. The already marginal groups associated with these livelihoods are further marginalized, which makes them less visible in governance, and their alternative observations of the coast as a zone in itself, possibly deserving its own governance, and their more complex understanding of land-sea interactions (hence risk calculation) cannot infuse policy with nuance, enabling more adaptation options [24]. The

discourse of the ‘discursive dyking coalition’ is hard to dislodge, and is likely to aggravate the risk it is purported to mitigate. Different from the situation described by Birchall [22], the hard boundary between land and sea, as discursive object coming with distinct risks for the community, is new, and its introduction is strategically used by existing elites.

Siriwardane-de Zoysa assembles her theoretical perspective using notions from EGT, political ecology and science and technology studies in an overall anthropological approach, which allows her to dig deep into the phenomena of object and subject construction, and material dependencies, which has been the focus of more recent EGT-inspired investigations. International discourses, policy streams, subsidy flows, local power relations and the lure of big projects co-created the discursive objects of the coast (as hard line to hide behind) and the dyke (formally as wall to protect, informally as generator of money and power). Meanwhile, both the land-sea interactions previously existing, the liminal zone as an asset for people, and those people themselves disappeared. Once the dykes are there, they have to be maintained, the coalition benefiting from them remains in place, and the material dependencies flowing from there (and more fully observable in places like the Netherlands), can extend way beyond the coastal zone – they can reconstruct the map of actors and institutions, of power/knowledge configurations, at a national level.

2.4. Governance integration and harmonisation

Anne Marie O’Hagan, Shona Peterson and Martin Le Tessier are looking at the governance of coastal spaces in Ireland and analyse how different regulations are interacting at various levels. They pay attention to the emergence of and interplay between local, national and EU regulations. They found a wild proliferation of policies which add up to a “horrendogram” [25] of more than 200 legislative attempts to regulate the coastal space in Ireland. The proliferation did not achieve all the goals professed, and overlaps and contradictions were abundant, for a variety of reasons. One of them seems to be derived from an aspect of what we called the coastal condition, i.e. the particular need for and obstacles for policy integration in coastal areas. Coasts are marginal, and need to be managed from those marginal spaces with high complexity but low visibility from the centre, but they also require central legislation integrating the various interacting issues for as much of what is relevant for the centre plays out and interacts in the coastal margin. A second reason seems to be path dependencies: the regulations seem to each follow their own path, with the lack of interaction and integration. In addition, there are many cases of broad goals and high ambitions which are not tightly coupled to policy instruments enabling implementation, but also clash with ambitions of other players and other levels, or rely on other levels, scales of governance in a manner not cognizant of the limited couplings between scales. Hence, the authors call for a co-evolutionary understanding of the way actors (at one level) and level of governance, and how each associate with their own assumptions, institutions, goals, narratives. Interestingly enough the huge quantity of regulations does not avoid what they call “a white line”: a governance vacuum at the coast in this zone, where there are constantly shifting boundaries between land and sea, leading to inertia and to *non-governance*. This is a fascinating observation, showing that multiplication of policies can create a de facto institutional vacuum. In this case, the issue seems to be multiple again: a partial discursive absence of the object of ‘the coast’, power relations in the broader governance context, between coastal and other policies, unintended path dependencies stemming from unthinking copying thus hardening the coast as line in new policies, and interplay between players and levels, with each identifying with partial goals and tools.

Nataşa Văidianu, Florin Tătui, Mădălina Ristea, Adrian Stănică [26] also focus on problems of multilevel and polycentric governance (as O’Hagan et al.) but bring us to a different country: Romania. Due to the institutional past of Communism in Romania, one might expect even greater discrepancies between local, regional, national and European

levels of governance. However, the paper tells a story which seems to imply that evolution of at least formal governance is largely driven by European directives. There are initiatives on ‘Integration of Black Sea and Danube planning, Coastal Erosion and Climate Change Adaptation, Wetland protection and rehabilitation, MSP, Marine Protected Areas, improved and integrated surveillance, need for a fishery strategy, tourism diversification, specialization of higher education, the setup of a science-business-administration network’ [26]. Integrated Coastal Zone Management or the later developed framework of Marine Spatial Planning are each marked by path dependencies. Similar to Ireland they seem to develop as non-integrated policy realms and despite strong interdependencies, the obstacles for integration seem to override the need for it.

Of particular interest in the paper by Văidianu et al. is also the grasp of processes of discursive migration, between actors and across scales. They illustrate how this can enable minimum forms of policy integration (as discourse is shared already), yet also how the discourse is reinterpreted each step of the way, modified, and in some cases abused (towards other purposes). Finally, this rich paper makes the point that lack of local participation in governance can render it blind for local issues, can reduce observation of local land-sea interactions and make adaptations options invisible, while increasing the opacity of the overall governance system, its use and abuse of power, and with that, decrease its democratic legitimacy and its governance capacity.

Mariá Ángeles Piñeiro Antelo, Jesus Felicidades, Brendan O’Keeffe [27] look at a particular governance tool of the EU Common Fisheries Policy, which are Fishery Local Action Groups (FLAGs). They do so by comparing the development of those FLAGs in Ireland and Spain. Due to the changes in the use of the coast, mainly signifying a diversification of activities, going far beyond fisheries, an evolution of how to govern fisheries and the coastal space was deemed necessary. FLAGs are a tool of the EU to enable the integration of local conditions and recognise the necessity of multilevel governance. The EU introduced FLAGs by copying the governance structure of LEADER Local Action Groups (LAGs). Despite the copying of the mechanism the authors do not find any integration or cooperation between FLAGs and LAGs, despite the fact that interdependencies exist. Comparing Ireland and Spain they find that in both cases the discourse around FLAGs is the same. However, they find substantial difference in the concrete appearance, functioning and results of those FLAGs in the two countries.

The authors demonstrate how this can be explained by the new arena being established in quite different systems of multi-level governance, marked by their own sets of co-evolutions, their own path-, inter- and goal dependencies. The actually devolved powers, the amount of resources involved the freedom to integrate and devise policy at the local level, the weight given to local observations and priorities in the new arena or site of governance, differ vastly. In Ireland, regionalism is weak and the bureaucratic central state is strong, so the FLAGs remained modest, with a weak identity, autonomy, and capacity for policy integration. In Galicia, the strong regional identity and institutional structures did seemingly not define themselves as too distinct from local identities and interests, so were able and willing to shield off national influences, while channelling resources and powers to the local level. FLAGs can be able to bridge the gap between the need for and obstacles towards policy integration, yet the result will largely depend on the context of the whole governance system and its dependencies (not in the first place on the local context). Ireland, a still centralized national administrative and political system, did not see the need for a new form of local coastal governance. It neither had the will, the narratives, nor the institutional infrastructure to enable coastal governance under the FLAG flag did not materialize. As the authors demonstrate, both through the Irish analysis and through the Galicia comparison, this is not simply a matter of filling in a ‘gap’, as in a blank. In the two cases, and entirely compatible with an EGT perspective, there rarely are real blanks. Much more often, the structure and evolution of larger systems do not allow for certain decisions to be taken at certain levels, and for certain

identities and sites (or arena's) to develop.

Wanting Chen, Kristof Van Assche, Stephen Hynes, Trine Bekkby, Hartvig Christie and Hege Gundersen [28] scrutinize a relatively new governance tool, i.e. ecosystems accounting, a technique which can be at the heart for new institutions for coastal governance. They explore its utility for coastal governance. Using the management of Norwegian kelp forests as a case, with three nested case studies, they interrogate the promise of this new tool. The authors acknowledge the promise of this and other ecosystems accounting techniques in situations where strong material dependencies exist and are acknowledged, understood as such. They point out both strong points and limitations, with on the positive side the promise of transparency in two directions (ecosystem for governance system and governance system for those with an interest in the ecosystem), and an enhanced capacity for coordination and policy integration around indicators. Less enthusiastic are the authors about interpretations of the new tool which might reduce governance to accounting, and about risks of simplistic thinking about social-ecological systems in terms of units and values (for human and other uses), rather than that of (shifting) relations, multiple perspectives and always negotiated priorities.

This means that future sets of recognized uses and values can be easily black-boxed in sophisticated accounting systems. Both democratic and economic problems might arise from this, while the dynamics of ecosystems themselves might undermine the value in terms of protection of individual assets (resources) and of ecosystems as such. A challenge of these and other quantitative tools for coastal governance will be to develop them together with other tools, and, last but not least, with robust infrastructure for coastal governance, as actor-institution configurations requiring arena's, resources, legitimacy, power and expertise. As in the Romanian case, crucial in such construction process seems to be the inclusion of a diversity of local perspectives, the creation of decision sites where scientific and local knowledge are consistently confronted and where this powerful hybrid of ecology and economics can compete with expertise offered by other disciplines. The tool is promising, its embedding in structures and practices of governance is essential.

Governance integration and harmonisation also takes place at a much larger, global scale. **Henryk Alff [29]** looks in this last paper of the special issue at the rapid evolution and convergence of governance paths due to the Chinese Maritime Silk Road initiative. He analyses how Chinese versions of older high modernist development discourse, focussing on large scale infrastructure development as development driver, and believing in rapid re-engineering of social-ecological systems, travel along the coasts of the Indian Ocean. He puts a special focus on Sri Lanka. The paper shows, similar to the paper by Teampău [19], how the ocean and the coast are characterised not only by far reaching material interdependencies, but that the coast is a particular place of strong interaction between very distant social systems. Alff offers more than a critique of re-emergences of the twinned discourses of colonialism and high modernism, however. His analysis reveals complex patterns of contestation within and between levels of governance, with the fractious political landscape of Sri Lanka as a relevant background. The development of a new southern port, plus flanking infrastructures over land, thus sparked dissension from the beginning, more so as it was clear that Chinese money would be needed for implementation. As expected, and partly because of Chinese strategy, partly because of local management and higher-level wrangling, the project was a financial disaster for Sri Lanka, and the takeover by Chinese actors reinforced a de facto dependency, while deepening divisions at home.

Once the port was there, interdependency was aggravated by strong material dependency. As Sri Lanka could not even afford this one, developing a different port, or focussing on other forms of investment (say, in education), was out of the question. In order to minimize the damage done, Sri Lanka has to remain committed to the success of the Chinese port, long after the current financial troubles are over. This most likely will entail growth, more infrastructure, a creation of new positions

of and routes to power through the emerging coalition of players around the port. Alff reconfirms a key insight of EGT: 'that the governance path has a remarkable transformative influence on the interacting actors and institutions, while it is shaped in turn by those interactions' [29]. In the case of Hambantota port in Sri Lanka, the already heavily criticized combination of Chinese projection of power and high modernist development is locally perceived with more suspicion. The unanticipated effects of the project thus spiral out in different directions, on the one hand creating strong dependencies, as described. On the other hand, the shifts in power/knowledge configurations create new discourses and most likely new actors aiming to break that dependency, towards path creation in a new direction.

3. Discussing the coastal condition

Not all papers thematise the three main aspects of the coastal condition identified in the framing paper of this special issue [10] (see Table 1). This makes sense for several reasons: First of all, the papers all have a different focus and a unique empirical base. Second, the authors combine elements of EGT, or the overall EGT frame, with concepts derived from other theories, such as political ecology, interpretive anthropology, network theories, institutional economics in the line of Ostrom, and theories of social-ecological systems. All this enriches the governance theoretical discussion, and shows its versatility. By doing so, and this is the third point, the issue purposefully fosters the critical reflection and further advancement of EGT through application to coastal governance and land-sea interactions. Using the three aspects making the coastal condition, advancements are pointed out and conclusions from those cases are drawn.

Path dependencies show up everywhere, but more typical for these coastal papers seems a particular emphasis on *interdependencies*, a recurring theme in almost every paper, might it be in the analysis of estuarine governance (Daniell et al.) [16], institutions evolving on a small island (Partelow & Nelson) [20] or in regulations evolving around coral reefs (Schlüter et al.) [21]. On a global scale we find actor interdependencies, as Alff [29] shows in his paper focussing on the travelling of development concepts along the 'Marine Silk Road'. Several papers also show how the material environment over time creates material path dependencies, and routinely changing coastal environments can generate observant and adaptive governance systems. Only when change comes in new patterns, as with climate variability in the paper by Birchall [22], comes interdependence at the cost of adaptive capacity. In this Alaska case, it also appears that local knowledge and local adaptive capacity can be entirely insufficient to deal with new variabilities. One can draw conclusions relying on localized governance, e.g. arguing for more intense sharing of information, more inclusive governance or even cultural change, but given the complexity of the issues, it seems that this and other cases indicate that the counter-force, subject expertise and networks into sectors beyond policy-circles of other levels of governance is required. Even when the dependencies between scales for the particular issue are not strong.

Those interdependencies, particularly the material and the actor and actor-institution interdependencies make polycentric and *multilevel governance*, with a particular emphasis on the regional level, a necessary coastal condition. In the papers focussing on the EU, this might be predisposed from the governance structure of the EU. However, for example, the global dilemmas in coral reefs governance (Schlüter et al.) [21] or the puzzles described by Daniell et al. [16] in relation to the interdependencies of estuarine governance, indicate this as illustrative of the coastal condition. Furthermore, on closer inspection, the EU regulations for issues affecting the coasts are already informed by notions of interdependence, requiring multi-level governance and integration.

With this comes along the need for and the obstacles towards *policy integration*. This tension is probably best described in the paper of Teampău [19]. However, also the three papers explicitly focussing on

Table 1
Coastal Conditions considered.

Area	Author	Theme	Interdep.	Multiscale	Integration
Ecosystem	Daniell et al.	Comparing three estuaries	X		X
	Teampău	Danube Delta	X	X	X
	Partelow et al.	Small (Gili) Island	X	X	
Coast and climate change	Schlüter et al.	Coral Reefs	X	X	X
	Birchall	Coastal Risks in Homer Alaska	X		
	Siriwardane-de Zoysa	Coastal Risks Bay of Manila	X		X
Integration	O'Hagan et al.	Coast Ireland/EU	X	X	X
	Văidianu et al.	Coast Romania/EU	X	X	X
	Piñeiro et al.	Fishery Local Action Groups	X	X	X
	Chen et al.	Ecosystem Accounting	X		X
	Alff	Maritime Silk Road	X	X	

issues of European coastal governance are full of examples. The contributions elucidate the notion of policy integration in the EGT frame. After reading the diverse case analyses, it is abundantly clear that multi-level governance cannot only be understood for its functional benefits. In most cases, there is also a real expectation of performing checks and balances. This performance should not be considered an obstacle to efficient policy implementation through scales, or an obstacle to policy integration. The difference between scales (and in fact between actors and between policy domains) enables this democratic game of cultivating difference and enabling force and counterforce. Policy integration in an absolute sense is thus neither possible nor desirable for several reasons: it would erase the necessary differences to make the system work, it would reduce its capacity to manage external complexity, it would jeopardize its adaptive capacity.

Policy integration, as both more necessary and more difficult at the coast, can thus manage this challenge by being envisioned in its full diversity. That diversity of integration options is again, in EGT fashion, determined by the evolution and structure of the *whole* governance system. If more levels and domains emerged, this creates unique needs for, and possibilities for policy integration. If informal institutions dominate local governance, then at least initially, integration will be a modest form of informal coordination. If local governments are the only realistic arenas for coastal governance, then the interests of other places have to be entrenched in the process. This especially pertains to the interests of the sea, which are not well defended, not well visible from the centre, but also not necessarily appreciated in the local coastal community. Coastal governance as privileged place of linking and sea interests can only work if the policy integration undertaken transcends the interests of the local community (as shown by Teampău, Schlüter et al. and others in this issue).

One other theme emerges, which is definitely addressed in the framework paper at various instances, but is not explicitly mentioned as a feature of the coastal condition: coastal risks. Maybe it should. Their particular role in the evolution of governance, might it be mediated via articulated risk discourses, or more implicitly addressed through other discourses or other features of governance, seems prominent. Interdependence returns here as risk management strategy. In Daniell et al. [16] it is particularly the shock exposure to coastal risks that has triggered governance changes in the three cases analysed. However, also there, but more pronounced in Birchall [22] and Siriwardane-de Zoysa [23] it is the occurrence of coastal risks mediated by discourses, which has substantial implications for governance adaptation. Discourse shapes expectations, creates concepts and fears of risk, and calculates risk, long before the quantitative analysts arrive. In coastal governance, some of the risk management involved is a result of stepwise adaptation, without formation of discourse or strategy, but usually, some awareness of the risk of coastal dwelling permeates governance.

Finally, and going beyond the direction of analyses of coastal governance outlined in the framing paper, one has to mention the insightful and inventive use of EGT concepts more generally. In several cases, as in the case of policy integration just mentioned, this pushed

EGT further in its own evolution. One has to refer to the previous passages commenting on the individual papers, and of course the papers themselves, but it is worthwhile to remind the readers of productive uses of the concepts of object and subject formation in governance, performance and performativity, discursive migration and its effects, and multi-level governance. The conceptualization of shocks and transitions in EGT has received new impetus. Maybe most fundamentally, in our view, is the inclusion of the concept of *observation* in EGT, partly through the framing paper, but largely through the other contributions. The observation of the sea, of risk, of higher levels of governance, in coastal governance is the focus here, but the theoretical potential is clear. Observation as a feature of governance configurations, of actors, from within particular arenas, emerges as a new linkage between actor/institution and power/knowledge configurations.

Future analyses of land-sea interactions and coastal governance can take away much from the contributions in this issue. We hope and believe this rich collection can be seminal, and inspire not only theory development, but more importantly, institutional experiments where ways of policy integration and coastal risk governance can be tested and developed.

Acknowledgment

We particularly thank all contributors to this special issue. Thank you that you have all engaged with EGT and worked with us on the improvement of the theoretical foundations of empirically observed change of coastal governance. We also thank Hance Smith and Quentin Hanich for their cooperation on this special issue as editors in chief of JMP. The response rate for queries could not be improved. This paper was written in the framework of COST action on “Ocean Governance for Sustainability - challenges, options and the role of science”, CA15217, within the Working Group ‘Land-Sea-Interaction’. We would like to thank COST, European Union for the funding that made the cooperation amongst the authors, and thus this article, possible.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.marpol.2019.103801>.

References

- [1] J. Kooiman, M. Bavinck, *Theorizing Governability—The Interactive Governance Perspective, Governability of fisheries and aquaculture*, Springer, 2013, pp. 9–30.
- [2] K. Van Assche, M. Gruezmacher, L. Deacon, *Land Use Tools for Tempering Boom and Bust: Strategy and Capacity Building in Governance*, *Land Use Policy*, 2019, p. 103994.
- [3] C.-W. Huang, R.I. McDonald, K.C. Seto, *The importance of land governance for biodiversity conservation in an era of global urban expansion*, *Landsc. Urban Plan.* 173 (2018) 44–50.
- [4] R.F. Durant, D.J. Fiorino, R. O’Leary, *Environmental Governance Reconsidered: Challenges, Choices, and Opportunities*, MIT Press, 2017.
- [5] M.C. Lemos, A. Agrawal, *Environmental governance*, *Annu. Rev. Environ. Resour.* 31 (2006) 297–325.

- [6] J. Kooiman, M. Bavinck, R. Chuenpagdee, R. Mahon, R. Pullin, Interactive governance and governability: an introduction, *J. Transdiscipl. Environ. Stud.* 7 (1) (2008) 1–11.
- [7] J. Pittman, D. Armitage, Governance across the land-sea interface: a systematic review, *Environ. Sci. Policy* 64 (2016) 9–17.
- [8] R. Beunen, K. Van Assche, M. Duineveld, *Evolutionary Governance Theory*, Springer International Publishing, Imprint, 2015. Springer.
- [9] R. Beunen, K. Van Assche, M. Duineveld, *Evolutionary Governance Theory*, Springer International Publishing, Imprint, 2015. Springer.
- [10] K. Van Assche, A.K. Hornidge, A. Schlüter, N. Văidianu, Governance and the Coastal Condition: Looking for New Adaptation Modes *Marine Policy*, online first, 2019.
- [11] K. Van Assche, R. Beunen, M. Duineveld, *Evolutionary Governance Theory: an Introduction*, Springer, 2014.
- [12] K. Van Assche, R. Beunen, M. Duineveld, The will to knowledge: natural resource management and power/knowledge dynamics, *J. Environ. Policy Plan.* 19 (3) (2017) 245–250.
- [13] H. Alf, A.-K. Hornidge, Transformation in International Development Studies: across Disciplines, Knowledge Hierarchies and Oceanic Spaces, *Building Development Studies for the New Millennium*, Springer, 2019, pp. 141–161.
- [14] J.G. Álvarez-Romero, R.L. Pressey, N.C. Ban, K. Vance-Borland, C. Willer, C. J. Klein, S.D. Gaines, Integrated land-sea conservation planning: the missing links, *Annu. Rev. Ecol. Evol. Systemat.* 42 (1) (2011) 381–409.
- [15] A. Schlüter, S. Partelow, L.E. Torres Guevara, T.C. Jennerjahn, Coastal Commons as social-ecological systems, in: B. Hudson, J. Rosenbloom, D. Cole (Eds.), *Handbook of the Commons*, 2019. Routledge.
- [16] K.A. Daniell, R. Plant, V. Pilbeam, C. Sabinot, N. Paget, K. Astles, R. Steffens, O. Barreteau, S. Bouard, P. Coad, Evolutions in estuary governance? Reflections and lessons from Australia, France and New Caledonia, *Mar. Policy* (2019) 103704.
- [17] J. Knight, *Institutions and Social Conflict*, Cambridge University Press, Cambridge, 1992.
- [18] M. Duineveld, K. Van Assche, R. Beunen, Re-conceptualising political landscapes after the material turn: a typology of material events, *Landsc. Res.* 42 (4) (2017) 375–384.
- [19] P. Teampău, Trouble in paradise: competing discourses and complex governance in the Romanian danube delta, *Mar. Policy* (2019) 103522.
- [20] S. Partelow, K. Nelson, Social Networks, Collective Action and the Evolution of Governance for Sustainable Tourism on the Gili Islands, Indonesia, *Marine Policy*, 2018.
- [21] A. Schlüter, C. Vance, S. Ferse, Coral reefs and the slow emergence of institutional structures for a glocal land- and sea-based collective dilemma, *Mar. Policy* (2019) 103505.
- [22] S.J. Birchall, Coastal Climate Adaptation Planning and Evolutionary Governance: Insights from Homer, Alaska, *Marine Policy*, 2019.
- [23] R. Siriwardane-de Zoysa, Beyond the wall: dyking as an object of everyday governance in the Bay of Manila, Philippines, *Mar. Policy* (2019) 103661.
- [24] R. Siriwardane-de Zoysa, A.-K. Hornidge, Putting lifeworlds at sea: studying meaning-making in marine research, *Front. Mar. Sci.* 3 (2016) 197.
- [25] S.J. Boyes, M. Elliott, Marine legislation—The ultimate ‘horrendogram’: international law, European directives & national implementation, *Mar. Pollut. Bull.* 86 (1) (2014) 39–47.
- [26] N. Văidianu, F. Tătui, M. Ristea, A. Stănică, Managing coastal protection through multi-scale governance structures in Romania, *Mar. Policy* (2019) 103567.
- [27] M. de los Ángeles Piñeiro-Antelo, J. Felicitades-García, B. O’Keeffe, The FLAG scheme in the governance of EU coastal areas. The cases of Ireland and Galicia (Spain), *Mar. Policy* (2019), 103424.
- [28] W. Chen, Ecosystem accounting’s potential to support coastal and marine governance, *Mar. Policy* (2020), 103758 (to be updated once accepted).
- [29] H. Alf, Negotiating coastal infrastructures: an evolutionary governance theory (EGT) approach to Chinese high-modernist development along the Indian Ocean, *Mar. Policy* (2019) 103545.