



The coproduction of knowledge and policy in coastal governance: Integrating mussel fisheries and nature restoration



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ABSTRACT

One of the challenges of coastal governance is to connect a variety of knowledge systems. The purpose of this paper is to show how a coastal governance practice can emerge and stabilize, such that actors with disparate knowledge systems collaborate towards the shared goal of sustainable resource use. We analyze this stabilization in terms of the coproduction of knowledge and policy. This paper is empirically informed by a case study on the transition towards a sustainable mussel fishery in the Dutch Wadden Sea. Our study illuminates the difficulties of underpinning a coastal governance practice with scientific research, since the relevance, quality, and results of research are interpreted differently from the perspectives of resource users and conservationists. Furthermore, our analysis shows that such a governance practice can stabilize through a combination of rule negotiation, legal, societal, and political pressure, along with collaborative knowledge creation. Based on our analysis, we identify several aspects of collaborative knowledge creation that enable the formation of a shared knowledge base for governance in a context of controversy. These include the shared ownership of research, knowledge creation as an integral part of governance, a focus on data and basic facts, and the close involvement of trusted experts. The findings of this study suggest that a controversial setting strongly structures knowledge creation, while at the same time knowledge creation enables coastal governance as a way of dealing with conflicts.

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1. Introduction

In coastal areas worldwide, tensions exist between ecological conservation and economic development. Such tensions often lead to conflicts between different actor groups and institutions with contrasting interests in coastal zones. Coastal governance has emerged as a key mode of dealing with such conflicts. In the context of coastal management, governance is often seen as an interactive form of policy-making or management, in which governmental and non-governmental actors collaborate in order to deal with social and ecological problems in coastal areas (Cicin-Sain and Belfiore, 2005; Jentoft, 2007; Frangoudes et al., 2008). Coastal governance practices are characterized by interdependence, and the distribution of power and competences among the actors involved in coastal management issues (Folke et al., 2005; De la

Torre-Castro, 2012). This paper investigates a case of a coastal governance practice in the Dutch Wadden Sea that integrates a transition towards a sustainable mussel fishery with a process of nature restoration.

In the coastal management and marine policy literature, a number of governance-related principles can be discerned, including adaptivity, integration, and inclusion. Adaptivity in management approaches is deemed necessary in order to deal with uncertainty, along with the social and ecological complexity of coastal zones, and to promote the resilience of coastal systems (Berkes and Turner, 2006; Lane, 2008; Rijke et al., 2012). Integration is a key principle of coastal governance, as exemplified by the rise in integrated coastal zone management (ICZM), which is considered a strategy for dealing with the multiplicity of uses, actors, stakes, and environments in coastal zones (Lane, 2008), by integrating sectors, governmental levels and policies, spatial and temporal scales, and science and policy (Cicin-Sain and Belfiore, 2005; Shipman and Stojanovic, 2007; Portman et al., 2012). Furthermore, inclusion of stakeholders is a key principle, as exemplified by the application of comanagement in fisheries governance (Trimble and Berkes, 2013).

This adaptive, integrative, and inclusive character has

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consequences for the roles of knowledge in coastal governance. In this paper, we will expand on two knowledge-related themes that figure prominently in the coastal governance literature. First, knowledge in the context of coastal governance is often described as a diverse, fragmented, and situated phenomenon (O'Toole and Coffey, 2013). An integrated approach, for instance, necessitates a diverse, interdisciplinary, scientific knowledge base (Bremer and Glavovic, 2013). Furthermore, due to the inclusion of multiple actors with multiple backgrounds and worldviews, “other-than-scientific” knowledge plays an important role in coastal governance. Such other types of knowledge are conceptualized in terms of, for example, experience-based knowledge (Berghöfer et al., 2008), traditional ecological knowledge (Berkes and Turner, 2006), fishermen's ecological knowledge (Holm, 2003), and local (ecological) knowledge (Gerhardinger et al., 2009; Bundy and Davis, 2013; Clarke et al., 2013). Moreover, the diversity and the situated character of this knowledge are expressed in terms of the different knowledge systems that are involved in coastal governance (O'Toole and Coffey, 2013; Gerhardinger et al., 2009; Clarke et al., 2013; Evans, 2010; Hastings et al., 2012). Second, the coastal governance literature proposes a variety of approaches for connecting or integrating these disparate kinds of knowledge. Institutional approaches include proposals to improve interfaces between knowledge creation and decision-making by creating flexible institutions for adaptive management, in which stakeholders can interact and evaluate the effects of management measures on an ongoing basis (Bremer and Glavovic, 2013), and by means of boundary organizations (Tribbia and Moser, 2008). The latter “play an intermediary role between knowledge creation and decision-making (in different domains and levels), with a view to achieving co-operation in relation to a shared objective” (Clarke et al., 2013: 94). Process-oriented approaches include deliberation and dialogue (Clarke et al., 2013; Le Heron et al., 2008) and learning in the context of coastal governance practices (Jentoft, 2007; Evans et al., 2011).

This paper aims to contribute to the body of literature on knowledge in coastal governance by showing how an adaptive coastal governance practice can emerge and stabilize, in which actors with disparate knowledge systems collaborate towards the shared goal of sustainable resource use. Here, “stabilization” means the formation of a collaborative practice and the existence of this practice over a substantial timespan. Our research question is: What are the factors and conditions that are influential in this emergence and stabilization? We argue that this emergence and stabilization needs to be understood in terms of the reciprocal relationship between the formation of epistemic order and regulatory order. Epistemic order refers to the establishment of knowledge systems, how knowledge disputes are dealt with, and how actors collaborate in knowledge creation. Regulatory order refers to policy-making, regulation practices, and jurisdiction. This reciprocal relationship, also referred to as coproduction (Jasanoff, 2004), is an aspect of knowledge–policy relationships, which has hitherto been scarcely addressed explicitly in the coastal governance literature.

The next section describes the analytical framework in further detail, after which Section 3 outlines the methodology and Section 4 introduces the case of the mussel fishery in the Dutch Wadden Sea. Subsequently, Section 5 describes the empirical results of the case study and Section 6 provides our conclusions on the role of knowledge systems and the coproduction of knowledge and policy in coastal governance.

2. The coproduction of knowledge systems and policy arrangements

In this study, we use the concept of coproduction as a general interpretive framework for the interrelationship between knowledge and policy (Jasanoff, 2004). In Jasanoff's words, “co-production is shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it” (Jasanoff, 2004: 2). In this sense, the coproduction of epistemic and regulatory order means that the two are mutually constitutive. Rather than a “fully fledged theory, claiming lawlike consistency and predictive power” coproduction is “far more an idiom – a way of interpreting and accounting for complex phenomena [...]” (Jasanoff, 2004: 3). The value of this idiom is that “we gain explanatory power by thinking of natural and social orders as being produced together” (Jasanoff, 2004: 2). Coproduction provides an interpretive device that enables us to explain the interwoven character of knowledge and policy in the context of governance practices. It is better suited to do so than theoretical models that depict science and policy as separate worlds that interact through a predominantly one-way linear process, such as the “speaking truth to power” model of science and politics (Hoppe, 1999).

As an analytical framework to study epistemic order, we will use the concept of the knowledge system, which we consider to be a “body of propositions actually adhered to (whether formal or otherwise) that are routinely used to claim truth” (Reid et al., 2006: 11). Furthermore, inspired by the concept of epistemic cultures, we will conceptualize knowledge systems as social systems creating and warranting knowledge, which “make up how we know what we know,”² and which are characterized by specific “machineries of knowledge construction” (Knorr Cetina, 1999: 1, 3). Thus, knowledge systems are social systems that are characterized by specific ways of creating, exchanging, and legitimating knowledge. This concept of knowledge system entails a symmetrical analytical approach, in which different kinds of knowledge and conflicting viewpoints are investigated by means of a single framework, and in which no knowledge system is privileged “in terms of producing true or good knowledge” (Watson-Verran and Turnbull, 1995: 136). The concept enables us to identify differences between knowledge systems without reifying preconceived classifications and asymmetries of knowledge, for instance, between scientific and other knowledge (Knorr Cetina, 1999; Verran, 2001).

As a framework for analyzing regulatory order, we will use the policy arrangements theory. Other authors have demonstrated the suitability of this theory for analyzing collaborative policy processes in the context of coastal management and marine policy (Bogaert et al., 2009; Seijger et al., 2013). A policy arrangement is defined as “the temporary stabilisation of the content and organisation of a policy domain” and is analyzed in terms of four dimensions (Arts et al., 2006: 96). The first dimension refers to actors (i.e., individual persons and organizations such as NGOs, fishing organizations, and governmental agencies) and coalitions. The second dimension refers to the division of power and resources among actors. Power is, on the one hand, regarded as “the ability of actors to mobilise resources in order to achieve certain outcomes in social relations,” and, on the other hand, as a “dispositional and a structural phenomenon of social and political systems” (Arts and Van Tatenhove, 2004: 343). The third dimension concerns the rules of the game that are in operation. In this case study, we focus on rules in terms of national and international legislation and rules in terms of collaborative agreements such as covenants. The fourth dimension is

² The original italics are deleted.

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