Chapter 8
Applying the Governability Concept in Fisheries – Explorations from South Asia

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Abstract This chapter investigates the variations in governability that occur in fisheries systems. It builds upon the notion that diversity, complexity, dynamics, and scale affect the performance of societal systems profoundly, and that these effects emerge at the level of their three components. Variations in the governability of systems-to-be-governed are examined through a chain approach. Theories of legal pluralism, institutional nestedness and adaptability are subsequently applied to assess the governability of governing systems. Finally, governing interactions are considered through the lens of three ideal-typical modes – self-governance, hierarchical governance and co-governance. The many variations of governability are illustrated with cases from the capture fisheries of South India. The central message is that connections between the components of a fisheries system matter and that a better match may result in higher levels of governability.

Keywords Governability • Fish chain • Legal pluralism • Nestedness • Institutional dynamics

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Introduction

Fisheries differ in many respects, natural and social, between and within countries. It is therefore quite logical to expect that these differences affect the opportunities available for successful steering, or governance. Similarly, some styles of governance may be more conducive to addressing particular circumstances than others. The challenge, as Ostrom (2007) points out, is to move beyond policy panaceas and develop a fine-tuned diagnostic approach for problems and potentialities in linked social-ecological systems. Such systems are invariably complex, nonlinear, multi-scale and changing (cf. Berkes et al. 2003). They require appropriate governance solutions. After all, "many variables affect the patterns of interactions and outcomes observed in empirical studies" (Ostrom 2007, 15181).

Interactive governance theory suggests that the governability of any societal system, such as fisheries, depends on the condition of its three parts: the system-to-be-governed, the governing system, and the realm of governing interactions (Kooiman 2008). The system-to-be-governed consists of a social and a natural sub-system, which are joined together by the act of fishing. After all, each fisher is part of an economic and social world, which drives him to fish the way he does, and also a natural world (including an ecosystem) that affects and is affected by him. Cumulatively, a collection of fishers within a particular sub-sector, or *métier,* fills up a specific niche in the natural sub-system to make up a system-to-be-governed. Various systems-to-be-governed possess different governance requirements as well as different levels of governability. Interactive governance theory ascribes a special influence to four features that affect both natural and social sub-systems and are present in different degrees – diversity, complexity, dynamics, and scale.

This chapter explores the consequences of diversity, complexity and dynamics for the governability of fisheries systems, and also considers the implications of geographical scale.[1] To enliven and illustrate what might easily become an abstract discussion, we provide examples at each step of the analysis. Almost all of these examples derive from field studies undertaken by the first author in the state of Tamil Nadu, India over a period of 15 years (1995–2010). The fact that one geographical region, and one 'collection' of fisheries, is capable of delivering a full set of examples of governability is noteworthy and indicative of diversity at a national scale level.[2] We also note that the examples connect different

[1] Gibson et al. (1998) provide a useful overview of the use of scale in the social sciences. They define scale simply as "the dimension used in any effort to measure a phenomenon", and distinguish three basic types: space, time and quantity (Gibson et al. 1998, 6). In this chapter we highlight the implications of spatial scale. Johnson (2006) discusses facets of scale with regard to fisheries.

[2] The fact that one setting is capable of delivering illustrations of almost the full set of governability options raises important questions regarding societal coherence. Is Tamil Nadu a particularly chaotic fisheries setting? Could other settings provide a similarly broad range of examples? We are inclined to believe that most fisheries settings, if investigated carefully, actually contain a large variety of governability arrangements, not dissimilar to Tamil Nadu. We must also point out, however, that the fisheries of Tamil Nadu may actually be more structured than this array of examples suggest.

scales internal to and beyond the case, and highlight more social and economic characteristics than natural science features. Moreover, all of these instances can actually be supplemented and debated. This fits in the interactive governance approach of not treating systems as objective facts lying 'out there', but instead as heuristic tools (Jentoft 2007, 361). In this line of thought, Kooiman (2008, 174) points out that: "What a system looks like, how it can be broken down, and what its boundaries and other qualities might be, depends on the perspectives of the observers."

Governability and Systems-to-Be-Governed

There are two basic ways of considering what constitutes a system-to-be-governed in fisheries studies. The first takes a spatial, or territorial, approach, and is concerned with defining system identities and boundaries. The ecosystem approach is a prominent exponent of this spatial orientation (Garcia et al. 2003). The second focuses on what have become known as value chains (Gereffi et al. 2005), or, in our field of interest, fish chains. The primary interest here is in identifying and tracing connections as they occur from an ecosystem to the consumer. The following discussion is based on the fish chain approach.

Diversity, Complexity, Dynamics and Scale of Fish Chains

The *Fish for Life* volume (Kooiman et al. 2005) presents the system-to-be-governed as a bundle of fish chains running from an ecosystem to the consumer's plate. Fish chains constitute the basic unit of any fisheries system and are therefore the object of governance activity. Within any fisheries system there are generally numerous fish chains, organized around various target species or seafood markets. These chains involve a variety of primary actors, such as the fish, fishers, processors, traders, transporters, wholesalers and retailers. Each category can of course be subdivided further (for example, the category 'fish' consists of numerous marketable species, whereas fishers can be divided into owners, skippers and crew members). Moreover, each fish chain involves a range of secondary actors – other species in an ecosystem and people who create the conditions upon which the fish chain operates. The latter include net makers, engine shops, and ship builders, right down to the road workers paving the routes that transport fish from landing centers to markets.

Individual fish chains vary with regard to their diversity, complexity, dynamics, and scale. The same can be said for the bundles of fish chains that constitute a fisheries system. Although diversity, complexity and dynamics exist in a continuum, we choose to distinguish between two basic values: high and low. We also discuss some of the implications of spatial scale.

Kooiman argues that *diversity* "calls attention to the specific and varying qualities of actors and other entities. […] It is a source of creation and innovation, but also carries the danger of disintegration" (2008, 176). For the natural system, diversity concerns features such as biological heterogeneity, species abundance, habitats and ecosystem health. Notably, the composition of the species assemblage in these ecosystems, the species richness and the status as rare, endangered, endemic or keystone species have to be identified. For the socio-economic system, the issues of diversity pertain to the composition of stakeholder groups in terms of their demographic profile, their organization, vested interests, property and access rights, and political orientation. Their capacity to influence the way the system works is determined by the power they exercise, which may or may not enable governability. Thus, what constitutes power (the capacity to ignore, exclude, marginalize or mobilize other groups) is a central issue.

According to scholars in the field of interactive governance, it is only through replication that systems-to-be-governed of high diversity can be adequately governed. They follow Ashby's Law of Requisite Variety, which argues that only variety in governance can 'destroy' societal mimesis. Wilden (1987, 192) has expanded on this idea, adding a principle of 'requisite diversity in representation'. He argues that it is not the diversity of the whole system-as-a-whole that must be represented; rather a governing system must be able to represent the basic types of variety found in the system-to-be-governed. Low diversity of a system-to-be-governed can be met by simple, unitarian styles of governance, whereas high diversity necessitates varied approaches.

Complexity is related first of all to how the natural system interconnects, how species interact, and how particular habitats (such as mangroves and coral reefs) contribute to the productivity of the system as a whole. This is the field of systems ecology. The complexity of the socio-economic system on the interactions among the actors involved, their interdependency, collaboration and integration, which rests partly on their "organic solidarity" (Durkheim 1964), and the normative ties that exist among them. Governance of the combined socio-ecological system is the topic of much recent scholarly activity (cf. Berkes et al. 2003; Folke 2006). According to Kooiman (2008, 176), "complexity invites examination of societal structures, interdependencies and interrelations and is a condition for combining interdependencies. The difficulty is how to reduce it in an effective and responsible manner." Kooiman (2008) highlights the problems involved in understanding complexity – in building an appropriate image – and thereby also in finding a suitable response.

Generally speaking, Kooiman (2008, 176) argues that *dynamics* "create the potential for change, but can have disruptive consequences." The focus is on alterations that occur over time, in the short as well as in the long term. They may involve both internal and external factors. Climate change (e.g. temperature, weather patterns, storm frequency and intensity) and invasive species are examples of natural system dynamics. Socio-economic system dynamics include alterations in stakeholder compositions, relationships, and interactions. Conflict and power differentials play an important role. The relationship between the human and the natural sub-system includes changes in use patterns or variations in the levels of extraction.

In acknowledging that uncertainty and risk are primary characteristics of human-in-nature systems, it becomes necessary to revise our understanding of their

governability. As Mahon et al. (2008, 104) point out, human-in-nature systems are not easily controllable. In other words, they face important limits to their governability. Jentoft (2007, 363) notes that the system-to-be-governed sometimes "alters rapidly, unpredictably, irreversibly," and that "for those affected, the result is uncertainty and surprise." In terms of governability, the system-to-be-governed may alter rapidly between one state and the next, sometimes appearing highly governable and subsequently reverting to a state of low governability. Jentoft (2007, 364) therefore argues for a response that emphasizes 'flexibility', whereby "flexibility is […] about the governing system's aptitude in adapting promptly to system dynamics and change." Governors' inability to respond flexibly to the dynamics of the system-to-be-governed in question will affect the appropriateness of their responses and, in turn, negatively influence governability.

Fish chains clearly operate at various *spatial scales* (see Kooiman et al. 2005, Part 2). While some ecosystems are geographically small, and some species have only limited spatial range, others are extremely large (see, for example, the global migratory patterns of high-seas tuna and the large marine ecosystems distinguished by the United Nations Environment Programme and others). The same is true of fisher operations and of markets. Whereas some fish chains are based on local fisheries catering to local markets, others reach out and operate on various scale levels. In linking the local to the national and international, fish chains often span the jurisdictions of territorially based governing systems, creating multitudinous interactions as well as tensions and ambiguities. We will highlight some scale effects below, without pretending to be comprehensive.

Feature Effects on Systems-to-Be-Governed: Examples from South Asia

The six fish chains included in the cells of Table 8.1 exemplify lower or higher values with regard to diversity, complexity and dynamics. In the following section, we briefly discuss each example, taking along scale effects, and providing hints of possible implications for governance.

Case 1: Lower diversity. In the mid-1990s, fish merchants introduced a simple hoop net for gathering *sea snails* (species unknown) to the small-scale fisheries of the Coromandel Coast in Tamil Nadu (Bavinck 1996, 1998). This métier required few fishing skills and could be carried out by small inshore fishing units, all of which utilize the same fishing methods. Produce was shipped to markets in the Middle East, thereby integrating the *métier* into a global value chain. The region's fishers, however, protested against the use of the net, arguing that it interfered in the food web and would contribute to resource depletion. The operation of this fishery thereby became a governance issue at the regional level.

In governance terms the challenge was relatively simple. As the same technique was being introduced to a larger region, the governing system could have decided on a common measure to be implemented centrally, prohibiting, regulating or leaving free the use of the net. As it turned out, however, the Fisheries Department, not

Table 8.1 Case studies governability and system-to-be-governed

Intensity/features	Diversity	Complexity	Dynamics
Lower	1. Snail net fishery	3. Mackerel fishery	5. Chank fishery
Higher	2. Mixed fishery	4. Tuna fishery	6. Shrimp fishery

being convinced of the danger of the fishery, did nothing at all. A series of fisher village councils prohibited the use of the net in their waters, while other councils refused to take measures. This resulted in conflicts between fishing villages, which could only be solved through police action (Bavinck 1998).

Case 2: Higher diversity. The Palk Bay in southern Tamil Nadu is recognized internationally as a *biodiversity hotspot* (Bavinck and Vivekanandan 2011). However, the area also harbors a large and socially diverse fishing population. Not only are there many castes and religions involved, but fishers also engage in a large variety of different métiers, varying from beach seining to trawling, gillnetting and diving, as well as the manual collection of, for instance, sea grass. These fisheries cater to local, national and international markets. The government of India, recognizing the ecological importance of the region, decided to implement a National Park (1985) and a Biosphere Reserve (1989) in the Gulf of Mannar. Fishers, however, have been protesting the various restrictions that are being implemented, creating new governance challenges.

Jentoft (2007) argues that a system-to-be-governed that is characterized by high diversity requires a governance approach that is 'sensitive' to difference. One possibility would be to opt for maximum decentralization and self-governance.

Case 3: Lower complexity. Indian mackerel (*Rastrelliger kanagurta spp*.) is one of the mainstays of the small-scale fishing sector (Bavinck 2001, 94ff). Most fishing households in the Coromandel Coast region possess several mackerel nets and operate them throughout the year. Although pelagic species such as mackerel have a large geographical range, the human dimensions of the fish chain in this case are short and straightforward: fisher women or small traders generally sell mackerel to consumers on the local market at relatively low prices. The mackerel fishery therefore plays a key role in the food security of the local agricultural population, and presents a societal issue for governance.

The fish chain is compact and of low complexity. No urgent resource problems manifest themselves at present, and the coordination issues that do arise are generally solved by individual market actors. Nevertheless, fisher councils keep watch over the fairness of the auctions in which fishers sell their catches. With limited economic interests and well-established procedures, governance activity is typically low key.

Case 4: Higher complexity. The *tuna fishery*, which has arisen in southern India since 1995, is linked into a complex international fish chain with a large number of agents and institutions playing a role. The Indian government has been promoting

the conversion of shrimp trawlers into gillnetters and long liners, and 25 boat owners in Chennai have actually moved into the tuna fishery (field notes MB 2008). Their catches are destined for export, mainly to the Far East, and quality control is an important consideration.

Contrary to the mackerel fishery discussed in Case 3, the tuna fishery chain is long, of high monetary value, and very intricate. The governance challenges are diffuse and of a serious nature. On the one hand, international agencies are pushing for a management regime that prevents overfishing of tuna stock. On the other, agencies at various scale levels keep watch over hygiene and food quality. Coordination of governance effort between actors is an important concern.

Case 5: Lower dynamics. The chank (*Turbinella pyrum)* fishery of the Gulf of Mannar dates back to pre-colonial times (Hornell 1914), and is linked mainly to North Indian ornamental markets. It is one of the few marine fisheries to have been regulated (and taxed) by the colonial government. Nowadays, divers, who own no more than a mask and a set of fins, operate this fishery from small boats, offering their catches to traders waiting on the shore. The main dynamic in this fishery is market demand and the resulting pressure on stocks.

This fish chain requires governance efforts of a stable kind, primarily directed at curbing fishing effort within ecological limits. In parallel to the pearl fishery that took place along this coast, the Tamil Nadu government historically issued licenses for chank diving and monitored the fishing closely. This practice was, however, recently discontinued for, what were in all likelihood, financial reasons. Some village councils are currently putting limits on diving technology, such as by prohibiting the use of scuba diving equipment (van Haastrecht and Schaap 2003).

Case 6: Higher dynamics. The shrimp fishery of India is an example of high dynamics, precipitated by a sudden integration, from the 1960s onwards, into a high-value, international market (Kurien 1978). The trawl fishery now counts almost 30,000 craft (CMFRI 2005) and still focuses largely on shrimp. The movement of trawler fleets from one Indian state to another has caused significant social tensions, as has their incursion into the fishing grounds operated by small-scale fisher populations. These dynamics are also influenced by rising fuel prices and the advent of shrimp aquaculture.

Governance theory argues that a system-to-be-governed characterized by high dynamics and unpredictability can be successfully addressed only when the governing system is flexible and organized for learning. As Mahon et al. (2005, 369–70) point out, “Dealing with unpredictable systems is like moving through uncharted territory. The only way to function in such systems is to constantly monitor where one has been and where one has reached, and then to reflect on the progress and to move forward guided by the learning.” In reality, the Fisheries Department has followed a reactive approach by trying, for the most part, to exercise damage control. Learning still has a low priority in departmental policy.

Implications for Governability

Each of the cases discussed above includes a comment about what constitutes an urgent governance issue or challenge, and what a 'successful governance intervention' might therefore look like. Biodiversity concerns (Case 2 above) first emerged in the realms of international science and environmental politics, and then impinged on the fisheries of the Gulf of Mannar. Concerns about the snail net (Case 1), however, arose within the localized fishing societies of the Coromandel Coast, resulting in fisher (not governmental) action.

The mackerel fishery of the Coromandel Coast (Case 3) does not present serious governability challenges to any governor at present and is largely taken care of by regular market mechanisms. The simplicity of that fish chain stands in contrast to the complex tuna fishery (Case 4), which is the scene of globalized governance efforts, ranging in location from the high seas to harbors and long liners, processing industries, trade and quality control. Finally, the slow dynamics of the localized chank fishery (Case 5) stand out against the hectic of shrimp trawling along the Indian coasts (Case 6). The latter can be handled only at a national or state level, such as through the imposition of a uniform closed season (Bavinck et al. 2008). Furthermore, due to its volatility and many externalities, the trawl fishery also requires constant vigilance.

The intention of the illustrative examples in this section of the paper has been to persuade the reader that the four features – diversity, complexity, dynamics, and spatial scale – do permeate and affect systems-to-be-governed, and, secondly, pose varying challenges for governance. Not only does each empirical situation provide different combinations of features, but the intensities by which these features manifest themselves also vary. Not every fishery is equally shaped by dynamics, nor is it equally diverse or complex. For governance action to be successful, governing systems and governing interactions must take on different shapes and styles of functioning.

Before closing this section, one point still needs addressing. We mentioned above that fisheries systems operating in a specific setting are frequently made up not of single, but of multiple fish chains, or 'bundles'. The individual chains that make up a bundle intersect – and interconnect – in various ways. The most obvious intersection occurs in the persons of the fishers (or traders, processors, etc.) who participate in multiple fisheries (and are affected by multiple governance arrangements). The composite 'bundle' is characterized by greater diversity and complexity than each single chain, with interferences between chains affecting their dynamics in, at times, unpredictable ways. This creates substantial challenges for governors aiming to create a holistic approach, because the various chains function at different scale levels. Their goals may only be achieved through linking with governing actors at other scales.

Governability and the Governing System

Governing activity involves more than finding an appropriate response to a particular societal issue. It is also about getting the structure and performance of a governing system right. This section considers governability of a fisheries system from the

viewpoint of a governing system, highlighting again the effects of diversity, complexity, dynamics and scale. Kooiman and Chuenpagdee (2005, 328) explain: "The governing system and the framework of actors engaged in governing are often as diverse, complex, and dynamic as the system to be governed." These features greatly influence its potential performance.

Theorists argue that a governing system makes use of elements – images, instruments and willpower, or action – for its operation (Kooiman 2003). Ideally, the governing system also possesses various 'levels' or 'orders' of functioning. Managers at the ground level make decisions about routine and urgent issues, applying the tools that they have available in accordance with their estimation of risks and opportunities. At a secondary, institutional level, governors reflect on and adapt the rules and organizational structures at their disposal. Thirdly, at a meta-governance level, discussions take place on the basic values, principles and norms that should drive governance activity (Kooiman and Jentoft 2009).

In the pages below, we discuss the diversity, complexity, dynamics and scale of governing system under three headings. Diversity is considered from the perspective of legal pluralism, which argues that societal systems often possess multiple sources of law. The degree of legal pluralism in a fisheries system impacts its governability. We then present complexity and scale from the viewpoint of institutional nestedness. Finally, we consider the dynamics of a governing system through the notion of institutional adaptability and learning.

Diversities in Legal Pluralism

Governors are the people or organizations that address societal problems and opportunities. Our approach allows for the inclusion of part-time or incidental governors in addition to full-time ones. It suggests the existence of informal governors – without uniforms, offices and business cards – operating next to official governors with formal mandates. Additionally, it notes that community and market institutions coexist with governmental frameworks. All these governors have opinions about and undertake action with regard to societal problems and opportunities. Together, these actors constitute the diversity of the governing system.

Governors are of course not completely free in their choice of action. As pointed out before, governing actors are constrained or enabled by conditions in their social and natural environments. These conditions include a range of institutions and, more specifically, the rules of the game (North 1991). Such rules generally do not come singly. Instead they are coupled in sets that can be analyzed as legal systems. Contrary to a formal definition of law, such legal systems may be anchored outside of government in realms such as religion, ethnicity or professional life.

Scholars in the field of legal pluralism argue that most societies are characterized by some form of legal pluralism (Merry 1988; von Benda-Beckmann 2002), i.e. the incidence of multiple legal systems applying to similar situations (Vanderlinden 1971). This is certainly the case for fisheries. There are numerous descriptions of strong, non-state legal systems governing fisheries that are connected to specific

ethnic groups, communities, and professions.[3] Collective action theory (Ostrom 1990) inquires how such legal systems can emerge in the daily practice of fishing. A rich body of literature has emerged on institutional arrangements, which have developed from the bottom up, both in the North and in the South.

Adding a new institutional layer on top of pre-existing non-state legal systems, state agencies in many countries have extended their jurisdiction over fisheries in response to their increasing profitability, environmental problems and associated social conflicts (Bavinck 2011a). Governments have expanded their range of instruments, including law, to deal with these new concerns. The result is the co-existence of multiple legal systems in fisheries.

Legal pluralism is essentially about diversity, or difference. However, not all situations of legal pluralism are equally 'different'. In some cases the state has come to dominate other legal systems, whereas in others it is met with substantial opposition. There are cases too that have culminated in institutional 'bridges' – forms of co-management that link state with non-state legal systems. The meeting of different bodies of law has often also resulted in 'institutional bricolage' (Cleaver 2002; Kraan 2009) and in the development of hybrid law. In short, one can distinguish between a variety of legal pluralist situations in fisheries, which can be posited to occur on a scale running from monopoly to strong differentiation. Jentoft et al. (2009, note 3) refers to these as instances of 'weak' versus 'strong' legal pluralism.

Legal pluralism has important implications for governance. Where pluralism is extreme, governors can be expected to be at loggerheads. They disagree about the substance of law, about procedures, as well as about the question who is ultimately in charge. Where differences are small and governors agree about most matters of substance and procedure, on the other hand, the path to governance is smoothened.

Complexities of Nestedness and Scale

We owe the term nestedness to Simon (see Hill and Fujita 2003), who introduced the image of the Chinese boxes. He observed, "Opening any given box discloses not just a new box within but a whole set of boxes; and opening any of the component boxes discloses a new set in turn." Nestedness is now considered an important feature of complex systems, both human and natural. It has been applied to cities (Hill and Fujita 2003), forests (Beckley 1998), fisheries (Jentoft 2004), environmental governance (Young 2002; Marshall 2008), and more generally to the study of institutions (Ostrom 1990, 2005; Hollingworth and Boyer 1998).

Important for our purposes is the conceptual relation between scale, level, nestedness and hierarchy. We view the analysis of governance and governability of a specific system as a choice of level in a hierarchy of nested systems. In exclusive hierarchies levels are not nested within one another – the higher level does not contain the

[3] See, for example, Bavinck (2005), Jentoft et al. (2009), Wiber and Kearney (1996), and Wylie (1989).

objects of a lower one (e.g. a food chain). In contrast, higher levels in inclusive, or aggregational, hierarchies such as taxonomic classifications, do embrace lower levels. There is, however, no interaction between them. Constitutive hierarchies are the most interesting type for our purposes, because the lower levels are not only included in higher ones, but all these units have functional relationships and continuously affect one another (Gibson et al. 2000). Bureaucracy provides a good example. Each unit in, for example, a department of fisheries has a specialized task that encompasses or is encompassed by other administrative units. However, the incidence of substantial interaction between units at different levels results in new governance forms and processes. In the literature constitutive hierarchies are often connected with complex systems theories and the way these systems emerge (Gibson et al. 2000).

As governors and governing issues are situated at various geographical scale levels, nestedness is also an issue of scale. Not only do perspectives change as one moves up from one level to the next, so too do mandates, tools and action potential. Increasing scale coincides with what is called multi-level governance, or "the dispersion of authoritative decision making across multiple territorial levels" (Hooghe and Marks 2001, xi). Young (2002 in Marshall 2008, 79) points out that multi-level governance generates two important challenges: (1) how to assign governance tasks across different levels, and (2) how to manage cross-level interactions arising in governing activity. Institutional nesting, or smaller organizations becoming "part of a more inclusive system without giving up their essential autonomy" (Marshall 2005, 47 in Marshall 2008), is one of the approaches used to address such challenges. We argue that multi-level governance in general, and nested governance in particular, generates different levels of complexity in the governing system with concomitant issues of governability.

In the examples that follow this section, we take nestedness to refer to the relationship between institutions at different levels. Lower complexity refers to the situation where local institutions are not nested in institutions at higher scale levels and governance efforts are channelled separately. Higher complexity, on the contrary, exists when institutions at various scale levels have been designed to interconnect. First, however, we consider issues pertaining to the dynamics of governing systems.

Institutional Dynamics

Governing is a spatial but also a temporal phenomenon – it is a process rather than a stable condition. The people and organizations involved in governing, and the rules that they apply, change with time. We know that some governing institutions are characterized by extreme flux, while others stagnate, atrophy or display robustness (Jentoft 2004). Institutional dynamics sometimes derive from challenges in the fisheries themselves. Managers, for example, reflect on the needs of fishers and others in the fish chain and take corrective action. In many instances, however, institutional dynamics have other origins. Scholars use the term 'path dependence' to indicate that present governing efforts are shaped by past choices (Page 2006). In reality, managers often

build upon existing structures and policies, and frequently have little space for independent action. In many coastal nations, forces outside of the fisheries frequently drive institutional change (Taylor et al. 2007). A lack of institutional innovation may reflect a general disinterest in the future of the industry and other governmental priorities. Moreover, if institutional changes do take place, they may have other inspirations, such as the need to cut budgets or a policy favoring coastal tourism or industry over fisheries. In all these instances, it is likely that governing structures and processes do not match with the priorities of those engaged in the sector.

The rate, or speed, of institutional change is another concern. Rapid institutional changes put high pressure not only on those who are involved in the governing process, but also on people partaking in the system-to-be-governed. This, in turn, may lead to confusion and resistance. Slow institutional change creates other problems, particularly if the fisheries in question are highly dynamic and require quick action.

Scholars concerned with improving the governability of fisheries currently champion the notion of 'learning organizations', because "fish chains are by their very nature unpredictable" (Mahon et al. 2005, 369; also see Armitage et al. 2007; Berkes 2009). Mahon et al. point out that "most organizations in the fisheries sector can improve the extent to which they 'learn' from experience as well as from their surroundings" (2005, 370). The dynamics of a governing system includes the extent to and rate at which institutions and institutional systems adapt to changing circumstances.

Feature Effects on Governing Systems: Examples from South Asia

Case 7: Lower institutional diversity (weak legal pluralism). The government of India ratified the United Nations Convention on Law of the Sea in 1995. This law delineated Exclusive Economic Zones (EEZ) with a width of 200 nautical miles (NM) and transferred responsibility over large, hitherto unregulated ocean territories to the governments of coastal nations. The government of India is now formally in charge of an EEZ encompassing 1.6 million km^2. Although governmental prerogatives over territorial waters (up to 12 NM) are regularly challenged by non-state actors (see Case 8 below), save for a number of border regions, its jurisdiction over the EEZ is not in doubt.

The term 'weak legal pluralism' refers to a lack of legal contention and is equivalent to hegemony. If legal prerogatives are not backed up by the exercise of power, however, the governability of fisheries is dictated not by the governing system, but instead by events and processes in the fisheries. Although the Indian Navy and Coast Guard patrol the borders of the EEZ, control efforts apparently do not dissuade foreign fishing vessels from regularly transgressing Indian waters (Pramod 2010). In this case, weak legal pluralism coincides with relatively weak enforcement of existing rules and regulations.

Case 8: Higher institutional diversity (strong legal pluralism). In the context of the so-called blue revolution, the government of Tamil Nadu introduced trawling as a new fisheries technique in the 1950s. The new class of trawler fishermen, operating from newly founded harbors, is safeguarded by the constitution of the Republic of India, which not only gave every Indian the right to enter any occupation, but also precluded any other law than that of the government from being applied to the fishery. However, the small-scale fishers of the Coromandel, who inhabit villages governed through traditional caste law, protested vociferously against trawlers fishing 'their' waters. After all, according to their law, each village controls adjacent waters and decrees the technology that is to be applied. Government law thus juxtaposed caste law. The violent conflicts between the two groups of fishers that hit the streets of Chennai in the late 1970s were arguably a result of the non-compatibility of legal values (Bavinck 2001). These conflicts have continued to a lesser extent until the present (Bavinck 2011b).

Strong divergences in a governing system have a negative impact on the governability of the societal system, which is being tugged in various directions. As long as neither of the contesting legal systems gains the upper hand, or a sufficient body of hybrid law has not developed, governability of the fisheries is impaired and fishers suffer.

Case 9: Lower institutional complexity (nestedness). Fishers in the village of Valinookkam, along the Gulf of Mannar in Ramnad District, have a long and successful history of beach seine fishing. Although the number of beach seine companies has gone down in recent years, company owners still wield considerable power at the village and regional levels. They have informed trawler fishers in the region that trawling is prohibited in village waters during the beach seine season (Hopewell 2004). This local rule (it is unknown in other fishing villages in the region) has no basis in governmental law, which claims a monopoly on fisheries regulation. In line with current international opinion, officers of the Fisheries Department also look on the beach seine industry with disfavor, criticizing in particular the small mesh sizes used, and are not inclined to offer it protection.

The village rule protecting beach seine fishing in Valinookkam is not nested in wider institutional frameworks – on the contrary, this industry has acquired a negative reputation with government and international organizations alike. Although customary law in the region still provides beachseining with shelter, its long-term governability prospectives are bleak.

Case 10: Higher institutional complexity (nestedness). With declining catches and increasing evidence of overfishing, the sizeable small-scale fishing population of India put pressure on governments of coastal states to start restricting the trawl industry. The instrument deemed most suitable for this purpose was a closed season, which would coincide with the spawning season of important species (Bavinck et al. 2008). As coastal fisheries are a prerogative of state governments (and not the national government), the first closed seasons for trawling in India, which emerged after 1988, were not coordinated with regard to time. The drawbacks of this lack of

synchronization soon emerged: trawl fleets started moving up and down the coast, making use of the variable timings of the closed seasons. It was only when the central government instigated a coordinated policy for east and west coasts in 1996 that closed seasons for trawling became adequately enforced.

Governability of the trawl fisheries in this case clearly improved after the central government brokered a national arrangement. The fact that small-scale fishers were in favor provided political backing. In time trawl fishers too have come to perceive the benefits of a closed season, as catches have gone up in the post-closure period. A long-drawn process of institutional nesting has thereby increased the effectiveness of the measure.

Case 11: Lower institutional dynamics (change). Trawler owners in Tamil Nadu maintain strong, long-term connections with a range of middlemen, such as export agents and female *varattavechchis,* or auctioneers (Bavinck 2001). Johnson (2010) analyzed the manifold dealings between such fishers and traders in terms of patron-client relations, whereby the latter provide services to the former in exchange for a regular supply of produce. The 'services' provided by middlemen in Tamil Nadu are mainly financial in nature: trawler fishers require a flexible and, frequently, immediate supply of credit for a variety of purposes. As Johnson (2010, 272) points out, "the patron-client institution at the heart of the […] fishery is an adaptive system with its own governance logic." Its adaptiveness is evidenced by its response to changing economic circumstances and needs. Johnson's conclusion that patron-client relations have been non-responsive to urgent ecological realities, such as the evidence of overfishing, and tend to "reinforce the fishery's path dependency" (Johnson 2010, 273), appears to be valid for Tamil Nadu as well. Consumer campaigns for responsible fisheries have not reached this part of the world, and middlemen experience no incentives to green their image.

This case illustrates the paradoxical nature of governance perspectives. A very successful governing arrangement may, from a different perspective, be analyzed as playing an obstructing role. While patron-client relations provide the proverbial grease to keep the trawl fishery going, they do not provide an answer to the emergence of larger governance challenges. From a governability viewpoint, their role therefore retains an ambivalent characteristic.

Case 12: Higher institutional dynamics (change). As India exports much of its marine produce, including shrimp, to markets in Europe, Japan and North America, its fortunes depend on the conditions imposed by institutions in those regions. Since the mid-1990s, an array of demands, varying from the use of turtle-excluder devices to measures for food safety, has been inflicted on Indian exporters, forcing many changes in the structure of the marine industry. Contrary to governments in other coastal states, Thailand for example, the Indian government has left the industry to essentially fend for itself. In the eyes of those that perform governing roles in the value chain, such as the export companies, the indifference of the state with regard to rapidly changing international regulations has resulted in numerous bankruptcies (Van der Pijl 2010).

Governing arrangements for international food chains are currently in flux (Swinnen and Maertens 2007), and their movements, which largely originate in the demand markets, reverberate at all levels. As a consequence, participants require vigilance as well as adaptive capacity in order to endure. Although many of these new governance efforts aim at improving, from one point of view or another, the governability of the system-to-be-governed, the net results of varying and sometimes contradictory arrangements are not easily evaluated.

Implications for Governability

In section "Governability and Systems-to-Be-Governed" above we considered the challenges created by the diversity, complexity, dynamics and scale of a system-to-be-governed for a governing system, and the implications for the governability of the societal system-as-a-whole. In this section we have attempted to do the reverse. That is, investigate how the diversity, complexity, dynamics and scale of a governing system can create impediments or opportunities for a system-to-be-governed. We have noted first of all that high institutional diversity (legal pluralism) can generate conceptual confusion and opportunities for the contradictory interpretation of situations and events. In the most extreme instance, such diversity can result in institutional paralysis or social conflict.

Whether institutional diversity is a good or a bad thing depends, however, on context and perspective. It also depends on one's perception of the reverse phenomenon, namely institutional hegemony. Whereas institutional hegemony can help to create a road map and promote governing effectiveness, it may also bury dissent. In this vein, one could argue that legal pluralism is an expression of countervailing opinions, which different segments of the population hold to be more relevant and fair.

Higher complexity (nestedness) makes for increased policy coherence. It would also seem to offer opportunities for expanding the governing scope to multiple scale levels. This is useful particularly when problems and opportunities are not localized, but are instead cut across geographical, sectorial, social and administrative spaces. This is frequently the case in fisheries. Institutional complexity also correlates with specialization and well-developed divisions of labor. As a result, governance capacities can reach new heights. The removal of many governing actors and their activities from the actual scene of fisheries is, however, a possible disadvantage. It may – as we shall see in the following section – be corrected through co-management.

Lower institutional complexity is best exemplified by the fisher-cum-governor: the fisher who, together with a group of compeers, creates and enforces his own fishing regulations. The people engaged in the system-to-be-governed here are also its governors. The division of labor is limited, as is the scope of governing, except through institutional replication along a coastline. The advantages of the fisher-cum-governor, however, are multiple. Chief among them is the fact that the fisher-cum-governor has an immediate, albeit localized, knowledge of the fishery.

Institutional dynamics can affect governability in various ways. If the pace of institutional change is too slow, it results in an accumulation of problems and unused opportunities in the industry, thereby lowering the system's governability. If, on the other hand, the pace of institutional change is very high, it may surpass the system-to-be-governed's capacity to adapt. Here again governability may suffer.

Governability and Governing Interactions

In previous sections we discussed the relations between units, or actors, in the fish chain, as well as those between governing individuals and organizations. All these relations are expressed through interactions, which involve the to-and-fro movement of information, goods and services. As noted by Kooiman (2003, 8): "Interactions shape actors and actors shape interactions; they are 'equal' as basic units of analysis and theory development." Interactions between governors are often purposive, as is their governing activity. The net effect of their activities, however, may be at odds with original intentions. This is because it is rare to find a single governor in charge of a fishery. Instead, there are often many governors involved, and their manifold actions and interactions have numerous impacts, including those not intended by any single actor. Just as a game of chess is never wholly determined by one of the two players, however strong he or she may be, governing activities have divergent and often unpredictable outcomes (Elias 1970). It is therefore only by taking a broad perspective – including the full range of governors and governing activities – and coordinating activities that the possibility of steerage increases.

Interactions also characterize the relations between the governing system and the system-to-be-governed. Whereas traditional governance theory viewed governing activity as 'one-way traffic' between the governing system and system-to-be-governed, contemporary analysts prefer a 'two-way traffic' model, with streams of interaction moving and having impact in both directions (Kooiman 2008, 2010). Interactive governance theory identifies three types, or modes, of interaction. Each differs in terms of its distribution of power. These modes are: hierarchical governance, co-governance, and self-governance. The first hierarchical mode of interaction takes place through 'interventions', or authoritative intrusions from above. In this mode, relations are fundamentally unequal, with superiors (the governors) being distinguished from inferiors (those being governed). The second set, involving 'interplays', aimed to reach goals by engaging actors in collective, rather than independent action. Interplays connect people or organizations of relatively equal status, and result in processes of co-governance. The third and most spontaneous set of interactions coincides with acts of self-governance. In this mode, the people or organizations directly involved in the fish chain steer their own activities. There are no 'outside' governors present.

As diversity, complexity, dynamics, and scale are ubiquitous, they permeate the realm of governing interactions too. We suggest that the *diversity* of governing interactions is likely to be highest in the self-governing mode, because actors in the

various segments of systems-to-be-governed make their own choices. This situation is mirrored by a relative lack of diversity in the hierarchical mode. Here governors have chosen to employ a pyramid-like and, hence, repetitive structure of interaction (cf. Bundy et al. 2008). Co-governance takes an intermediate position.

When we turn to *complexity*, the situation described above is reversed. Complexity of interactions may be largest in the hierarchical mode. This is namely due to the scale of operations and the number of partaking units is frequently larger. The self-governing mode, which involves a smaller number of units at a lower scale level, reveals a less complex set of interactions. Here again, the co-governance mode is likely to hold the middle ground.

Finally, *dynamics*, or the propensity towards change, run parallel to the expectations of diversity. They are generally largest in the self-governance mode, where positions and interaction styles are less formalized and therefore more flexible. The hierarchical mode leans on bureaucracy and standardized procedures, both of which tend to resist change. Interactions in the co-governance mode are definitely more dynamic than in the hierarchical mode, connecting governors from a host of different origins. The varying values, principles and objectives available, and the different styles of operation, make for an ongoing process of public reasoning (Sen 2009) and negotiated decision-making. We suggest therefore that co-governance will generally take a medium position as far as dynamics are concerned.

Effects of Governing Modes on Interactions: Examples from South Asia

In order to account for the three distinguished modes, Table 8.3 has a slightly different setup than Tables 8.1 and 8.2 above. A third row capturing intermediate intensity has been included. In addition, rather than identifying a separate example for each of the

Table 8.2 Case studies governability and governing system

Intensity/ features	Diversity (legal pluralism)	Complexity (nestedness)	Dynamics (change, learning)
Lower	7. Governing EEZ waters	9. Community management	11. Patron-client relations
Higher	8. Government vs. caste law	10. Closed season	12. International standards

Table 8.3 Case studies governability and governing interactions

Intensity/features	Diversity	Complexity	Dynamics
Lower	Implementation CITES	Gear regulations	Implementation CITES
Medium	Time-zoning	Time-zoning	Time-zoning
Higher	Gear regulations	Implementation CITES	Gear regulations

nine cells (which would be theoretically feasible, but impractical in terms of length), we have chosen to limit ourselves to illustrating the three interaction modes.

Case 13: Implementation of the CITES-List (hierarchical mode: high complexity, low diversity and low dynamics). The government of India ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1976 and added a list of species – including a significant number of marine flora and fauna – to the Wildlife Protection Act (1972). Wildlife wardens were put in charge of local enforcement; these officers make use of the machinery and hierarchical governance style of the Tamil Nadu Forest Department, by whom they are employed. The implementation of regulations prohibiting the harvest and trade of endangered species, such as sea cucumbers in the ecologically-rich Gulf of Mannar, is, however, resented by fishers and traders alike. Not only are these rules therefore frequently evaded, but Forest Department personnel are occasionally threatened with physical violence (Bavinck and Vivekanandan 2011).

Being nested at international, national and local levels, the interactions over CITES rulings are necessarily complex. A hierarchical – top-down – mode of interaction between decision makers at the national level and local people partaking in the system-to-be-governed has resulted in low legitimacy and substantial levels of illegal fishing.

Case 14: Time-Zoning in the Palk Bay (co-governing mode: medium-level diversity, complexity and dynamics). The large-scale violence that erupted between small-scale and trawler fishers in the Palk Bay from the 1970s onwards resulted in a special governance arrangement found nowhere else along the Tamil Nadu coastline. Rather than introducing a spatial zoning system, recommended by the Tamil Nadu Fishing Regulation Act (1983) and nominally implemented (see Case 8 above), the administrators of adjoining districts decided to proceed on the basis of a time-zoning agreement reached by the conflicting parties themselves. According to the terms of this agreement, trawler fishers from adjacent harbor locations are allowed to fish in the Palk Bay for three days a week, with the remaining days being reserved for small-scale fishing. This rule is monitored through concerted action by the Fisheries Department (which only provides trawler fishers with subsidized fuel on their fishing days), the Indian Coast Guard and local fisher organizations. It has survived, with minor modifications, for over 30 years (Bavinck 2003).

In this case, governing interactions are centered at the district level, and involve governmental administrators and fisher leaders from both sides. With the issue deemed both urgent and, there was great pressure to find a mutually satisfactory solution. The result – the endorsement by government of an agreement between the two fisher parties – was legitimate and long-lasting. It could not, however, be easily transferred to other geographical regions, where different conditions prevail.

Case 15: Gear regulations (self-governing mode: high diversity and dynamics, low complexity). The trammel net, which was introduced to Tamil Nadu's Coromandel Coast in the 1980s, triggered excitement as well as trepidation. Many

fishers were enthused by the sudden increase of high-value shrimp catches, while others, like 35 year old Siva who, looking back on the arrival of the trammel net in his village, expressed worry about the long-term consequences: Would some fishers, who procured the net first, benefit at the expense of others? And if trammel net fishing became popular, might fish flee from inshore areas? What would then happen to older members of the community, who no longer had the capacity to undertake long fishing voyages? As a result of such anxieties, many village councils gathered and passed rules structuring the introduction of the trammel net (for example, setting a date before which no one was allowed to use the gear) as well as its use.

This case is centered at the local level. Such governing efforts, which are initiated in response to events deemed to negatively affect fishing practices (Bavinck and Karunaharan 2006), presume a high density of diverse interactions between village fishers, as well as between fishers and the marine ecology. Interactions of this kind commence with the sharing of observations from fishing practice, and the recounting of stories about experiences elsewhere. They then move on to the more formal dealings of the village councils. Enforcement, which is carried out by the body of village fishers, brings about its own body of interaction – sometimes verbal and other times involving physical force.

Implications for Governability

The interactive governance perspective assumes that no style of interaction and no governing mode is *a priori* preferable to another. Instead, various governability situations are said to call for different modes of governing. Hierarchical governance may thus be appropriate in some situations, while other situations call for self- or co-governance. The opposite condition also holds true: a particular mode of governing may be quite inappropriate for the situation at hand. For example, in Case 13, which discusses the implementation of the CITES list, the hierarchical governance mode used is in some ways counterproductive, because it provoked hostility among actors in the system-to-be-governed. Self-governing modes of interaction like the one presented in Case 15, on the other hand, possess great capacity for generating legitimacy. Their participants, however, may lack a broad view and the decisiveness to deal sufficiently with the governance issues that arise.

In practice, we rarely encounter the three governing modes in pure form. Instead, societal systems display a large variety of ‘mixes’, or hybrid varieties, of governing interaction (von Benda-Beckmann et al. 2009, 9–11). These modes are only malleable to an extent. While governing actors can deliberately change some aspects of their interactions with others, they also have to make use of, and adjust to, the patterns that have developed in every societal system over time.

Concluding Remarks

In this chapter we have discussed the ways in which the characteristics of fisheries systems may impact upon their governability. We conceptualized the system-to-be-governed as possessing both a natural and human dimension –typified by varying extents of diversity, complexity, dynamics, and scale effects. Subsequently, the attention shifted to governors and the nature of the governing system, which sometimes evolves in reaction to demands posed by the system-to-be-governed, but may also have other origins. Like systems-to-be-governed, governing systems also prove to be diverse, complex and dynamic. Finally we considered the manifold interactions that occur within and especially between a governing system and a system-to-be-governed, distinguishing between three relationship modes.

The central message of this chapter has been that the connections between the three parts of a fisheries system matter for governability and that a better match may result in higher levels of governability. Conversely, where the fit between the system-to-be-governed, governing system and governing interactions is lacking and mutual responsiveness is low, governability is likely to suffer. In this case, the fisheries in question are not appropriately steered and have unwanted societal consequences. These can vary – depending on perspectives of the society in question – from environmental destruction to economic hardship, social injustice and political strife. In such cases, remedial action is required. The focus of such action, however, depends on the nature of the situation at hand. Governors must determine the contours of the societal system and the issues to be addressed. They may then choose to either focus on adapting the governing system to the needs of the system-to-be-governed, or – the other way around – modeling the system-to-be-governed to better match governing system's capacities and values. They may also try to change the style of governing interactions, thereby influencing the legitimacy of rulings. Whatever the case may be, the overall governability of the system in question is affected, for better or for worse.

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