Governance in transition:
Exploring people's mindset and institutional matches towards a governable coastal fisheries in South Korea

By

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Abstract

Many fisheries challenges are closely linked to the choice of governance style, with the typical top-down, hierarchical mode unable to effectively cope with ever more diverse, complex, dynamic, and multi-scalar fisheries reality. Subsequently, transition towards a co-management type has been a popular trend in many coastal fisheries around the world. Although this initiative has shown potential in bringing positive outcomes to local fishery and communities, in many cases the transition process has proved to be a 'wicked' undertaking with multiple intricate issues emerging to complicate the efforts and to frustrate community members, practitioners and researchers alike. Recognizing the need for alternate insights into these implementation challenges, this thesis argues for a thorough understanding of governance change by highlighting the importance of 'meta-order governance' elements, such as values, images and principles, of various fisheries stakeholders in shaping its outcomes. Further, it calls for an investigation of the institutional aspect of governance to underscore the structural elements being promoted in the transition and to elucidate its fit with the meta-level notions of governance actors, including the local fishers affected by them. These two areas of inquiry are inspired by the interactive governance theory and the governability concept, which emphasizes the need to examine all aspects of a governance system and their interconnectivity in order to solve problems and create societal opportunities. A government-initiated fisheries co-management program currently underway in South Korea, called '*Jayul'*, forms the context in which this new focus is applied. The main research question this thesis aims to explore is "how does the governance change instituted by the central government align

with what fishers fundamentally conceive to be important and desirable for the fishery?" In addition to theoretical conceptualization, the research has a strong emphasis on method development, given the knowledge gap in the elicitation of values, images and principles in empirical settings. The approach advanced here can be extended to examine the implementation of other fisheries governance initiatives, such as marine protected areas, individual transferable quotas and seafood certification schemes, to provide a useful way of understanding their standings and prospects. In the process, new insights may surface, challenging and improving the core ideas raised in this research.

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Chapter 1 Introduction

Fisheries governance has been a subject of research for several decades. Yet, while successful cases of fisheries that are moving towards sustainability have been documented (Hilborn et al. 2005; Hilborn 2007), a general decline of the resources at the macro-scale observed around the world (Pauly et al. 2002; Myers and Worm 2003; Allan et al. 2005; FAO 2012a) suggests that fisheries governance faces many challenges (Cochrane 2000; Beddington et al. 2007; Berkes et al. 2007; Mora et al. 2009). Unsustainable fishery outcomes bring real as well as serious consequences on several fronts. About 200 million full-time jobs provided by global fisheries (Teh and Sumaila 2013) could be put in a vulnerable position, for instance. Such a scenario was observed in the collapse of a Newfoundland cod fishery, which resulted in soaring unemployment in the traditionally fishing-heavy regions (Hamilton and Butler 2001; Schrank 2005). Poorly governed fishery also creates grave concerns in securing animal protein supply for the world's population, especially for the poor (Kent 1997; Béné et al. 2007; Jentoft and Eide 2011). Further, fisheries hold cultural meanings and significance to local communities, which may face abrupt erosion with a fisheries collapse (McGoodwin 2001; Close et al. 2002; Foale et al. 2011). The need for a global effort on rebuilding marine resources is being called upon in moving forward, with consideration of a diverse set of governance options congruent with local context (Worm et al. 2009; Khan and Neis 2010).

One of the key developments in addressing the fisheries challenges has been an effort towards governance transition. Broadly meaning changes in the mode of

governance, which involves hierarchical, co- and self-governance (Gray 2005; Kooiman et al. 2005), many jurisdictions in various parts of the world have begun to experiment with governance reforms, particularly those embodying a process of transition (e.g., Hall-Arber 2005; Olsson et al. 2008; Armitage et al. 2011; Cinner et al. 2012). Appearing under the rubric of fisheries co-governance (more commonly referred to as 'co-management') or self-governance (see Wilson et al. 2003; Townsend et al. 2008), such transition typically involves a move from a long-established top-down, hierarchical governing structure to a more decentralized and collaborative one, based on the premise that greater fisher participation and responsibility in managing a local fishery could lead to better governance. Co-management is built on partnership between various actors to create an arrangement for joint, trust-based and democratic governance (see Jentoft 2005; Frangoudes et al. 2008; Berkes 2009). Self-governance in fisheries relies on elements such as customary tenure, group norms, social taboos, and informal rules. While this form of arrangement has persisted in certain parts of the world, particularly in the South, a renewed interest in instituting it in developed countries context is also being observed (Johannes 2002; Basurto 2008; Townsend et al. 2008). Overall, the change in the governance mode involves a shift in the relative weights of the main actors (e.g., state, market, civil society and community) with regard to the role and power dynamics (Meuleman 2008; Foley 2013) in order to produce a setup more conducive to resolving issues and creating opportunities.

Despite decades of thinking and experience in governance transition, which have resulted in numerous case studies and a large quantity of research material, its progress has not been without significant challenges and failures. For instance, co-management

can be path-dependent, meaning that outcomes may have already been largely determined by the time it was conceived and initiated (Chuenpagdee and Jentoft 2007). There are also social and political concerns such as the participation paradox (Suárez de Vivero et al. 2008), elite capture (Platteau and Abraham 2002), and the lack of capacity of resource user communities (Fabricius et al. 2007). Other less fruitful attempts have been observed around the world (e.g., Scholtz et al. 1998; Pinkerton 1999; Cheong 2005; Blaikie 2006; Gelcich et al. 2006; Njaya 2007; Béné et al. 2009; Cudney-Bueno and Basurto 2009). As such, transition to a new governance mode is never a straightforward affair, further contributing to the 'wickedness' in the governing of world's fisheries (Ludwig et al. 1993; Dietz et al. 2003; Jentoft and Chuenpagdee 2009). In this backdrop, there appears a need for a sustained research attention and alternative outlooks on the issues of governance transition to examine it in a new light and also to stimulate further discussion on the topic.

Affiliated with interactive governance theory, an emerging perspective called governability has come to the fore in recent years offering a novel way of approaching fisheries governance and therefore studying governance transition (Kooiman et al. 2005; Kooiman 2008; Bavinck et al. 2013). With an emphasis on understanding an inherent and constructed quality of a fisheries arrangement, a governability-inspired inquiry would seek whether a system (e.g., an inshore fishery) or a process in question (e.g., governance transition) is a governable one, capable of dealing with the multiple problems and issues facing the sector. Subsequently, it searches for ways to make it more governable, recognizing also limits to governability.

The purview of governability is wide-ranging and raises various possibilities for a potentially innovative analytical direction in which fisheries research can be undertaken. Among them is an interest in the meta-order of governance. Representing one of the understudied areas of governance, this aspect focuses on people's normative ideas and underlying convictions that form the basis of governing decisions and actions (Kooiman and Jentoft 2009). The assertion is that all those involved in fisheries governance hold certain deeply-held notions about the fishery, policies and also about themselves, and they can inspire, guide, and shape the process and outcome of governance. Likewise, the meta-order is also posited to influence governability of governance transition. Yet, studies that fully examine this concept are rare. The elements that constitute the meta-order, such as values and principles, thus, remain hidden under the radar and the potential to spark alternative insights go unnoticed.

An example of this is a concept framed as the 'mindset'. We often hear a call such as "ultimately, change in mindset (or a new mindset) is necessary" when attempting to effectuate lasting positive changes in natural resource policy (e.g., fisheries– Mace and Gabriel 1999; Francis et al. 2007; Korda et al. 2008; water management– Sadler 1998; Postel 2003; Biswas 2009; agriculture– Wall 2007; Ahnström et al. 2008), and climate change adaptation– Capili et al. 2005). In this sense, people's mindset is regarded as a crucial link in initiating or maintaining successful governance outcomes. Despite a common usage of the term, both what a new mindset specifically refers to and how to bring about a new mindset is not well accounted for in many cases. Furthermore, who initiates, who it targets and how widespread it may occur is rarely discussed, leaving this sweeping generalization hollow in its projection. Thus, there is a need for a study that

firmly engages with the meta-order aspect of governance to generate potentially useful discoveries.

In deepening the understanding of meta-order mechanisms, this study relies on another order of governance, which deals with institutions and complements the governance actors' normative notions. According to the interactive governance, designing and caring for institutions is the second order matter. Institutions are identified as a structural frame that gives substance to governance transition as well as provides stability and continuity to people's underlying thoughts (Kooiman et al. 2005). How institutions constrain normative notions and how they in return strengthen or weaken institutions are the types of insights that can be sought. Uncovering such interactions between the two orders of governance is expected to enrich the overall analysis and also illuminate their influence on governability (Chuenpagdee and Jentoft 2013).

In summary, this dissertation research is interested in studying the changes in governance mode, especially one that undergoes a transition from hierarchical to co-, or self-governance. It aims to enhance the existing body of knowledge by engaging in the under-explored theoretical angles of meta- and second order of governance inspired by the governability perspective. Since these topics are under-researched, the dissertation also intends to contribute to the methodological development of governance research through an innovative design.

The introduction chapter resumes with a description of interactive governance theory which forms an overarching theoretical framework for this dissertation research. This is followed by an explanation of the governability concept, a useful analytics that guides the formulation of the research questions. Drawing from a co-management process

taking place in South Korean coastal fisheries, together with the theoretical inspirations, the research aims and objectives are presented. Next, an outline of the thesis is provided, together with a summary of the chapters, which is followed by a detailed description of the South Korean fisheries. Finally, the chapter offers a discussion on methods, and ends with the co-authorship statement.

Theoretical foundation and analytical concepts

Interactive governance theory

This research stems from the ideas raised in interactive governance theory, whose interdisciplinary deliberation was grounded in Kooiman's concept of governance (Kooiman 1993; Kooiman 2003) and later refined by others in the context of fisheries and aquaculture (Kooiman et al. 2005; Chuenpagdee 2011; Bavinck et al. 2013). Its general premise lies in the view that interactions are the fundamental conditions for the existence and functioning of social-ecological systems (Kooiman 2008). In this sense, any fisheries or human-in-nature system can be characterized and evaluated by the concept of interaction, whether through the presence or the absence of interactions, or the types and the nature of interactions, or the actors involved in them, or finally the speed at which interactions happen and hindrances that exist to impede its vigour. Kooiman et al. (2005, p.17) define interactive governance as:

> the whole of public as well as private interactions taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them.

One of the key aspects it brings forward is the mode of governance (see Fig. 1). The governance mode sets an overarching perimeter within which the formation and execution of governing activities unfold. With hierarchical, co- and self-governance as the three most prevalent modes, it has a far-reaching effect in how a fishery operates. The interest in the mode has arisen from observing the limitations of centrally-coordinated hierarchical governance, in which problems in goal-setting, garnering legitimacy, and maintaining responsiveness may reduce its effectiveness (Jentoft et al. 2005). The attention on the mode also stems from the common property research (Ostrom 1990; Young 2001; Ostrom et al. 2002), which argues that the collective action problem, visualized as the "tragedy of the commons", can be alleviated by an alternate mode involving community-based initiatives beyond the usual prescriptions of stronger government direction or privatization.

Governing modes operate in tandem with other aspects of the governance system. Interactive governance specifies three orders of governance at which the governing modes are constructed (see Fig. 1). The first order deals with day-to-day activities required to solve societal problems and create societal opportunities. This is the domain of governance that mostly resembles management, i.e., technical and mundane decisions and actions related to performing tasks and solving operational problems (Chuenpagdee 2011). Governance implies more, however, involving two extra outer layers. Captured in the definition of interactive governance above and also shown in Fig. 1, the second order refers to the institutional aspect – a structural arrangement and mechanism that houses and enables the first order activities. The third, or meta-order, is about the ideas and processes that "govern the governance". The stipulation of the meta-order is a firm

recognition that fisheries governance is grounded in certain underlying normative concepts of governance actors, such as values, principles, and images, referred to as the 'meta-order' elements. It is these elements, more so than those at the other orders such as actions (1st) and instruments (2nd), that can have a far-reaching effect in how fisheries is shaped and implemented (Kooiman and Jentoft 2009). Its articulation has been identified as the most distinguishing and innovative facet about interactive governance theory (Symes 2006; McGoodwin 2007).

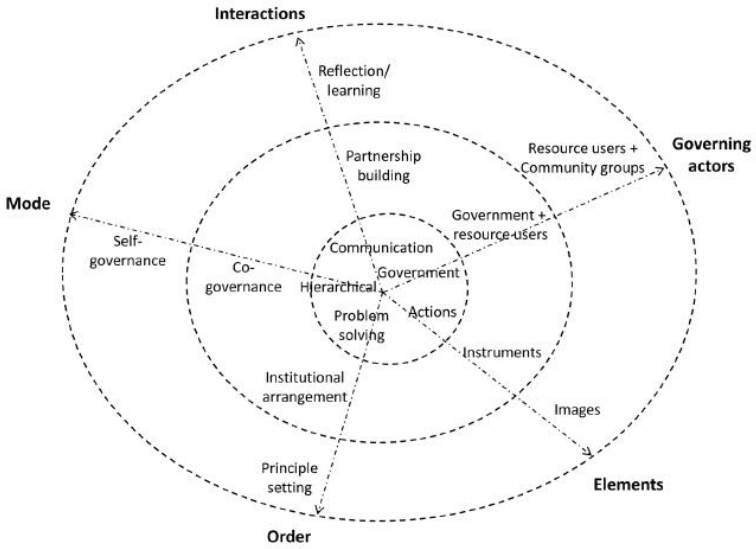

Fig. 1 Conceptualization of interactive governance theory (source: Chuenpagdee 2011)

Lastly, interactive governance theory recognizes a broadening purview of governing actors to comprise direct resource users, as well as to see a role for community groups as bona fide participants in the evolving and expanding sphere of resource governance (Fig. 1). With the inclusive array of actor groups, multiple forms of interactions also need to be accounted for and facilitated. This would include, but not limited to, communication

among various groups at different positions, partnership building to foster collaboration, and societal learning through reflection and self-examination.

Governability

The emerging analytical approach this research uses to generate research questions is called governability. It is seen as a synthesizing construct in the scheme of interactive governance, which enables connecting and utilizing the various components described in the earlier section and also shown in Fig. 1. Defined as the integrated quality of governance in a societal system (Bavinck et al. 2013), governability is distinct in the sense that emphasis is less on attaining governance performance or specific outcomes per se but on fostering the overall capacity of the system which would then lend itself to attaining whatever outcomes one finds necessary. Higher governability implies being more apt to deal with any societal problems that may arise and also being more conducive to creating societal opportunities. In this sense, Bavinck et al. (2013) argues that the act of governance is basically about influencing and improving governability.

From the governability perspective, then, the question shifts from what must be done to rebuild a depleted fishery to what inherent and constructed characteristics of the fishery system (including the governing system and the governing interactions) that may lower or enhance the possibility of a fish stock to recover. Chuenpagdee and Jentoft (2013) introduce a systematic assessment framework as a guideline to explore factors that may determine governability. As they explain, governability may be influenced by the degree of 'wickedness' of fisheries problems which arises from various stakeholder concerns, trade-offs and hard choices. How well the institutions of a governing system

match the demanding requests and characteristics of systems-to-be-governed brought about by their diversity, complexity, dynamics and scale is described as another aspect that could contribute to the level of governability. In addition, presence and quality of governing interactions among fisheries sub-systems with consideration of power relationships is theorized to also impact governability. As such, governability is grounded in the recognition that various features may affect governance, and that there are likely no easy solutions and quick fixes for improving governance effectiveness. Overall, the governability lens opens up a comprehensive and sensible viewpoint to understand fisheries governance, offering a promising avenue with which to conduct a study of fisheries governance.

Meta- and second order of governance

From the governability perspective, the meta-order and the second order of governance represent important aspects of governance that may intricately influence governability. First, as meta-order elements, values, images and principles highlight agents' capacity to imagine and inspire, and are viewed as the fundamental building blocks of governance. They are something that governors' speeches are framed in and specific management measures are built on, as well as where the reactions of those-being-governed are rested upon. This would imply that these normative elements of governance actors have a bearing on how policy decisions are to be acted out or neglected, promoted or resisted.

In addition, agreement or compatibility in these underlying notions between governors and those-being-governed is theorized as a variable that affects the quality of a governance system (Chuenpagdee and Jentoft 2013). The system would be considered

more governable when the meta-order elements of various actors are first made known and explicit, and when general agreements appear between them. On the other hand, obscureness and/or disagreements in these elements would intensify 'wickedness' in the system likely lowering governability. Following from this similarities or dissimilarities in the values, images and principles of stakeholders would be expected to influence the course of governance transition as well. A similar value system may increase synergy and efficacy in moving towards a shared goal. On the other hand, value disparity and incompatibility may impede the progress by creating dissent or trade-offs and enlarging social-political complexity (see Song and Chuenpagdee 2011; Almerigi et al. 2013 for early examples of examining convergence and differences in the meta-order elements). Thus, in order to understand why governance transition unfolds the way it does and to anticipate where fisheries governance is headed, an examination into the meta-governance aspect may prove useful.

The governability perspective also identifies institution as a crucial feature that can affect the level of governability of a system. This research, therefore, draws from the second order of governance and connects with the institutional component. Generally speaking, institutions are structural guidance that provide continuity, reduce uncertainty and shape people's interactions (North 1990; Peters 1999; Scott 2008). They provide an overarching environment which enables or controls governing decisions and actions. As such, an institution transcends individual actors to involve larger groups of people in patterned interactions that are somewhat predictable and stable, and that creates some sense of shared values and meanings among the members of the institutions (Peters 1999).

While institutions can work to resist change and reinforce the status quo, they can also serve as a catalyst in bringing changes to the system (Scott 2008). In this sense, governance transition is often approached institutionally, meaning that co-management or community-based management schemes are treated as institutional arrangements to facilitate governance change (e.g., Ostrom 1990; Pomeroy 1995; Jentoft et al. 1998; Acheson 2006; Berkes 2009). A co-management program would represent a bundle of rules, norms, and organizational structures that are arranged together to sustain or foster certain behaviors and mindsets of involved groups. As governance transition is conceptualized to take place via an alteration or introduction of an institutional arrangement, understanding what the institution embodies and how it works becomes a crucial inquiry. If the behaviors or ideas that an institution aims to promote happen to be far-fetched from the mindsets of affected people, for instance, it may face immense difficulty in bringing intended changes. Thus, an institutional analysis can also explore the extent of institutional match between co-management and governance actors, which governability hinges upon. The postulation is that the greater the match, the higher the governability, and the greater propensity to produce successful governance transition.

Thesis scope, research questions and paper outline

This dissertation research aims to contribute to the understanding of governance transition, from the perspectives of meta- and second order governance. These two areas are worthy of research attention as they are key parts of what determines governability. Examining the meta-order aspect would be about revealing the degree of social

complexity, or 'wickedness', of the governance system through the similarity or disagreement in people' underlying notions, such as values, images, and principles, as they pertain to governance transition. The second order governance inquiry centers on assessing institutional aims and mechanisms, and comparing them with the normative notions of stakeholders to understand institutional match and to draw implications for governability.

This research is applied to small-scale coastal fisheries of South Korea, in which a fisheries co-management program has been undergoing in the past decade. Although this co-management setup is an installation of the central government and thus being implemented in a top-down manner, government managers and academic researchers generally agree that a true, enduring shift into co-governance (or even self-governance) can be ultimately achieved if and when a 'change in mindset' of fishers takes place. Here, a change in mindset is about affecting the fundamentals of people, such that they appreciate a new way of doing things and have a genuine interest in upholding it. In the context of the case study (i.e., the transition towards a more collaborative mode of governance), it would mean that fishers develop a sense of ownership and responsibilities for the coastal fishery. More specifically, they would have acquired a robust inclination and justifying reasons for embracing active and sustained participation in the management of local fishery, even when the incentives to do so disappear or when the grip of regulative measures or social norms weakens.

Given the emphasis on the change in mindset in the governance process of the South Korean fisheries, together with the theoretical motivations explained earlier (see Fig. 2), this research poses the following questions: What are the 'mindsets' of fishery

stakeholders, as represented by, and studied through, their values, images, and principles? Do their values, images and principles agree or differ among fishery stakeholder groups, and to what extent? What does the co-management program as an institutional arrangement aim to promote, and how do they compare with the 'mindsets' of fishery stakeholders? The findings of this research aim to generate insights into whether the implementation of the Jayul co-management program (and thereby governance transition) through a change in mindset is a feasible venture in South Korea and what hinders its progress.

Following the research questions, eight specific objectives are pursued. They are:

1. To develop a conceptualization of the meta-order governance to comprise values, principles, and images, and review them as they have been discussed in fisheries research
2. To review and understand institutional theory as it corresponds to the second order of governance and pertains to fisheries resources
3. To develop a method for eliciting values, principles, and images of stakeholder groups
4. To examine the convergence and disparity of values and principles among coastal fishery groups in South Korea and also the dominant images across the groups
5. To understand the institutional aims of the co-management program in South Korea and explore its fit with respect to the values, principles, and images of fishery stakeholder groups

6. To generate policy implications based on the findings of the study towards the change in mindset and the future implementation of the co-management program in Korea
7. To reflect on interactive governance theory and the governability concept and share insights

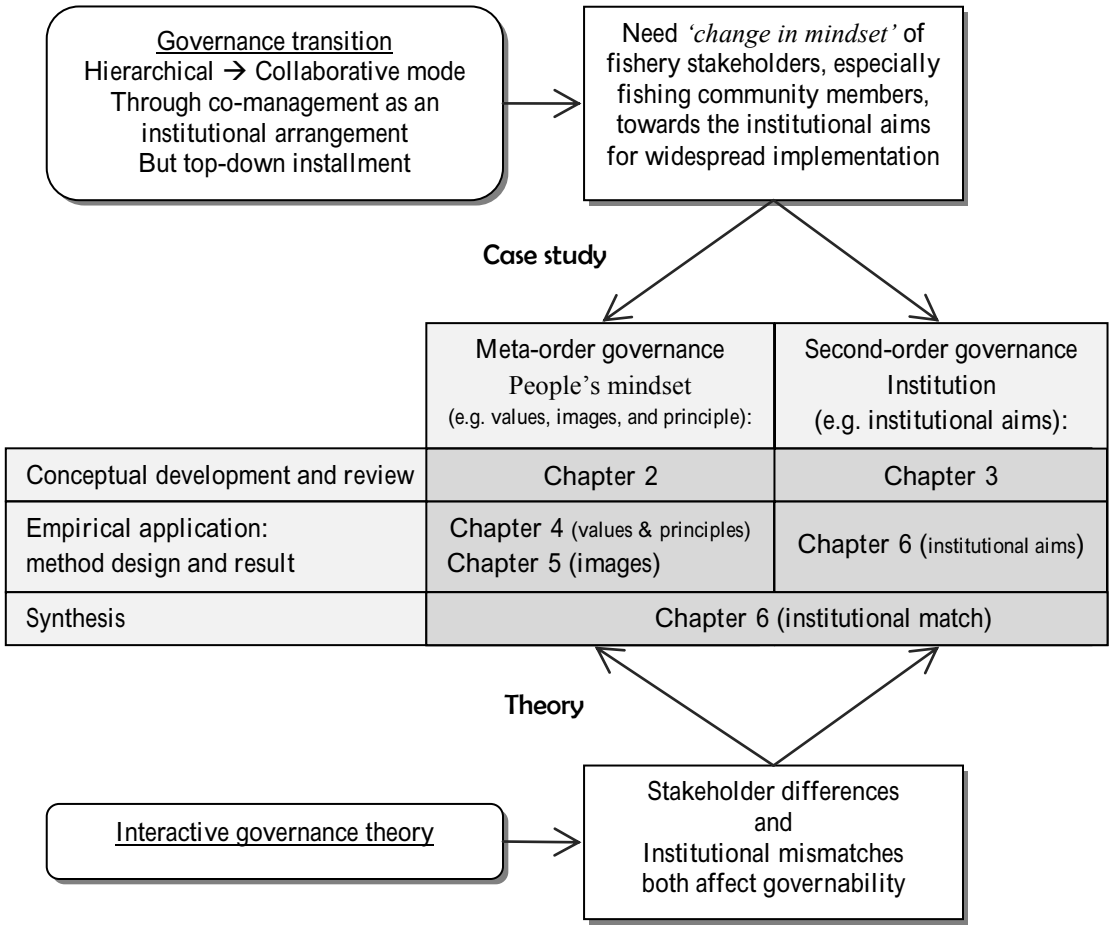

Fig. 2 Study context, thesis structure and paper outline

The thesis contains five papers in addition to the introduction and conclusion chapters (Fig. 2). The five papers (Chapters 2 to 6) form the main body and are organized as follows. Chapter 2 and 3 initiates the research by providing a conceptual development and review of the two main theoretical perspectives – the meta-order and the second order of governance. Chapter 2 reviews the meta-governance theory and connects it with a set of operational concepts that can be used and studied in the context of fisheries governance. Values, images, and principles are conceptualized as the appropriate meta-governance elements, and their standalone meanings as well as inter-linkages among them are elucidated. This is followed by a literature scan to examine how frequently the values, images, and principles have been featured and discussed in fisheries governance research so far.

Connecting with the second order of governance, the purpose of Chapter 3 is to review institutional theory and highlight an emerging institutional perspective appearing within fisheries research in the last decade. Based on this, it also identifies and explains a holistic scheme (i.e., three "pillars" of institution by Scott (2008)), with which to study fisheries institutions. Embodying a broadening purview of an institution that encompasses normative and cultural-cognitive dimensions as well as a regulative aspect (Scott 2008; Jentoft 2004), a growing body of fisheries literature is calling for a more inclusive consideration of different institutional elements such as cultural preferences, social taboos, and rule systems. Adopting this inclusive approach is expected to help governance actors to be more fully aware of and utilize the various institutional mechanisms in achieving a governing goal (e.g., changes in the mode of governance).

Chapter 4 and 5 illustrate the methods and results of an empirical application of the meta-governance aspect. Together, they focus on examining the 'mindsets' of fishery stakeholders in the context of the Korean example. Chapter 4 focuses on the design and testing of an alternative survey method for eliciting stakeholder values and principles. The method developed here is called 'P+ sort', and it incorporates sorting techniques to generate both quantitative and qualitative data. The method is also designed to offer simplicity and interactivity in data collection, for the reason that values and principles can be something that people may have difficulty in verbalizing. This exploratory design is then applied to the case of South Korean coastal fisheries to examine the values and principles considered important by two main fishery stakeholder groups: fishers/resource-dependent community members and government managers/researchers. Comparisons are made between the two groups to identify their convergence or disagreement and draw implications towards the Jayul program.

Chapter 5 documents a study of images that South Korean fishery groups have about the fishery and fishing life. Concise but open-ended questions are formulated to elicit the content and the general characteristics of images. These questions form a part of the survey instrument package used to target values and principles (Chapter 4). This exploratory design is applied to elicit a range of images held by two main fishery stakeholder groups: fishers/resource-dependent community members and government managers/researchers. Representing the respondents' central aspirations or concerns linked to the fishery, images are examined and discussed to inform the co-management implementation.

Finally, in order to deepen the understanding of governance transition in Korean fisheries, Chapter 6 complements the meta-order study by conducting an institutional analysis of the Jayul program. Acknowledging the critical role of 'mindset change' in facilitating nationwide Jayul implementation, it examines the institutional aims of the program and draws comparison with the 'mindsets' of fishery stakeholders (fishers/community members in particular who represent the target group). More specifically, the analysis identifies the mismatches between the aims, organized according to the scheme of three pillars (introduced in Chapter 3), and with the result of the value-image-principle survey (Chapters 4 and 5).

The conclusion chapter summarizes the main points of the thesis, discusses future research needs, and offers reflection. Each paper is formatted in a style that meets the requirements of a target journal.

Case study: The Jayul Fisheries Community Management in South Korean coastal fishery

This dissertation research examines a case of governance transition taking place in the coastal fisheries in South Korea. First, an overview of the fisheries is presented, followed by a description of its management history and setup. The process of governance change is then explained to further introduce the empirical context.

Overview of the fisheries

South Korea (officially the Republic of Korea) is located in the southern part of the Korean Peninsula in a temperate climate zone of the Northwest Pacific region (Fig. 3). Its geographical configuration displays a great biophysical variability in its coastal environment. The west coast faces the Yellow Sea which is set in an epicontinental shelf with relatively flat bathymetry and a generally shallow depth of less than 100m (Alexander et al 1991; Liu et al. 2004). The Yellow sea receives a large amount of fine-grained sediment from the Yellow River and Yangtze River in China as well as a number of smaller rivers in the Korean peninsula, which contributes to high turbidity in the nearshore water column (Lee and Chough 1989). The west coast also features a very low gradient (< l m/km) and contains numerous embayments and islands, as well as extensive wetlands and tidal flats (Lim and Park 2003). On the contrary, the east coast follows a mountain range and steeply connects to deep water basins of the East Sea (also known as the Sea of Japan) which has a maximum depth of roughly 3,500m. Its deep water is replenished every winter by deep convection, and it also contains well-defined subpolar fronts in the surface layer between warm and cold water masses, suggesting the East Sea to be a model of the large global ocean (Ichiye 1984; Yamada et al. 2004; Zhang et al. 2004).

Waters around Korea experience comparably high annual primary production (over 150 g Chl m^{-2} y^{-1}) as estimated from upper ocean chlorophyll concentration (Antoine et al. 1996). Other large-scale phylogeographic and oceanographic processes, such as Pleistocene glacial oscillations, associated tectonic sea-level changes, and the dominant warm surface Kuroshio Current, have fundamentally influenced the distribution and genetic diversity of marine coastal species, creating a region of productive fishing

grounds in all three adjacent seas – the Yellow Sea, the East Sea, and the Korea Strait which joins onto the East China Sea (Kang 2006; Hu et al. 2011; Kim et al. 2012; Lee et al. 2012). In 2010, South Korea produced 2,208,489 metric tons of fish, crustaceans, and molluscs, of which 1,732,928 tons are from capture fisheries (FAO 2012b). With additional 914,715 tons of aquatic plant production (e.g., laver and wakame), South Korea ranks among the top fish producing nations in the world.

Fig. 3 Map of South Korea and the distribution of Jayul fisher organizations (number in parenthesis indicates the number of organizations in each jurisdiction)

From ancient times, fishing has naturally taken place in Korea, and helped satisfy much of the domestic fish consumption demands over the years (Hong 1995). Fish occupies an integral part of Koreans' dietary life and intimately connected to their culture even to this date. According to data recorded since 1960s, fish has consistently contributed over 40-50% of the animal protein intake per capita per day (Han 2009). Moreover, in 2007, South Korea was the 4th biggest consumer in the world in the annual per capita consumption of fish, shellfish and seaweed at 65.5kg, only to be surpassed by the island nations of Maldives, Iceland and Kiribati (FAO 2010). In the coastal fishery, there are nearly 150 target species of commercial significance, which include anchovy, squid, mackerel, hairtail, swimming crab, Pacific herring, snow crab, and yellow croaker (in the decreasing order of landed volume), as well as a wide variety of shellfish and seaweeds (Kang 2006; KMI 2010). Also, with over 28 licensed fishing gear types permitted in the coastal fishery, it has the strong character of multi-gear/multi-species (Han 2009). There were 71,046 fishing households nationwide in 2008, which marked 11.1% decrease from 2005. The number of full-time fishing households and those who engage in capture fisheries decreased by greater margins than the part-time and the aquaculture households, respectively, for the same period (KMI 2010). A similar downward trend is observed in the number of coastal fishing vessels (defined as under 8 tons generally), showing a steady decline from 60,892 in 2005 to 53,792 in 2008 (KMI 2010).

Management history and setup

In the pre-modern period, many inshore fishing grounds were privatized by clans and village authorities. With the beginning of the Japanese occupation of Korea in 1911, the colonial government took over and restructured Korean fisheries by introducing fishing rights and laws and also founded fisheries cooperatives at the village level (known as uchon-gye). This shift endowed the government with an exclusive power to grant and manage licenses and effectively placed the colonial state in charge of overall fisheries management (Cheong 2004). Following independence in 1945, post-colonial government inherited much of the colonial setup, and the fishery has been chiefly operated under the overarching direction of the central government who sets the regulations, issues licenses, enforces the rules, and provides benefits and subsidies to communities (Hong 1995; Cheong 2004). A simple scheme depicting the present-day organizational structure of the South Korean coastal fishery is displayed in Fig. 4.

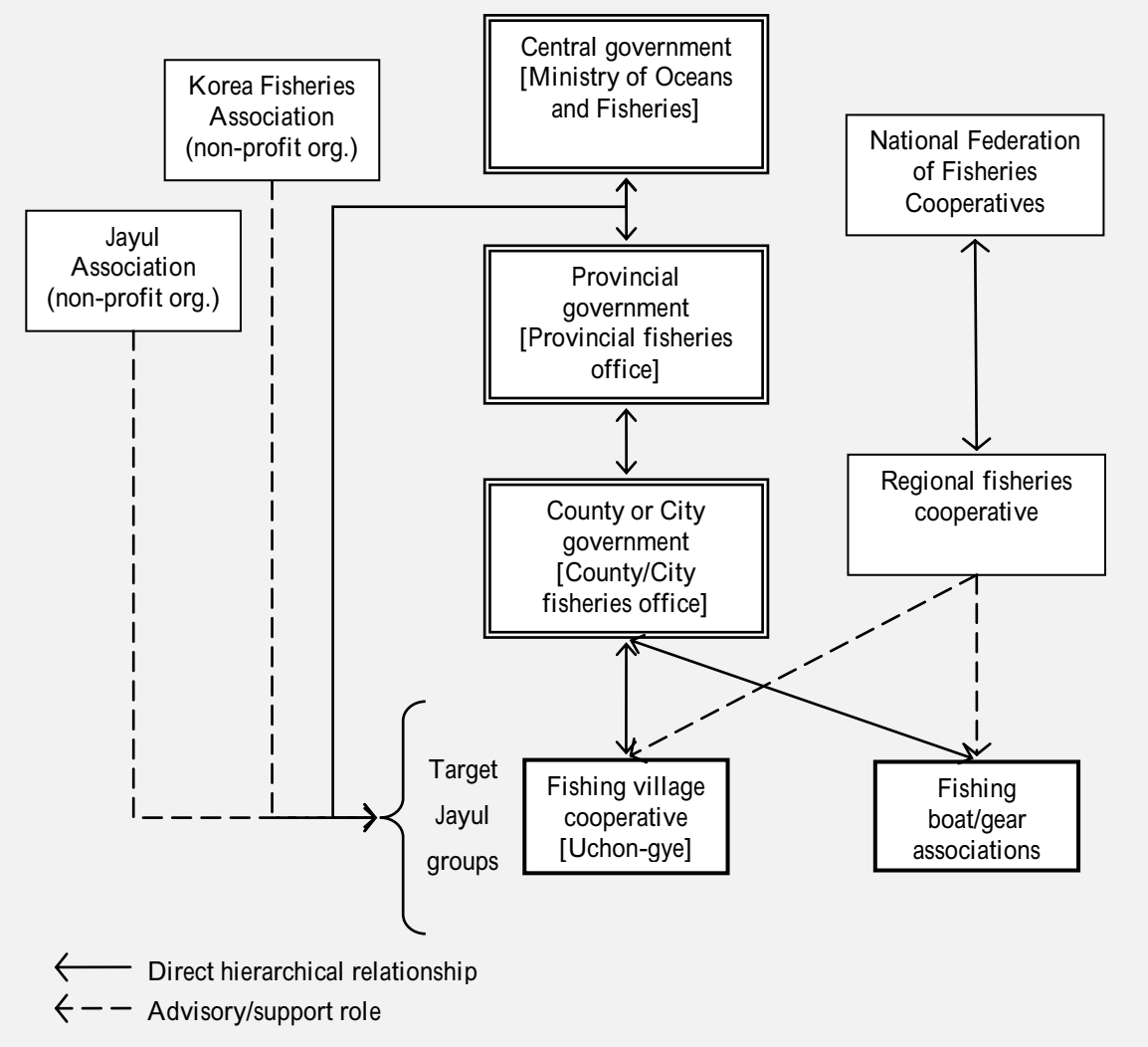

Fig. 4 General organizational structure of South Korean coastal fishery showing main organizations and their mainly hierarchical relationships (double-lined boxes denote government organizations; thick-single-lined boxes represent community-level fishing organizations or industry group; and thin-single-lined boxes represent non-governmental support organizations)

The centrally coordinated fisheries management regime is currently composed of three main elements – a license system, technical regulations (e.g. mesh size, catch size, and closed seasons), and the Total Allowable Catch (TAC). The TAC system is a recently introduced measure first taking effect in 1999. It came about in response to the limitations of the input control and technical restrictions alone to curb overexploitation of economically important species, such as yellow croaker and hairtail (Nam 2007). A need to construct scientific and efficient management system in the era of Economic Exclusive Zone sovereignty also contributed to the development of the TAC (OECD 2011). Quotas are allocated to individual vessels based on the recommendations of local governments taking historical catches and vessel sizes into consideration. It thus resembles individual quota system without transferability, although the introduction of quota trade is reasonably expected in the future (Nam 2007). As of 2013, there are 11 species of high volume and high value managed under the TAC system including mackerel, squid, sardine, snow crab, swimming crab, and pen shell. Early results, however, indicate several issues related to quota allocation, reporting of catch, and bycatch (Nam 2007; OECD 2011).

Limited entry through the license system has been the primary means of regulating fishery since the beginning of the modern day management (Cheong 2004). A common classification specifies three types of fishing, i.e., license-, permit-, and report-based. First, license-based fisheries include those taking place in intertidal and nearshore areas such as shellfish and seaweed gleaning, fixed gear operation, and aquaculture. The harvesting privileges are licensed to lawful holders allowing them to maintain exclusive management and fishing rights to a designated area. While license can be granted to

individuals or private enterprises, much of the areas covered by licenses are 'village-owned' fishing grounds governed by fishing village cooperatives (i.e., uchon-gyes). This makes uchon-gyes an important local resource manager. In this sense, community-based management of local fisheries has been a conspicuous part of the seascape in Korea, which also receives support from two other levels of cooperative organizations: national- and regional fisheries cooperatives, as shown in Fig. 4. As the main economic and social organization of the fishing community, uchon-gyes play a key role in maintaining order with community-set rules, fostering cooperation among members, and representing local fishery interests vis-à-vis the central and municipal government and the regional fisheries cooperative. In recent years, however, a dwindling fisher population, continuing fisheries resource decline, and an increasing scale of production and capital investment in aquaculture activities have weakened the cooperative-based local fishing operation (Cheong 2003a). Less prevalent are collective harvest and equal distribution of fishing grounds and earnings. Instead, privatizing tendencies and individualistic modes of operation such as leasing out the village fishing ground to individual households or hiring outside labor to harvest fishes have become a more common occurrence.

The second type of fishery involves fishing using vessels and gears in the inshore and offshore waters. Regulated through issuance and withdrawal of quinquennial fishing permits by the county and city governments, the permits are held by individual fishers, who may be members of uchon-gyes and/or sector-specific fishing gear associations. This permit-based boat fishery is a significant sector in coastal fishery in terms of both catch volume and value. According to 2001 data, this fishery recorded 213,003 metric tons of catch with the landed value of 766,623,987,000 won (approx. 766 million dollars US)

(Han 2009). This is compared to 49,470 metric tons and 88,011,422,000 won (approx. 88 million dollars US) of license-based community fishery, and 655,827 metric tons and 717,162,507,000 won (approx. 717 million dollars US) of license-based aquaculture fishery (Han 2009).

The third type is called 'report' fishery. Although it has the highest number of certificate holders (121,453 in 2009) among the three types, it forms a minor part, as it allows fishers to carry out smaller-scale, rudimentary type of fishing operations on an individual basis. City or county government responds to the request of each fisher by issuing a certificate which is valid for five years (MIFAFF, 2012).

'Jayul Community Fisheries Management' Program

Building on the tradition of uchon-gye-based fishery management, the 'Jayul Community Fisheries Management' program was initiated by the central government in 2001 (hereafter referred to as the 'Jayul' program). It attempts a nationwide shift from the hierarchical, unilateral governing of the central government buttressed by the regulation and enforcement regime to consensus, trust, and collaboration-based governance mode, entailing more direct involvement of multiple actors and resource user groups. Under this scheme, government sets out policy guidelines and provides financial and technical assistance, while local fisher organizations (e.g. uchon-gyes and gear associations, see Fig. 4) draft and carry out a management plan for their fishery. As an alternate direction for resolving various environmental and social challenges such as stock depletion, illegal fishing, rising operational costs, and decline of coastal villages (Cheong 2003b; Han 2009), as well as reducing fishers' over-reliance on government support (Lee 2010;

OECD 2011), its overall aim is to raise the level of community participation in managing local fisheries through reinvigoration of uchon-gyes and fisher associations, and to ultimately instill a sense of ownership (MOMAF 2003; Lee et al. 2006).

Since its inception a decade ago, the number of community fisher organizations participating in the program has reached 893 in 2011, whose distribution is shown in Fig. 3, and there have been several exemplary cases in which fishing income has increased and illegal fishing have subsided through this process (MOMAF 2005; Uchida et al. 2010, 2012). The general view is that the Jayul program has been helpful in instituting fisher involvement and/or revitalizing uchon-gye-based management in many communities (OECD 2011). Yet, doubts are also raised as to whether fishers' activities are really self-regulatory and voluntary, or they are simply responding to external incentives, i.e., whether the change in mindset of fishers to embrace this governance mode is genuinely taking root. Many Jayul communities simply exist only on paper with no substantial follow-up activities, or they have quit the program altogether (Seo and Byeon 2006). Moreover, a financial reward system that the central government has set up to entice fishing community organizations to join and keep up with the activities could be promoting further reliance on government, negating thus its original intention. For instance, there is a worry that a discontinuation of the funding or facing low prospect of receiving financial benefits may arouse negative sentiments towards further participation. As a result, communities may be induced to lapse back into inaction (Lee 2010).

The central government has expressed the ambition of broadening its participation and benefits to 1,400 fisher organizations by 2014 and to nearly all 2,000 coastal communities nationwide in a foreseeable future (PPACP 2008; Lee 2010). Lee and Shin

(2004) also submits that achieving this new mode of governance represents the only viable option available in improving the fisheries situation in Korea. Corresponding to these high expectations, an examination of the normative and institutional elements of the Jayul program would serve a useful and timely inquiry into understanding its impeded progress and identifying areas of (re-)consideration.

Methodology

This research employs mixed methods (Axinn and Pearce 2006; Creswell and Plano Clark 2007) and includes both quantitative and qualitative techniques for data collection and analysis. The three main data collection methods are (1) literature and document review; (2) a questionnaire survey that combines a sorting exercise and a series of open-ended questions; and (3) participant observation and informal discussions. The method(s) used for each of the five papers (Chapters 2 to 6) are listed in Table 1. Review of relevant documents includes both published and grey literature, and those written in Korean as well as in the English language, and is conducted by the candidate who holds proficiency in both languages. This has allowed making use of government reports and research articles that are only available in the Korean language, which can contribute towards gaining in-depth information about the domestic fishery situation. A questionnaire survey is chosen as the main method of primary data collection for its flexibility to produce both quantitative and qualitative data while targeting potentially a large number of respondents (Hines 1993). A sorting technique called "P+ sort" is also developed as part of the survey, building on the methodological foundation of both pile sort (P) and Q sort. "P+ sort" aims

to achieve an 'intermediate' level of sophistication by offering a more structured format than the pile sort while remaining simple with fewer assumptions and constraints than the Q sort, for the reason that 'mindset' can be something that people may have difficulty in verbalizing. The survey method is thus designed to offer simplicity and user-approachability in data collection. Two versions of the questionnaire are used, which feature slight variations in the sections seeking personal opinions and demographic information – one intended for the resource-dependent community members and the other for the researchers/managers (See Appendix I and II). The design and application of the survey method employed in this research is described in Chapter 4 and 5. Lastly, informal chats with additional key informants and direct observation during 1 to 2 week long visits to each of the surveyed fishing communities are used to triangulate the data, thereby complementing the survey process.

A meta-analysis of fisheries governance literature forms a significant mode of analysis for Chapter 2 and 3 (see Zhao 1991; Paterson et al. 2001). The numerical data obtained from the survey questionnaire based on the sorting technique is analyzed using frequency analysis and non-parametric statistical procedures, such as the Kendall coefficient of concordance W and the chi-square test through an assignment of weighted scores to sorted patterns (see Chapter 4). An analysis of the transcribed and coded qualitative data utilizes 'thematic analysis' to identify appropriate categories and prevalent themes in people's responses (Braun and Clarke 2006). This is employed as the primary method for understanding stakeholder images, as discussed in Chapter 5. Finally, Chapter 6 applies a generic form of document analysis, which offers a

systematic way of reviewing various forms of documents, usually those found in the public domain (Bowen 2009).

Table 1 List of data collection and analysis methods used in the research organized by paper

Paper number and the main topic	Data collection methods	Analysis methods
Chapter 2: Conceptualization of meta-governance and review of values, images, and principles	Literature review	Meta-analysis
Chapter 3: Review of institutional thinking	Literature review	Meta-analysis
Chapter 4: Value and principle survey	Questionnaire survey (a sorting exercise and open-ended questions); informal chats; participant observation	Non-parametric statistical tests; Thematic analysis
Chapter 5: Content and characteristics of stakeholder images	Questionnaire survey (open-ended questions); informal discussions with key informants, participation observation	Thematic analysis
Chapter 6: Institutional analysis	Literature review, informal discussions with key informants, participation observation	Document analysis

The research process is outlined as follows. The first phase of data collection coincided with the initial fieldwork period that span from September 2009 to June 2010. Through activities such as informal discussions with key informants, reconnaissance visits to fishing villages, and establishing contacts with a domestic fishery research community, this initial groundwork has helped the candidate to develop an adequate sense of the

salient fisheries issues in South Korea and subsequently build research ideas around the local context. After a year spent on campus in St. John's, Canada, during which a research plan was formulated, an ethics approval granted, and the initial drafts of the two review papers prepared, the second phase of fieldwork took place from September 2011 to July 2012. In this period, the survey design was finalized through incorporating input from domestic experts and pre-tests, and the survey was conducted together with informal chats and participant observation. Also, data verification and preliminary analyses were carried out during this phase involving re-visits to the communities and management offices to discuss the findings and seek explanations for the attained results. Full analysis and the write up of the results were followed occupying the main activities in the subsequent year in St. John's.

Co-authorship statement

Chapter 2, 3, 4 and 5 share co-authorship with the supervisor and/or supervisory committee members with Chapter 6 having single-authorship. The candidate is the principal author of Chapter 2, 4 and 5, for which the candidate formulated research questions, conceived study design, collected and analyzed primary and secondary data, and prepared initial drafts. All these steps were guided by the supervisor, and supported by the committee members. The preparation of final manuscripts incorporated critical input and editorial suggestions of the supervisor and the committee members. The candidate is the second author of Chapter 3. Here, the supervisor took a lead role in formulating research ideas and study design. Writing of the manuscript took a

collaborative effort, while the candidate was mainly responsible for literature review and revision of the manuscript in response to reviewers' comments.

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Chapter 2 Values, images, and principles: what they represent and how they may improve fisheries governance

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Abstract

Natural resource governance is expected to respond effectively and timely to dynamic environmental conditions, also in a manner that reflects social and political complexity of the system that it aims to govern. Values, images and principles that resource users and governing actors hold about how the world works represent a fundamental part of that complexity. These elements have indefinite form and meaning, may be incommensurable, competing and incompatible, and they often go unnoticed in governance discourse. This paper examines how values, images and principles are represented in a fisheries setting, and explores their diversity and ubiquity as well as the potential differences in the way

they are conceived by various stakeholders. These characteristics are shown to give rise to the difficulties in policy planning and implementation, and create implications to power relations and overall governability of a fisheries system. The paper posits that governance challenges could be lessened if stakeholders' values, images, and principles are made explicit, understood, and articulated into policy and decision-making process. It concludes with suggestions about future research steps.

Keywords: value; image; principle; fisheries; interactive governance; governability

1. Introduction

The complexity, dynamics and multi-scaled interactions between humans and the environment make governance of natural resource industries such as fisheries among the most challenging systems to govern [1-3]. Conventional and popular policy initiatives that resemble 'panaceas' [4] or 'technical fixes' [5], even if well-implemented, often remain ineffective and produce disappointing results [6]. Recently, some researchers have begun drawing parallel to the dilemmas confronting planning theory [7] in characterizing resource governance issues as 'wicked problems' [8-13]. Here, defining a problem itself is a problem, and the problems are never solved, but re-solved for the time being. This conundrum stems from the inherent nature of social problems, or any problems that have social implications, in which diverse groups of individuals express their interests, judgments and worldviews [7,9].

According to the interactive governance perspective [14], dealing with 'wicked problems' may start with an examination of fishery systems in order to understand their social and ecological limits [15], as well as potential and opportunities embedded within [16]. This includes a study of fisheries institutions, how they are created and what are expected of their functions [17]. Ultimately, a thorough investigation of what underlies people's behaviors, actions and decisions is required to make these problems more comprehensible. As posited by Kooiman and Jentoft [18], this understanding is fundamentally what governors should strive for.

Studies illustrating how stakeholders vary in their interests and motivation include those emphasizing users' attitude (e.g., [19,20]) and perception (e.g., [21,22]). Though they provide a useful way of understanding people's sentiment about specific objects, situations or issues, these attributes are based on other mental constructs, particularly values, images and principles which are slow-changing, few in number and deeply ingrained [23-25]. It is these latter elements that create 'hard choices' in resource governance, requiring decisions about incommensurable trade-offs that a simple opinion poll or attitudinal survey is ill-suited to resolve [26,27]. There have been numerous studies to understand these fundamental concepts, as well as other related notions, such as beliefs, norms and worldviews (e.g., [23,28,29]). While they endeavour to distinguish these constructs from each other, they also acknowledge that there is a great amount of overlap. In fact, they may be best used in conjunction with each other as suggested in studies of values, theories of planning, and governance [27,30-32].

In this paper, the benefit of understanding 'meta-level' governance elements, i.e., values, images and principles, of those involved in governance in resolving fisheries

problems is examined. It does so by exploring the diversity in these elements, how they have informed and dominated the fisheries discourse, as well as revealing the elements that have been seldom discussed. The paper posits that an enhanced understanding of what these meta-elements are and how they might be differently conceived by various stakeholders may contribute to lessening the complexity and making fisheries a less wicked affair.

In the following, a description of these elements according to the interactive governance perspective is presented. A literature review is then conducted to examine what values, images and principles entail and how they have been approached in the fisheries context. The paper reflects on the findings by discussing their implications to governability, and concludes with suggestions on future research direction.

2. Meta-level governance elements

The interactive governance perspective shares many key ideas promoted by other governance approaches [16], but has its own emphasis on interactions as the fundamental conditions for the existence of social-ecological systems [14,33]. It is within these interactions, especially between the systems that are being governed (whether natural or social) and the governing system, where problems and opportunities for governance lie. In its deliberation, meta-level governance, which deals with elements such as values, images, and principles, is identified as the most distinguishing and innovative facet about the interactive governance [34,35]. Symes [34, p. 116] notes, for instance, that the "firm foundations in ethical values and carefully articulated governing principles" on which

interactive governance bases its focus is a pioneering notion that could lead fisheries governance to a new height. The explicit attention on meta-level governance stems from the acknowledgement that governance is value-ridden from top to bottom [36]. In other words, the normative and cognitive concerns of fishery stakeholders are what underpin the overall governance process, guiding, shaping and inspiring decisions and actions. Kooiman [36, p. 170] explains that meta-level governing is like "an imaginary governor, teleported to a point 'outside' and holding the whole governance experience against a normative light." This imaginary governor can be envisaged as having a set of values, images and principles, by which his/her decision is evaluated and judged.

According to Rokeach [23, p. 5], values are "enduring beliefs that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence." Hence, they are ultimately about what is desirable. They transcend specific situations, guide selection or evaluation of behaviour, and are ordered by relative importance [37]. Despite being abstract and ideal [38], the essence of governance lies in the determination and allocation of values [39], the process in which power dynamics are embedded. Images are "a way of thinking and a way of seeing that pervade how we understand our world generally" [40, p. 4]. Cognitive in nature and tied to real practices, they are neither easily recognized nor often questioned, and mostly remain unverbalized and implicit [41]. Boulding [42] maintains that images are what one believes to be true; one's subjective knowledge that largely governs his/her behaviour. Principles are codes of conduct, operating guidelines, or yardsticks to internally refer to when decisions and actions are made, evaluated, criticized and when changes are

proposed. Principles are the most applied notion in the sense that they have a more direct bearing on real-life choices and practices than values and images [18].

Two properties of values, images and principles give rise to difficulties in resource governance. They often differ between stakeholders, especially those with different interests, and they are subjected to change. In addition to their diverse and dynamic nature, they tend to interact in ways that are not easy to explain. As implied by several theories, such as those of Planned Behavior [30] and the value-belief-norm model [31], they may be best understood together. Biggs et al. [29] also explain how values and beliefs interact with mental models (i.e., images) in multi-loop learning processes. These studies suggest that one can expect lively interplay among these elements, requiring therefore joint consideration when attempting to understand how they influence resource governance decisions.

The difficulties observed through the meta-level elements also highlight governability challenges, which need to be addressed for improving governance. Governability is a concept loosely defined as the capacity to govern, given the real and foreseeable demands of those being governed [33,43,44]. Incommensurable values between fisheries stakeholders, for example, may act as a limit to how governable a fishery can be [15]. But in another case where people's images appear consistent with their value priorities, the system would be deemed more governable. Focusing on stakeholders' values, images, and principles would present one way of permitting recognition of different degrees of governability that exists in a fisheries system.

3. Values, images, and principles in fisheries governance

3.1. Values

Generally speaking, values are discussed in a number of different ways with varying foci. A broad range of disciplines, such as philosophy, psychology, sociology, anthropology, ecological economics, and resource management, all contribute to value literature. This section outlines salient values being evoked in fisheries and by the same token identifies values that have received less attention by fisheries stakeholders. Because value can be a bewildering concept whose meanings may vary depending on one's disciplinary frame, an introduction of the general value literature is first presented to illustrate the diverse array of existing value discourses.

Satterfield and Kalof [45] refer to two dominant traditions in categorizing values – axiomatic and relativistic. An axiomatic approach operates on the premise that certain values are better, more important, and intellectually defensible than others. Values under this tradition are formulated based on argument (e.g., [46,47]) and/or measurement (e.g., [48]), and are typically expert-driven from the field of ethics, philosophy and ecological economics. The relativistic approach, on the other hand, assumes that there are no right or wrong values, only different ones. Abiding by the principle of 'value-neutrality', this tradition is well-accepted by practitioners and applied researchers, who rely on expressed preferences to elicit or monitor public beliefs and conduct survey exercises for policy and management purposes [45].

Another way to organize values is by the distinction of held and assigned values [49]. Held values refer to underlying values or ideals that prioritize modes of conduct or

desirable qualities. Mainly advocated through sociology and psychology, this perspective sees values as fundamental beliefs, which are typically subject to ordering of relative importance (e.g., ranking). On the other hand, assigned values refer to a benefit, worth, or merit that is given to an object, most often assessed through valuation techniques. Here, value is "not a characteristic of the object per se but the importance of which is derived, at least partially, from held values" [45, p. xxv].

The approach taken in this paper to study values in fisheries governance was through developing a set of common value types. Dietz et al. [28] mentions that the Rokeach/Schwartz tradition of conceiving human values, for example, needs an expansion to capture altruism in order to better link with environmental concerns and be more useful for the study of environmentalism. Supported by such ideas that combining different ways of seeing values can be a value-added activity, this study consolidated eight well-established value schemes (i.e., [23,37,46,50-54]) that are judged collectively to reflect the diverse traditions that exist in the value literature. A considerable overlap among the examined value schemes was observed, and these commonalities allowed for the forming of 24 value types, as listed in Table 1. Though not a universal list, it reasonably captures the broad value discourse offering a comprehensive scope in a concise fashion. These 24 value types provide the basis for the search words used to conduct literature scan that identifies the values frequently or seldom discussed in fisheries governance.

A journal article scan using 'ISI Web of Knowledge' as a search engine was conducted for each value type in October 2012 using the search words listed in Table 1 in combination with ("fisheries" OR "fishery") AND ("governance" OR "management").

Owing to the many different linguistic connotations associated with the word "value", a direct scan of the word "value" was deemed less meaningful and thus deliberately omitted.

The results indicated that ecosystem conservation, wealth, knowledge, equality, secure livelihoods, achievement, tradition, and influence are the eight most widely discussed values in fisheries governance research in the decreasing order. This is perhaps not a surprising finding, given the prominence of the topics concerning ecosystem, economic growth, and livelihoods in the general fisheries discourse (e.g., ecosystem-approach to management [55], wealth-based fisheries management [56], and sustainable livelihoods approach [57]). On the other hand, what also becomes evident from the results is the type of values that have been less well-embraced, but potentially important and worthy of greater attention. It is argued, for instance, that spiritual values reified through religious practices and sacred rituals can serve as a driving force in reviving long-neglected traditional ecological knowledge for facilitating sustainable management of fisheries in East Africa [58]. Also, striving for peace can be an enabling factor in developing an integrated management plan that overlays commercial fisheries, tourism activities, claims of indigenous people, and territorial disputes, as demonstrated in the case of the Shiretoko World Natural Heritage area in Japan [59]. In addition to these discrete empirical cases, a conceptual framework centering on social wellbeing has recently emerged which highlights the subjective and psychological aspirations of individuals for enhancing quality of life [60,61]. Such perspective appears to align well with less advanced value types such as self-esteem, freedom, and attachment to place.

Coulthard et al. [61] further argues that when applied to a fishery context these values can provide a basis for poverty reduction and ecosystem conservation in fishing communities.

Further examination enabled categorization of the value types into four broad orientations. The value types in the 'better world' category can be said to hold a worldly orientation, as something that is desired for the world/broader society. As such, promoting ecosystem conservation, advocating equality, or deepening knowledge all carries an altruistic appeal that strives for the common good. Those in the 'good life' category are oriented towards what is desired for an individual's satisfactory, eudaimonic life. Accumulation of wealth, enhancement of spiritual wellbeing, and hedonistic aspirations can be said to closely follow egoistic motives, although it needs not be strictly egoistic at all times. Values in the 'personal virtues' category hold the orientation of desired righteousness of a person. Striving for self-esteem, moderation, or honesty would tend to promote a higher attainment of personal merit. Lastly, 'outward aspirations' signify those values oriented toward desired relationship/quality with outer beings, that is, they represent the so-called social values that guide interactions with fellow humans or objects outside of self.

Table 1 Twenty-four thematic value types that emerged from a review of eight value schemes, followed by the number of articles generated in a literature scan conducted for each value type in the fisheries governance context. The value types are described by the search words and categorized under the four broad value orientations

Type of values	Search words	Number of articles	Broad value orientations

		generated	
(1) Ecosystem conservation	Ecosystem conservation, environmental protection, existence value, intrinsic value	315	Better world (what is desired for the world/broader society)
(2) Appreciation of beauty	Beauty, aesthetic value	29	
(3) Peacefulness	Peaceful, social order	3	
(4) Equality	Equality, equity, social justice, future generation	149	
(5) Freedom	Freedom	45	
(6) Knowledge	Knowledge value, scientific knowledge, ecological knowledge, intelligence	221	
(7) Wealth	Wealth, economic value, utilitarian value	269	'Good' life (what is desired for an individual's satisfactory, eudaimonic, life)
(8) Spiritual wellbeing	Spiritual value, religious value, moral value	2	
(9) Secure livelihoods	Livelihood security, food security	140	
(10) Hedonism	Joy, pleasure, recreational value	30	
(11) Achievement	Achievement	106	
(12) Novelty	Novelty, creativity	11	
(13) Benevolence	Benevolence, compassion	2	Personal virtues (desired virtuous inner quality of a person
(14) Moderation	Moderation, self-control	8	
(15) Self-esteem	Self-esteem, self-respect	1	
(16) Honesty	Honesty	0	
(17) Politeness	Polite	0	
(18) Attachment to place	Attachment to place, sense of place, place value, heritage value	6	Outward aspirations (desired relationship with
(19) Social cohesion	Social cohesion, social capital, community value, sense of belonging	37	
(20) Influence	Social power	95	

(21) Social recognition	Social recognition, public image	35	human/object outside of self)
(22) Tradition	Tradition, cultural sustainability, cultural value	102	
(23) Conformity	Conformity, obedience	21	
(24) Affection	Humanistic love	0	

3.2. Images

Images have been associated with a wide array of conceptual backgrounds and framed in different terminologies, such as mental model [62], cognitive map [63], cognitive orientation [41], and virtual reality [64]. The traditions of anthropology and cognitive science have emphasized their linkages to aspects such as culture and internal information processing, respectively. Focusing on the fisheries governance context, this paper approaches images from the angle of policy decision-making and implementation. In other words, it aims to understand how images of governance systems held by stakeholders influence policy initiation, execution and evaluation, and in turn how the images are affected by the very process. This entry point has been supported by an argument such as "individual cognitions or mental models of resources are not irrelevant to environmental decision making, as assumed by content-free framing in terms of utilities" [62, p. 771].

An analysis of the images followed a more qualitative and interpretive approach than those aimed for values and principles. This strategy is grounded in the discursive and contextual nature of image [65]. Following a journal article scan using 'ISI Web of

Knowledge' in October 2012 based on the criteria of ("image" OR mental model" OR "cognitive map" OR "virtual reality") AND ("fisheries" OR "fishery") AND ("governance" OR "management"), an in-depth review of the returned articles was conducted to grasp the ways in which images have been discussed in fisheries. The result was organized into three main types of image-based arguments, accompanied by examples of supporting ideas, as listed in Table 2.

One of the most prominent uses of images and associated concepts in fisheries research has been to expose faulty, or at least worrisome, conceptions of various aspects relating to fisheries reality. The assertion is that these images, such as the sea as a 'frontier' [66], fishing as 'mining' [67], and the ecosystem as a linear, stable 'pyramid' [68,69], have misled governance effort into the current demise of resource health. The cognitive bias described by "Pauly's ratchet" or "shifting baseline," which creates a short-term illusion of resource abundance [70], is also argued to bring serious consequences. While real practices and experience shape one's images, the reverse is also true because people are driven by their ideas held in their images. Because people tend to see the world in the way the images are drawn, and then act in ways that make the world conform to the images, images have a predictive quality [41,64]. In other words, they do not just describe what is happening but prescribe what the world ought to be. This line of argument maintains that fixing fisheries problems requires a critical review of the use of images in fisheries discourse and likely a complete overhaul of certain images, as a consequence.

Explicit recognition of the similarities and differences in the images of various stakeholder groups is another theme discussed in the literature. It posits that the general public or different sectors of the society may have certain images of the fisheries.

According to Downs and Stea [63], group images arise due to a combination of three factors. First, a set of socio-cultural environment contains many regular and recurrent features common to all members of a group. This is perhaps why connection to the coast and tie to the sea are common images in fisheries. Second, members also share similar information-processing capabilities and strategies, that is, the range of fishers' knowledge and expertise may not be too disparate from each other. Thirdly, behavior patterns may contain similar origins, destinations and frequencies. In other words, fishers working in the same environment may operate with the similar modus operandi about fishing practices. As such, when images are shared by a group of people, they serve as the basic bond of an organization, culture, or even society [42].

While images are capable of creating important insights, they are also incomplete, biased and potentially misleading [40]. This may thus result in different tiers of people possessing disparate images about fisheries. For example, the images held by managers and scientists may deviate a great deal from those held by fishers and community members [65,71,72]. In governance context, this poses a potential danger as ill-matched images could lead to misunderstanding and confrontation, bogging down management efforts and generating public outcry. This does not imply that there must be one unifying image, however. Jentoft et al. [65, p. 195] advises that "stakeholders need not necessarily agree on images, but they must at least be aware of which images are present, how they vary or concur, and they must understand where such images come from and what prospects they hold". Smith [71, p. 209] further asserts that "…making explicit these underlying cognitive modes would provide more "common ground" for addressing management problems".

The third type of argument in fisheries casts a caution against discursive power and dominance of a particular image. Kooiman [36, p. 29] argues that "anyone involved in governing, in whatever capacity or authority, forms images about what he or she is governing". Similarly, Jentoft et al. [73, p. 1315] explains that "governing is inconceivable without the formation of images, and that they are needed for the sake of understanding, communication and action". Such statements affirm that images are omnipresent and integral in the act of governing. Images thus play a persuasive and rhetorical role in steering the course of governance, shaping how stakeholders view issues, problems and other involved parties. By the same token, failure to control images can lead to loss of control over policy itself, opening up for a change in regimes [74]. It is in the interest of governors, then, to find or create compelling metaphorical images that can help clarify or favorably represent their vision of governance and persuade those being governed [40]. A powerful example in the history of fisheries is Garrett Hardin's 'tragedy of the commons' image based on the premise that "freedom in a commons brings ruin to all" [75], which became the root metaphor for an enclosure of the open sea, leading eventually to the empowerment of coastal states and the declaration of the Exclusive Economic Zone [76]. Furthermore, images can be created by a dominant societal discourse which constructs a version of reality that is widely perceived as true. For instance, St. Martin [77] warns that the neoliberal logic tends to paint fishing economies as pre-capitalist, a barrier to capital accumulation, and consequently dictates fishers to become capitalist subjects through a blanket promotion of industrialization and commercialization. Such a dominant discourse can create forceful images about fisheries which may deny other alternative fishing forms such as subsistence, spiritual, and

community-based fishery. As such, how images can become hegemonic, and by what means, is an area of governance analysis that needs to be continuously explored [27].

Table 2 Three types of arguments concerning image emerged in fisheries governance literature and examples of supporting ideas

Argument	Ideas	Reference
Faulty and worrisome images of ecosystems and fishers	The idea of the "frontier" being at the core of American fisheries policy making it difficult to undertake ecosystem management	Bromley [66]
	The frame used in management being similar to that of "mining", seen as a non-renewable resource	McCay et al. [67]
	A particular image of fish and fishermen - of nature and society - forged by strong bonds between science and the state, which is problematic for accommodating the complexities of real world fisheries	Holm [68]
	The image of humans at the top of the trophic pyramid no longer applicable for ecosystem-based approach	Bundy et al. [69]
	Pauly's ratchet or shifting baseline	Pitcher [70]
Similarity and disparity in the views of various stakeholders	Governability hinging upon image diversity and compatibility	Jentoft et al. [65]
	Different cognitive models exist, and play an important role in the way people think about the world, affect decision-making	Smith [71]
	Differences in the views of scientists, resource managers, and watermen on how best to manage and protect a local fishery	Paolisso [72]
Discursive power and dominance of images	The 'tragedy of the commons', described as undoubtedly the most influential image governing fisheries, leading to widespread policy prescriptions in terms of limited access programs, quota systems and rights allocations	Jentoft et al. [73]
	Fishing economies represented as pre-capitalist and	St. Martin

	as a barrier to capital accumulation, and fishers called by neoliberal discourse to become capitalist subjects	[77]

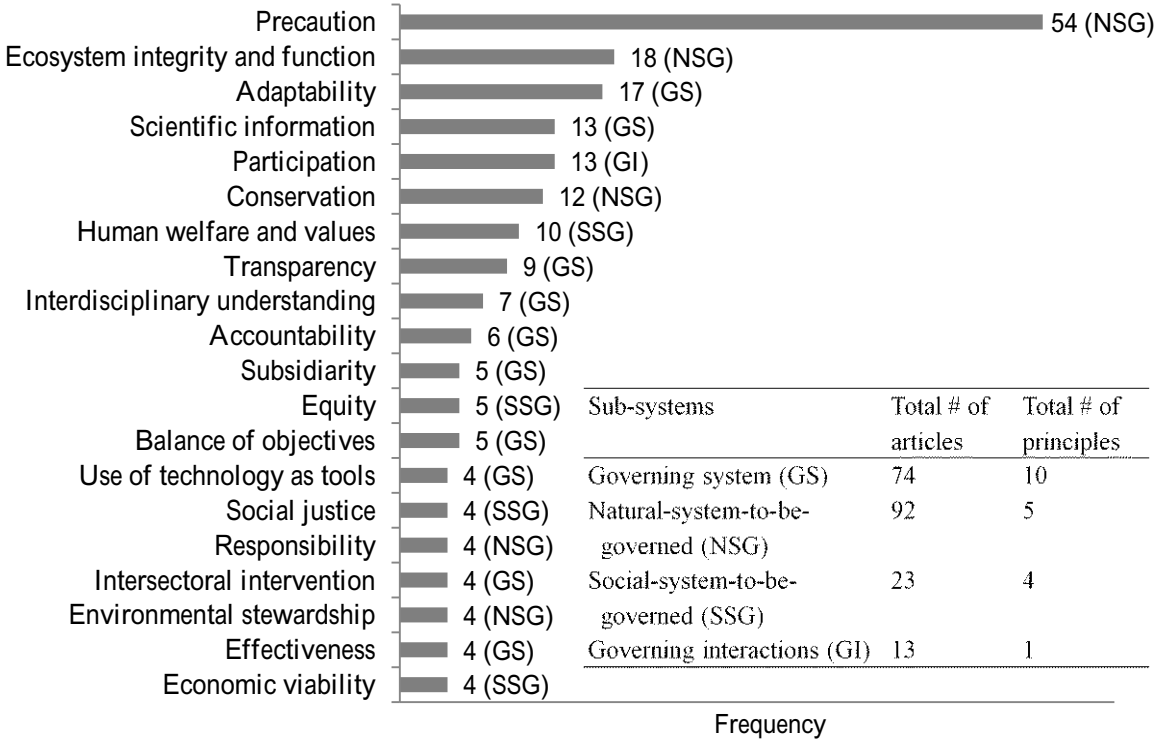
3.3. Principles

Principles are likely the most well-articulated concept of the three. There is already an array of national and international guidelines concerning natural resource governance. The World Bank [78], the United Nations Development Programme [79], and the European Commission [80], as well as Ostrom's design principles for common property resource institutions [81] all provide normative guidance. The fisheries sector also sees a collection of overarching standards, most notably the Code of Conduct for Responsible Fisheries [82] and the International Guidelines for Securing Sustainable Small-scale Fisheries recently launched by the FAO (Food and Agriculture Organization of the United Nations) [83].

As with the review of values and images, a journal article scan using 'ISI Web of Knowledge' was conducted in October 2012 to identify some of the most frequently discussed governance principles that research attention has been drawn to in fisheries over the years. This returned 1175 journal articles containing ("principle" OR "guideline") AND ("fisheries" OR "fishery") AND ("governance" OR "management") in the article title, abstract, or keywords. Further, in this study a general governance principle was framed as a normative concept that stipulates how fisheries should be guided by (i.e., a basis on which decisions should be made). Applying this criterion

resulted in 141 articles, containing 88 unique varieties of principles akin to the idea of principle as 'how what needs to be done ought to be done,' proposed in the interactive governance.

Of these, 20 are most frequently referred to and discussed in fisheries, meaning they have been mentioned by at least four articles in a non-trivial manner, either with their concepts centrally featured or the cause and effect of their application fully elaborated (Fig. 1). The collection does not purport to be an exhaustive list, but an illustration of a major trend in the discourse about governance principles. Precaution receives the most attention by far, followed by principles relating to ecosystem integrity and function, adaptability, use of scientific information, participation, conservation, and human welfare. As shown in Fig. 1, these principles cover the entire range of sub-systems central to the interactive governance, i.e., the natural and social systems-to-be-governed, the governing system and the governing interactions. The basis for associating principles with governance sub-systems is by determining which system is likely to benefit most from the service of each principle. For example, the natural system would arguably be the most direct beneficiary of the activation of precautionary principle. Likewise, transparency or the use of scientific information would act as relevant guidelines for how governing should be carried out. It is notable that more emphasis has been given to the principles pertaining to the governing system and the natural system-to-be-governed than the other two sub-systems. In terms of the number of different kinds of principles, again the focus has been on the principles that inform and guide the functioning of the governing system and the natural system-to-be-governed.



Sub-systems	Total # of articles	Total # of principles
Governing system (GS)	74	10
Natural-system-to-be-governed (NSG)	92	5
Social-system-to-be-governed (SSG)	23	4
Governing interactions (GI)	13	1

Fig. 1. Ordering of 20 most frequently referred to and discussed governance principles in fisheries identified by this review (the numbers in italics show the frequency of articles featuring each principle). The total numbers of articles featuring the principles that belong to each sub-system and the breakdown of the 20 principles according the sub-system classification are also displayed

The less frequently mentioned principles (the other 68 found in articles) cover a wide range, including legitimacy, adjacency, user-pays, no-net-loss, relative stability, and limits/sufficiency. While receiving less attention, they are arguably crucial in many specific governance situations, hence likely not any less important. For instance, the principle of legitimacy is likely to contribute to rule compliance by invoking normative obligations of fishers [84]. This principle is expected to improve governing interactions,

and becomes a highly requisite concept in co-management where resource users themselves become part of the governing system, as elaborated by Jentoft [85]. Limit or sufficiency is another principle that has perhaps not gained wide currency but argued by many to be worthy of critical consideration. From the natural system perspective, it can be expressed as willfully limiting fishing pressure, for instance, on those larger predatory species with low productivity rates, given their important role in top-down control of ecological processes [86]. Similarly, in the social domain, it is about being satisfied with an attainment of a modest and reasonable level of governing goals [87]. Instead of striving for the absolute maximum, learning to live with a sufficient amount is suggested to be an intuitively sensible, and even rational, guideline. This can underpin personal endeavors as well as organized social-economic activities, as Monhegen lobster fishery in the state of Maine has demonstrated through self-imposed seasonal closures and limited entry [88].

4. Discussion

Review of the values, images, and principles point to two main areas of reflection in their roles and potential for improving fisheries governance. First, it has shown that some meta-level elements have been topics of active discussion and promotion while there are others which have not been given equal consideration. As observed earlier, the current study found that fisheries work so far has been making minimal connections to the value types in the 'personal virtues' category. Yet, striving for personal values could profoundly influence governance stakeholders' leanings towards their decisions and actions. Certain

governance challenges such as corruption may in part spring from governors' lack of regard towards benevolence, honesty, or politeness value types, for instance. By the same token, it is plausible that any combination of values may be borne by governing actors as a source of inspiration. While a well-publicized 'core' set of values may take precedence in many instances, one must recognize that other value types could be deemed more important by certain segments of stakeholders, whether powerful leaders or minority groups. How to keep abreast of a wide range of values, understand how they may align more to certain stakeholder groups, and re-balance them in governance consideration whenever necessary are important research questions. The same logic holds for images which at times require re-examination and adjustment to provide checks and balances for the hegemonic dominance of influential governing images. Similarly, a set of new principles can become promoted and in need of wider subscription for governance innovation. It has been cautioned, however, that updating or bringing forward new principles in fisheries is "a Herculean task that lies beyond the competence of bureaucrats and scientists and requires the mobilization of considerable social forces" [89, p. 782].

Secondly, generally underpinning the cognitive and normative internal decision- and action-generating process, values, images, and principles have distinct roles to play and occupy different thematic niches in one's mindset, i.e., (1) general value priorities of an individual, (2) his or her images about the world/fishery, and (3) governance principles he/she subscribes to. From the governance perspective, what is most meaningful may not be the separate accounts of the values, images and principles that people hold, but how they work as a whole to influence governance processes and outcomes. Thus, it is not one or the others, but likely a melding of the three that would

produce the most holistic and relevant insights. Since different stakeholder groups may be imbued with a different meta-level elements, their interests and positions are likely varied, depending also on how these elements interplay. For instance, if economic wealth and individual freedom are prioritized values, when combined with an image of the fishery that resembles 'race to fish' or 'too many boats chasing too few fish,' this mix could give rise to efficiency, exclusivity, and decentralization as their guiding principles. A group of stakeholders (e.g., government bureaucrats) in a certain setting with this set of value, image, principle arrangement would likely orient their policy decisions towards the privatization of the commons with an emphasis on market- and incentive-based approaches such as individual transferable quotas and catch shares [90,91]. In another case, if social and altruistic values such as equality, social cohesion, and attachment to place are prioritized instead and merged with a different set of images that are consonant with 'community solidarity' or 'cooperative model' [77,92,93], fisheries governance might come to be organized around principles such as cooperation, equity, and adjacency. A group of stakeholders (e.g., nongovernmental organizations) who adhere to this blend of values, images, and principles would tend to advocate community-based approaches to fisheries management as a result. In a similar manner, it may also be possible to characterize the underlying values, images, and principles of the proponents involved in large-scale and small-scale fisheries to help better make sense of the large divide that seems to exist in their assumptions and operational traits. Recognizing the similarity and disparity in the meta-level elements as well as the way they interplay, could, therefore, provide an alternate way of deepening an understanding of stakeholder differences and reducing the complexity of fisheries governance.

Given their potential to influence the course of policy decisions, one of the future directions for empirical research could be ascertaining to what extent these meta-level governance elements are directly related to, and thus can be used to explain, the occurrence of real-world practices, and what effect they produce towards the initiation and implementation of governance policies. Already there are studies that have begun to explore these aspects. In trying to detect a relationship between the use of illegal fishing gear and a bearing of a principle on conservation in a Lake Malawi fishery, Song and Chuenpagdee [94] found that fishers who engaged in illegal practices were most frequently found having relatively low levels of awareness about conservation as well as inclination to promote it. Contrastingly, fishers who held elevated conservation principle were mostly associated with owning or operating legal gears. In another example, Agrawal [95] draws on the case in India in which initially forced or incentive-based participation in environmental practices generates new conceptions of what constitutes people's mindset and lead to formation of new environmentally caring subjectivities. The study demonstrated that the quality and the degree of involvement in governance initiatives by stakeholder groups could affect the shaping of their meta-level elements and vice versa. Taken together, these studies support the view that values, images, and principles are relevant components in the governing of people's actions, and that their examination provides another pathway towards facilitating governance initiatives.

Ultimately, the values, images, and principles that stakeholders hold would in part determine the capacity to govern a fisheries system. Incommensurable values, or conflicting and incompatible images and principles not only would make wickedness of fisheries governance to persist but also contribute to lower governability. Stakeholders

may not agree on issues, for instance. With each group promoting their own image of 'what is desirable' or 'how things ought to be', what one sees as a favorable decision could be a disadvantage for others. As a result, governance initiatives can be marred with resistance or indifference rendering the system less governable. Interactive governance theory posits that improving stakeholder interactions could enhance governability via democratic participation and wide representation, for example. But the contrary can also hold true, for malicious governing interactions, in the case of dictatorship, may deceivingly inflate governability by moderating people's demands through oppression and censorship. This is why the quality of interactions is important and should be carefully assessed [16]. A critical look at the meta-level governance elements can be expected to help uncover ethical reasoning as well as power relations that tend to dominate interactions among governance actors. For example, questions need to be raised about the degree to which local resource users accept and are ready to follow state rules, visions, and policy messages, or how non-governmental organizations represented by their staff and activities become a vehicle that serves to extend the political rationalities of the state [96]. Such an investigation opens an avenue for bringing in the analytics of 'governmentality,' submitted by Foucault [97], into the discussion. "As indicated by the semantic linking of the words governing and mentality, governmentality…is a field of enquiry that problematises the collective and often taken-for-granted systems of thought that make governing strategies appear natural and given at certain times in history" [98, p. 8]. The comparison of values, images, and principles and ensuing examination of the flow and unevenness of power may reveal a sense of coercion, marginalization, or contestation implicated in governance process. One's values may be co-opted or silenced via

interactions with other stakeholders, which would invariably affect the governability of the system. Bringing the analytics of governmentality into the overall governability of a fisheries system presents a prospective theoretical inquiry that can build upon the articulation of the meta-level governance elements.

5. Conclusion

This paper examined values, images, and principles in the context of fisheries governance. Exploring their diversity through a review of journal articles, it was shown that a wide array of these meta-level elements have been discussed in the literature, but with a varying degree of attention. Values that promote ecosystem conservation, wealth, knowledge, equality, and secure livelihoods appear to be more frequently featured. Images that worrisomely liken fishery to an extractive and competitive resource frontier have been sharply pointed out. Further, principles that aim to guide the operation of natural and governing systems, such as precaution and adaptability emerged as the prevailing topics of debate. While their eminence signifies a major pattern in the way a fisheries discourse has been conceived and aspired, the review also revealed those that have been seldom discussed, but nevertheless, deemed important by various groups of fishery stakeholders. Being aware of the diversity in these elements as well as the potential differences in the way various stakeholders embrace them would offer an alternate entry point to approaching governance for resolving fisheries problems, especially those with a high degree of wickedness.

Ensuing research could focus on learning about, or developing, mechanisms for reconciling and re-balancing the wide spectrum of values, images, and principles. This will be important not to lose sight of other noble elements and help bring holism and open-mindedness into stakeholder interactions. Values, images and principles are difficult to discern due to their inherent nature and their subtleness. However, a survey tradition in the social sciences that employs direct ranking or rating of a set of values offers one possible method of eliciting and comparing stakeholder values [23,99]. Principles could take a similar survey approach that utilizes choice inquiries, for example, based on paired comparisons [94]. Because these methods offer numerically-based results, they would likely need to be corroborated by qualitative information in order to capture nuanced context-driven details and derive proper meanings. Understanding images could be led by qualitative techniques to permit exploration of rich and multi-faceted imaginations but also aided by modeling or mapping exercises to attain a mixed method design [29,65].

By using methodological approaches such as these with necessary modifications, elucidating values, images, and principles' linkage and effect on governance responses, decisions and actions, and vice versa, presents an area of future research that can strengthen their policy relevance. For example, questions such as "would a marine protected area succeed in this region given the existing set of values, images, and principles of involved stakeholders?" or "would the reorientation of policies aimed at small-scale fisheries require a reconceptualization of current images, values, and governance principles?" pose a useful inquiry. Finally, the articulation of the meta-level elements offers potential in facilitating an analysis of power dynamics between stakeholder groups. One could raise a question as to "to what extent are the images,

values and principles of some stakeholders hegemonic, thus suppressing those of others?" Here, how a related concept of governmentality by Foucault can be drawn in to help facilitate this inquiry represents a prospective research direction.

Understanding values, images, and principles may help broaden the discussion, raise new research questions, and create an opportunity for stakeholders to heighten appreciation of diversity and compatibility among each other. At the same time, an explicit expression of these underlying elements could bring greater transparency, accountability and more equitable exercise of power. A more systematic and holistic understanding of values, images, and principles is thus warranted to enhance governability and remains an important area for empirical research.

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Chapter 3 Institutional thinking in fisheries governance: broadening perspectives

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Abstract

Institutional thinking has long been central to fisheries governance. Defined in its most generic form as structural constraints that provide regularities, reduce uncertainties and shape people's interactions, institutions create an enabling or controlling environment for specific governing actions and decisions to take place. Over the years, fisheries governance has relied heavily on the creation and evolution of institutions, especially those related to property rights and access rules. A growing body of literature is calling, however, for a broader notion of institutions that can deal with the social, cultural and

historical aspects of fisheries, including meanings and values, trust, and norms. This review highlights recent changes and emerging trends, relevant to addressing current challenges in fisheries governance and promoting sustainability.

Introduction

Institution is a wide-ranging concept, differently conceived and applied to diverging circumstances and topical fields. Many meanings and usage of the concept of institution have been well-noted by scholars of various academic disciplines interested in deciphering and classifying its details (see [1,2]). Jentoft [3] provided a critical view of institutions in fisheries, suggesting the key roles that institutional design and dynamics play in the effectiveness of fisheries management. He called for clarification about what institutions mean, what they do, and how they develop over time. Rather than solely relying on rational choice theory which has dominated institutional thinking in fisheries, Jentoft followed Scott's definition of institutions as consisting of 'cognitive, normative, and regulative' structures and activities that provide stability and meaning to social behavior [1], suggesting that a broader concept of institutions is required. This proposition aligns well with the increasing consensus that today's challenges in fisheries governance are linked in part to institutional failure [4,5], and with the recognition that these challenges are 'wicked' problems [6**]. Supported by a growing body of literature in recent years, we argue that the purview of institution should be extended to include regulative, normative, and cultural-cognitive elements in order to more adequately inform the design and maintenance of institutional arrangements (Figure 1). This, according to

Kooiman [7] is needed to facilitate legitimate and effective governance and address current global fisheries problems.

We begin by introducing various strands of theoretical approaches, whose diversity and commonality has given rise to Scott's conception of institution. This is followed by a brief summary of the four main types of institutional arrangements much discussed in fisheries policy making in the past decades. Governance challenges brought about by these existing arrangements are also presented. In light of these, we emphasize key emerging institutional thinking grounded in a more inclusive notion of institution, which we consider to have major influences in addressing concerns in global fisheries governance and sustainability.

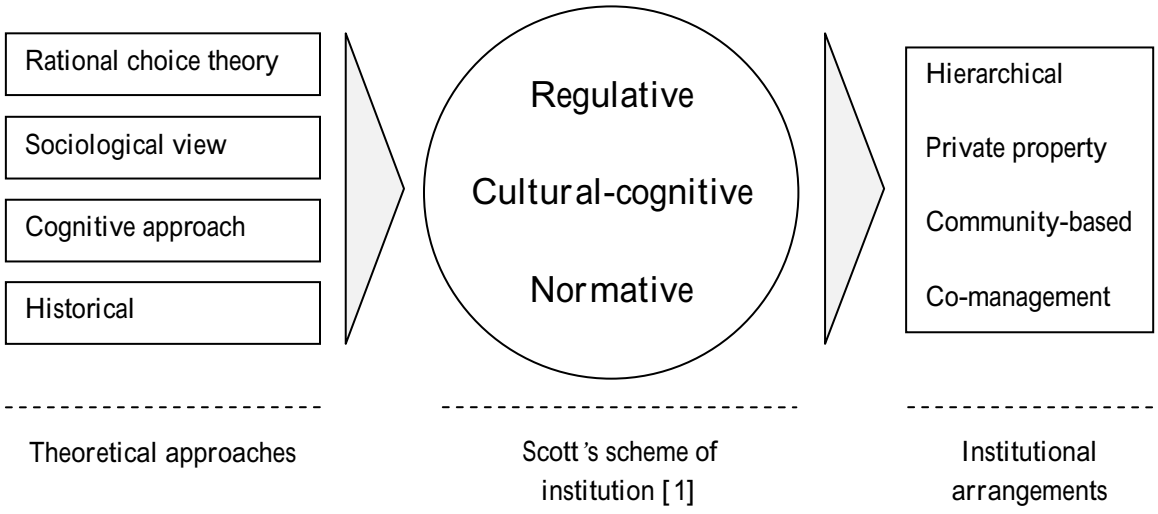

Figure 1 Diagrammatic representation of institutional thinking in fisheries governance centering on a broadened scheme proposed by Scott of what institutions comprise

Institutional thinking in fisheries

Theoretical approaches

Various facets of institutional thinking have garnered much attention in fisheries research and policy making. The most well-known account is the common-property analysis of Ostrom and her colleagues [8-10], which theorizes and tests institutional ideas for solving collective action problems such as the "tragedy of the commons" in the context of fisheries (and other common pool resources) [11]. At the core of their inquiry lies a question about why the rationality of individual fishers leads to a collective irrationality in the form of resource depletion, when resource sustainability would be in their long-term self-interest. As a version of rational choice approaches to institutions, it assumes that economic calculations drive individual behavior, and the rules that prescribe and permit behavior are thus conceived as the institutions that help reconcile individual and collective rationality. This line of thinking has led to the implementation of highly influential fisheries management schemes that include incentives, access regimes, and property rights (see for example [12–18]). Other institutional studies take in a more sociological view, such as the 'embeddedness' concept of Granovetter [19], and organizational theory of Meyer and Rowan [20] and DiMaggio and Powell [21], which highlight some overlooked aspects of institution such as trust, reciprocity, ideology, and organizational values (see for example [22,23]). Sharing a similar theoretical foundation, the 'normative institutionalism' of March and Olsen [24] proposes institutions as a collection of values and rules that are normative in the way in which they impact

institutional members. Here, individuals operate under the 'logic of appropriateness', that is, individual behavior is motivated by the dominant institutional values, and would remain within their parameters [2]. Other fisheries scholars have a more cognitive approach by defining institutions as structured and persisting patterns of behavior as they mediate access to, and control over, natural resources (see for example [25,26,27*]). This way of theorizing institutions would tend to focus on cultural habits, customs and social taboos, for instance, as 'taken-for-granted' sources of constraining fisher behavior. In another case, those who are conscious of historical institutionalism are more likely to take a macro-perspective, tracing the evolution of an institutional form and asking how it shapes fisher interaction with one another and with nature (see for example [28,29,30*]).

Institutional arrangements

In fisheries, four main types of institutional arrangements are much discussed, commonly called hierarchical, private property, community-based and co-management, respectively. While their conceptual characteristics can be discerned from each other with relative ease, there is often an overlap and blurred distinction between them. The hierarchical, state-controlled system has been a long-standing feature in natural resource management including fisheries. Supported by the idea that individual self-interest inevitably drives resources to depletion when left alone in an open-access regime, and propelled by the idea of territoriality of coastal seas under the Law of the Sea, fisheries were put under the control of the state and many government-coordinated fisheries institutions were created around the world in the mid-twentieth century [22,31,32]. This form of government-centered institution has suffered numerous instances of failures, however, stemming from

the 'principal agent problem,' i.e. the behavior of politicians and government officials who serve their own interests more than those of the public [4,33]. This problem may occur through agents exploiting information asymmetries, entering into corrupt transactions, or engaging in the promotion of special interests at the cost to the public. Other reasons for failure are a strong penchant for regulatory uniformity giving little regard to variations in the local ecology [34], poor interest and understanding of social organization [35], introduction of perverse subsidies [36], and concentration of power in the hands of local elites [37,38]. Blind faith and uncritical reliance in science and technical progress can also cause government efforts to break down and introduce errors [34,39,40]. Failed attempts to manage the Newfoundland cod fisheries are a clear example of a hierarchical institutional failure, as illustrated by Bavington [31]. Oran Young [41] has extended this idea of state management of natural resources to study inter-state institutional arrangements, alternately called as international regimes, to tackle transboundary natural resource issues and mull over the effectiveness of supra-national structures.

Driven by the similar logic as the state control model, private property institutions were introduced to provide fishers with an assurance that benefits from their investments will accrue to them, accompanied by secure entitlements [42]. The main thrust of recent debate about property right schemes has been on Individual Transferable Quotas (ITQs). According to Chu [43], eighteen countries are currently using ITQs to manage their fisheries, but not all of them are successful. Based on the anecdotal analysis by Hilborn et al. [44], top-down, state control with poor ability for monitoring and implementing

regulations is one of the reasons for unsuccessful ITQ systems, such as those in New England groundfish and Argentinian hake fisheries. Success stories experienced in New Zealand rock lobster, Canadian sablefish, and Canadian and US Pacific halibut fisheries can be attributed to factors such as strong local cooperatives, effective government control and appropriate incentives that encourage behavior consistent with conservation value. Scholars like Bromley [45] and Pinkerton and Edwards [46] warn, however, against indiscriminate promotion of ITQs, noting that they do not always lead to economic benefits. Failure can still occur, for instance, with uncertainty about resource availability, long time horizons, absence of efficient markets for certain resources [4], as well as the many unexpected and unanticipated outcomes of management processes and institutional design [30*]. The spatial dimension of private property institution is also being considered. Holland [47] advocates the establishment of spatially-designated property rights and zoning regulations that will attenuate the problems of ITQs and territorial user rights in fisheries (TURFs). Opposing views are, however, highly critical of privatization and spatial enclosure through raising concerns with respect to equity and erosion of community identities [48,49].

On the other end of the spectrum is community-based, local-level fisheries management. This institutional arrangement can be further characterized as taking two forms. A traditionally-oriented type has existed for a long time, and a few can still be found in various pockets of the world (see for example [50,51]). In these instances, a long-term tradition based on customary ways of managing fisheries is intricately linked to, and inseparable from, community functioning. This self-governing institution has been much

touted as an alternate solution to the commons dilemma [10,52]. In recent decades, there has been a renewed interest in establishing community-based fisheries institutions, especially in places where livelihood needs are more directly connected to local marine resources [53,54]. This latter emergence differs from the earlier one in that it is largely driven by the contemporary donor/policy support of government and non-governmental organizations [55] and that it is being promoted, not only in developing countries but also in the so-called First World context [49,56]. A study on the nascent involvement of coastal communities in fisheries management in countries surrounding the Gulf of Thailand reveals key governmental needs for this form of arrangement [57]. The emerging economy countries like Vietnam and Cambodia need significant legislation to control fisheries operations and greater clarity about the role of communities, whereas in Thailand, greater support by the government to promote local-level enforcement and monitoring activities is required. Furthermore, current global policies, e.g. subsidies [58], trades [59], and certification schemes [60], have increased the connectivity between community-based institutions and external governance structures. Critical to proper functioning of this type of institutional arrangement, whether customary or policy-driven, are questions of how they can adapt to broadening influences and how they can use the integration into a wider world to their advantage without losing their community-based, grass-root integrity.

Another type of institutional arrangement commonly found in fisheries is co-management. Considered a hybrid form, it typically manifests as a sharing of responsibility between government and local-level fishery organization(s). Originally

articulated by Jentoft [61] and Pinkerton [62], it has since been developed into other related forms such as adaptive co-management, which is an extension of adaptive management into the social domain. This form of institutions draws explicit attention to the learning (experiential and experimental) and collaboration (vertical and horizontal) functions and aims to contribute to trust building and the formation of social networks [63,64]. Though typically seen as democratic, legitimate, and cost-effective, hence an attractive type of institutional arrangement, there still remain tensions to be addressed. Critiques of co-management contend that the problem of free-riding would persist in co-management because the interests of fishers and their social relations would be unaffected and guided by individual utility, which favors abandoning this cooperative mode of governance [23]. Proponents, however, counter that once one shifts away from the rational choice frame of mind, co-management can represent a markedly different social system where cultural and social qualities of human communities are taken seriously, and become more than simply a reconfiguration of incentive structure or a set of rules [23,65]. In a similar vein, Chuenpagdee and Jentoft [28] highlight the crucial role of path-dependency and human cognitive elements such as trust and community ties in affecting the success of co-management implementation. Such nuanced analysis of socio-cultural constructs of leadership and social capital stands in stark contrast to the still widely-held reductionist view of co-management (see for example [66]), which relies on a positivistic science of politics that seeks predictive explanations but fails to fully appreciate the complexity, contingency and subjective meanings embedded in governance.

Emerging trends in fisheries institutions

The continued challenges in fisheries governance call for, among other things, innovation in institutional thinking. The dominating institutional arrangements in fisheries have resulted in an emphasis on formal and informal rules, with attention drawn to access regimes and fishing rights, whether state-driven and private property are concerned. Sometimes even the community-based management utilizing tenure and taboos is unduly generalized to only speak about local fishing restrictions guarding against the "tragedy of the commons" while missing out on other rich social and cultural meanings and functions such as prestige and status [27*]. Institutions can, however, embody more than just 'the rules of the game' [67]. Arguing against rational choice as a sweeping basis for institutional design, Jentoft [3] suggests that the concept of institutions be broadened to include the social and cultural underpinnings of the management systems and to capture the social processes and governance mechanisms that are essential to fisheries management.

By weaving together the various strands of institutional theories found in economics, political science and sociology, Scott [1] broadens the definition of institution to comprise regulative, normative and cultural-cognitive "pillars". The normative pillar involves defining goals and objectives and also designating appropriate ways to pursue them through activation of values and norms. It appeals to social obligation and conformity as opposed to coercion of the regulative rule. This perspective is closely related to the normative institutionalism of March and Olsen [24]. The cultural-cognitive pillar

emphasizes the extent to which behavior is informed and constrained by the ways in which knowledge is constructed and codified. It is about the creation of shared knowledge and belief systems rather than the production of rules and norms (see [68]). Under this view, socially constructed models, shared assumptions, and common beliefs, through the use of symbols such as signs and gestures, and one's internal images that provide a way of seeing, underlie all decisions and choices.

Several authors have drawn from this wider conception of institution (see for example [69*,70**,71*,72-75]. Notably, De la Torre-Castro and Lindstrom [70**] argue for a "broad institutional approach" that recognizes the complexity and multifaceted nature of institutions, including issues around trust and relationship. In their view, a vast majority of efforts in fisheries governance have focused on rules and economic incentives, while very few have included norms, and even less cultural-cognitive elements. Regulations, despite their importance, offer a limited scope for institutions, which may lead to a perspective that is biased and partial if they are not backed by norms and cultural-cognitive institutions. More succinctly, Caballero Miguez et al. [72, p. 627] submits that "it is quite clear that institutional approach in studying fishery resources can clearly not be limited to issues of property rights." Coulthard [71*, p. 408] echoes this view by stating that "the meanings of the Padu system (a customary marine tenure institution in South Asia) therefore reach beyond property rights and fishing access…" It becomes evident from these studies that community norms, trust relations, values and beliefs, historical factors, and social and cultural meanings, as well as community organization, form an essential underpinning of any fisheries institution, in addition to the codified or

informal rule system. What is perhaps more remarkable is that several of these studies are unequivocally situated in the theoretical framework of Ostrom and Northian sense of institution, with due attention to property rights, rules, and regulations for the governance of common pool resources [29,69,74]. Yet, they explicitly appeal to extend from the traditional focus on the regulative aspect. For instance, Tang and Tang [74, p. 103] emphasize cultural-cognitive elements such as beliefs and rituals by contending that:

> Among the indigenous communities that are successful in conservation, most have developed elaborate institutional rules for defining resource boundaries, user rights, resource allocation rules, monitoring arrangements, conflict resolution mechanisms, and more (Ostrom 2005). These institutional rules are supported not just by knowledge of the local environment, but also by deep-rooted social values and belief systems passed down through generations (Klooster 2000). In some aboriginal belief systems, natural resources are considered as gifts from gods, and deserve care and respect from humans. In some cases, routine social rituals may have evolved for other purposes, but have contributed to maintaining an effective resource conservation regime (Fowler 2003).

Conclusion

In this review, the four types of institutional arrangements most commonly featured and widely debated in fisheries are presented to demonstrate how each of them comes with particular strengths that make them suitable for certain circumstances. There are also

weak points that make them subject to failures. A critical look at these institutions reveals that co-management seems to have been more receptive towards other theoretical possibilities, which prioritize harmonistic relationships and mutual coordination. The state-driven, private property and community-level fisheries institutional types, on the other hand, have been much analyzed in relation to common property theory, which shares many assumptions with the rational choice approach. However, hierarchical and private property arrangements need not be exclusively regulative-driven, only to be concerned with incentives and sanctions for individuals. There are social and cultural mechanisms at work through individuals' membership in institutions such that same people would make different choices depending upon the nature of the institution within which they were operating at the time [2]. As a growing number of scholars have noted, we leave open the possibility of such rules-heavy arrangements to be also affected by shared values and meanings. Thus, all four institutional arrangements can benefit from widening their institutional perspectives to examine Scott's three pillars of institutions and their interactions. We argue especially that the cultural-cognitive aspect of institutions holds much untapped explanatory power for analyzing how institutions shape fisher interactions, helping to reveal what has largely been 'taken for granted' and overlooked in mainstream fisheries research. As evident by the emerging thinking about institutions, broadening the concept helps enhance our understanding of the ever complex and unpredictable fisheries systems and secures that appropriate institutional arrangements are in place for promoting sustainability and for improving fisheries governance.

Acknowledgements

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Chapter 4 Eliciting values and principles of fisheries stakeholders in South Korea: a methodological exploration

Target journal: Society & Natural Resources

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Abstract

A rising eminence of governance concept in natural resource policy has meant widening and more meaningful stakeholder participation in decision-making. Yet, it may also intensify complexity in resource planning and practice as more diverse values and principles are represented. We develop a survey-based method to elicit and understand stakeholder values and principles in an effort to help highlight their roles in shaping natural resource governance. This experimental design, called 'P+ sort' to recognize its methodological foundation on both pile sort and Q sort methods, utilizes a semi-structured sorting procedure with verbal questions to capture both quantitative and qualitative data as well as to increase simplicity and user-approachability. An empirical testing of the P+ sort was conducted in South Korean fisheries, which are undergoing a major governance reform. Results show promising utilities of P+ sort for identifying value priorities and the salient principles of stakeholder groups, examining the convergence as well as notable differences in these elements, and providing policy-relevant input into the natural resource governance process.

Keywords: fisheries resources; interactive governance; principles; P+ sorting method; stakeholder interaction; value elicitation; values

Introduction

Meaningful involvement of multiple stakeholder groups in various aspects of governance, especially those that are politically and economically marginalized, is considered essential in addressing concerns and challenges in natural resource sustainability (Chuenpagdee et al. 2004; Gray 2005; Jentoft 2005; Kooiman et al. 2005; Larson and Soto 2008). This is the case for all modes of governance, including the hierarchical and centrally-driven format, but particularly so for self-governance and co-governance (commonly referred to as community-based or co-management). Through an inclusive, engaging and respectful process, the experiences, interests and worldviews of a broad range of stakeholders can be incorporated in decision-making, and their underlying values and principles can enter the dialogue, thus helping to shape sensible policies. The multitude of values and principles, while enriching the quality of discussion, can also lead to 'hard choices' and 'messy situations' especially if they appear conflicting and incommensurable (Jentoft and Chuenpagdee 2009; Kooiman and Jentoft 2009; Lachapelle et al. 2003; Rittel and Webber 1973). According to the interactive governance theory (Kooiman et al. 2005), understanding what these values and principles are, what they are informed by, and how they influence actions can contribute to alleviating tension

and conflict and lead to more governable natural resource arrangements (Bavinck et al. 2013; Kooiman and Jentoft 2009).

Following from this, learning about values and principles and examining their deep-seated convergence or disparity among different stakeholder groups is hypothesized to provide an alternate entry point into making sense of the social-political complexity inherent in resource use issues (Chapter 3 – Song et al. 2013). In this process, values and principles would complement each other; the former as the general notions of what is desirable and important (Hitlin and Piliavin 2004; Vaske and Donnelly 1999;) and the latter as more specific operational guidelines, or "codes of conduct" by which the desired end-states are achieved (Lockwood et al. 2010; Song and Chuenpagdee 2011). Satterfield and Gregory (1998) also argue for a similar pairing to link values with another attribute which is more action-based and context-rich in order to prevent values from remaining as abstract statements disembodied from practical governance experiences.

The study of values for governance and policy purposes has been chiefly influenced by relativistic traditions that are suited to the gauging and monitoring of public opinion from the position of 'value-neutrality' (Brown 1984; Satterfield and Kalof 2005).[1] Within this tradition, scholars such as Mitchell and Carson (1989) and Hanemann (1994), siding with applied welfare economics, elevated valuation techniques such as contingent valuation involving the willingness-to-pay and willingness-to-accept procedures to be the most commonly accepted form of value elicitation. While such monetary methods capture people' preferences expressed in quantitative metric useful for economic benefit-cost assessment, they are less adequate in accounting for values that are non-market-based, ethically-driven, or culturally-derived (Chan et al. 2011; Sagoff 2004; Satterfield 2001).

On the other hand, others like Keeney et al. (1990) argue that a qualitative approach to elicitation utilizing narratives and interviews tends to be time-consuming, anecdotal, or overly descriptive with detailed verbalization of non-utilitarian values, yielding cumbersome application to policy-making. Furthermore, "ask-direct-questions-receive-direct-answers" format surveys utilizing conventional ranking or rating procedures can be, though efficient and statistically rigorous, void of contextual information and clues, often leading to 'empty' or shallow discussion of values (Satterfield 2001). Overall, wholesale reliance on either elicitation approach without acknowledging its weakness would create a danger of misrepresenting the values of stakeholders and/or relegating discussion to powerful elite, such as government managers, academic researchers and industry lobby groups (Satterfield 2001). Consequently, there lies much room for creative measures to be introduced and experimented in the elicitation of values and other normative aspects to provide a greater set of methodological options.

In this paper, we combine a quantitative survey approach with qualitative verbal narratives to elicit detailed information that can be useful for policy-makers. The specific combination explored in this study is called "P+ sort". It builds on the existing sorting techniques such as pile sort and Q sort, but aims to achieve an 'intermediate' level of sophistication by offering a more structured format than the pile sort (P) while remaining simple with fewer assumptions and constraints than the Q sort. The use of the modestly-structured sorting procedure combined with qualitative input is to ensure that the design is approachable and comprehensible to a number of stakeholder groups. Such consideration is an important one, especially in the context of governance, given the difficulties of many groups, including resource user communities and laypeople (i.e. the general public),

in articulating the deeply-held and privately defended values and principles (Keeney et al. 1990; Satterfield 2001).

The empirical testing of the proposed approach was conducted in South Korean fisheries, in which a co-management program, referred to as Jayul, was initiated by the central government in the previous decade and is being implemented across the country. Similar to natural resource governance initiatives elsewhere, the main struggle of the program implementation is to foster a policy environment where an active involvement of local fishers and other resource-dependent members is encouraged and appreciated. This problem context serves a useful test case for examining the feasibility of the P+ sort to study values and principles of fishery stakeholders. In the present study, the two main groups investigated and compared are fishers and community resource users, on one hand, and managers/researchers on the other.

We commence with the conceptual development of the P+ sort method by drawing comparisons with other existing survey-based elicitation methods. The practical considerations of the design are further illustrated using the example of the South Korean case. Following the description of our sampling strategies and the survey process, we present the analyses and summarize the results. Finally, this article reflects on the findings to examine their implications to the governance situation and formulate suggestions that can inform future directions. We conclude by revisiting the feasibility of the P+ method and discussing some of its limitations.

Developing a method

Experimental design

Designing an alternate elicitation method has remained an active area of research, which tries to provide wider options that supplement the more dominantly-positioned monetary valuation techniques (e.g., Mitchell and Carson 1989) as well as the ranking and Likert-scale rating exercises (e.g., Alwin and Krosnick 1985; Rokeach 1973). Notably, Gregory et al. (1993) suggests an improved contingent valuation approach that better accommodates multidimensionality of values and reduces cognitive demands upon respondents by drawing upon multiattribute utility theory. In another case, a damage schedule method proposes using paired comparison survey to derive non-monetary measures of relative importance of natural resources (or seriousness of adverse impacts on them) as a proxy to stakeholder values (e.g., Chuenpagdee et al. 2001). In addition, qualitative approaches such as pencil-and-paper tasks and open-ended interviews that employ transcription, coding and content analysis have focused on obtaining "thick" value descriptions (e.g., Buijs 2009; Satterfield 2001).

The design of the method developed in this study utilizes a sorting technique. Similar to the basic tenets of existing sorting procedures such as pile sort and Q sort, values and principles are presented in a deck of cards, and through manual sorting of the cards, values and principles are judged according to their importance and placed into different piles. Generally, sorting allows use of a large number of target values than direct ranking or paired comparison, which are limited to a fewer number of values due to a greater level of effort and longer response time required for a large set.[2] The need to work with a potentially sizable number of values and principles that may exist and prove to be crucial in natural resource context serves as an important criterion for a sorting-based

design. In addition, arranging cards into different piles or categories on a sorting board permits visual display of the sorted pattern and induces implicit comparisons between values, such that values grouped together would imply a similar degree of importance and likewise dissimilarities are also differentiated. This marks an advantage over a Likert-scale type of rating exercise in which each value is evaluated independently without necessarily making connections to other values (McCarty and Shrum 2000). An incorporation of a comparing mechanism, albeit implicit, is a required trait that allows discerning of relative importance among the values and principles as survey participants go through the exercise. Furthermore, sorting of cards offers an intuitive and interactive mode of elicitation. It has been pointed out that the conventional survey format that relies heavily on direct question-answer arrangement "avoids the very language and style that many people use to discuss values, that is, conversational talk that encompasses everyday reflections on beliefs and values" (Satterfield 2001, p. 332). In the current design, both the cards and the display of sorting results on the board could act as a 'conversation piece' that assists articulation of values. To actively encourage further discussion and drawing out of qualitative information, follow-up questions about the personally-held meanings of important values and principles are offered, after the completion of the sorting task. Key characteristics of the relevant survey methods, including P+ sort are summarized in Table 1.

Table 1 Key characteristics of comparable value elicitation methods

Method	Key characteristics
Ranking	– Direct comparison of values yielding more precise distinctions about their relative importance

(e.g.rank-ordering, pair-comparison)	– Forcing choice similar to real-life situations – Longer response time and greater respondent fatigue when involving a large set of values
Rating	– Values are evaluated independently – A set of rating produces absolute standings as well as an inferred rank-order of values, arguably producing more information than a set of ranking – Applicable to a greater range of and more sophisticated statistical analyses – Less time-consuming, easier to administer allowing for the collection of data among a large number of values – Potential lack of differentiation (e.g. many ties) and skewed distribution of responses
Q sort	– Highly structured and constrained version of sorting yielding both rank-order and a normal distribution of values – Applicable to well-defined statistical analyses as part of Q methodology – Allows the collection of data among a large number of values – Longer response time, greater respondent fatigue than other sorting methods
Pile sort	– Exploratory method geared towards revealing similarity between values – Allows for the collection of data among a large number of values – Easy to administer and intuitive – Conducive to drawing out qualitative data – 'Lumper-splitter' problem which makes comparison of individual responses less adequate
P+ sort	– More focused aim with specific instructions than pile sort – Allows implicit comparison among values – Allows for the collection of data among a large number of items – Easy to administer and intuitive – Conducive to drawing out qualitative data – 'Lumper-splitter' problem which makes comparison of individual responses less adequate

Main elements of the P+ sort

Rokeach (1973), who has pioneered a human value tradition, presented a list of plain value labels, such as 'happiness', 'national security', 'courage', and 'politeness', to participants for rank-ordering. While this was proved to be implementable in diverse social settings, the meanings of these labels were assumed to be familiar to many laypersons and hence no additional explanations were deemed necessary. The current

study, however, is couched in the more specific conditions of natural resource governance. Some of the relevant management principles, such as subsidiarity, user-pays, and precaution, may not be readily graspable by user communities and government managers alike. Hence, we decided to use short phrases or sentences to represent the values and principles on the cards in order to be more reflective of the resource context and to help facilitate judging and comparing of these items. Only one statement representing either a value or a principle is written on an individual card.

Study participants are given a deck of cards containing randomly shuffled value statements in the first round of exercise and principle statements in another, and are asked to place each card on a sorting board according to a specific instruction, such as "please sort based on importance". The board itself contains distribution markers which indicate pre-defined importance categories, as shown in Fig. 1. This represents a more structured and focused design than a highly exploratory unconstrained pile sort, which leaves respondents to determine the criteria for grouping similar cards as well as the number of piles to be generated (Weller and Romney 1988). The design of the P+ sort also deviates from the Q sort, a much more elaborate sorting technique, stemming from a bigger rubric of Q methodology (Brown 1980; McKeown and Thomas 1988). There are several reasons for using the P+ sort design. First, there is a concern that a Q sort task lies beyond the cognitive aptitude of most people to perform adequately (Bolland 1985), as it normally involves 10 or more categories and restricts the individual sorting responses to fit into a fixed pattern that approximates a normal distribution (Brown 1980). Dunn-Rankin et al. (2004) suggests that the consensus for the number of categories on a scale is from 3 to 9. Because values and principles (and their relative importance) are not something that

people contemplate on a regular basis, and since resource users in rural areas may lack formal education, this study chose a simple design with three categories, resembling three-point scale of importance, denoted with very-, somewhat-, and little-important. Secondly, the P+ sort is distribution-free and imposes no explicit constraint on how many cards can be placed in any of the three categories. At the same time, to discourage against 'lumping' (i.e., sorting all the cards into one or few categories, see Table 1) and a tendency to judge objects too low or too high (Weller and Romney 1988), the design comes with evenly-spaced grids as a visual cue to suggest that all three categories in the scale are equally available.

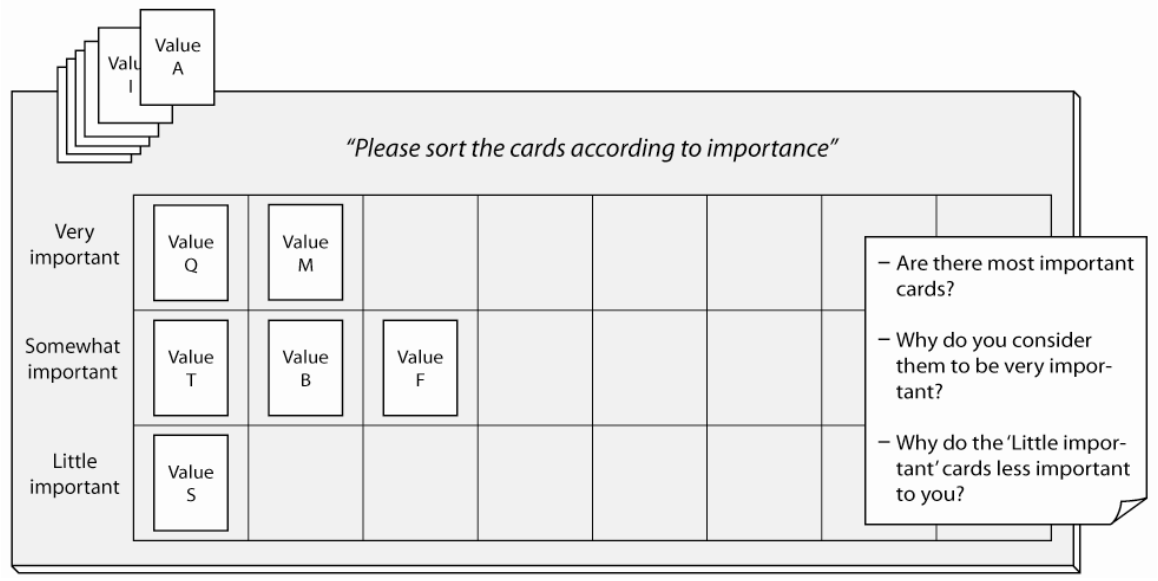

Fig. 1 Generic design of the P+ sort method comprising cards, a sorting board and semi-structured follow-up questions

Sorting responses can be analyzed using non-parametric statistical procedures such as the Kendall coefficient of concordance W and the chi-square test through an assignment of weighted scores to the three categories (i.e., 3 to very-, 2 to somewhat-, and 1 to little-important). Also, an analysis of sorting frequency data can be conducted to ascertain value and principle hierarchy. Qualitative information solicited in the form of voluntary comments and follow-up, probing questions (shown in Fig. 1) are transcribed and organized according to pertinent value and principle items. In this way, both quantitative and qualitative data are used in the explanations about which values and principles are important or meaningful to respondents and the reasons why.

Application to a case study: coastal fisheries resources in South Korea

Description of Korean fisheries and the co-management system

South Korea (officially the Republic of Korea) is located in the southern part of the Korean Peninsula in the Northwest Pacific region (Fig. 2). Endowed with productive fishing grounds in all three adjacent seas (Kang 2006), fishing has naturally taken place from ancient times, and helped satisfy much of the domestic fish consumption demands over the years. Fish occupies an integral part of Koreans' dietary life and intimately connected to their culture even to this date. Korea is also one of the top fish-producing nations in the world with inclusion of seaweed and shellfish production (FAO 2012). In the coastal fishery, there are nearly 150 target species of commercial significance, and with over 28 licensed fishing gear types permitted in coastal fishery, it has the strong character of multi-gear/multi-species (Han 2009).

Following independence from colonial rule in 1945, fishery has been chiefly managed under the overarching direction of the central government who sets regulations, issues licenses, enforces rules, and provides benefits and subsidies to communities (Cheong 2004). The 50 years of government-centered management in the modern era, however, has proved inadequate in resolving various environmental and social challenges that have surfaced surrounding fisheries (Cheong 2003a; Han 2009). As a response to the ineffective management regime, the central government initiated a new governance mode called the 'Jayul' program in 2001. It aims to raise the level of community participation in managing local fisheries and ultimately to instill a sense of ownership in resource users (Lee et al. 2006; MOMAF 2003). Jayul, meaning free will in Korean, is a type of placed-based co-management program where government sets out the institutional framework and provides financial and technical assistance to local fisher organizations, while the latter drafts and carries out a management plan.

Since its inception a decade ago, the number of community fisher organizations participating in the program has reached 893 in 2011, and there have been several exemplary cases in which fishing income has increased and illegal fishing has subsided through this process (MOMAF 2005; Uchida et al. 2010). Yet, doubts have also been raised as to whether this governance reform is genuinely taking root. Many Jayul communities simply exist only on paper with no substantial follow-up activities (Seo and Byeon 2006). In addition, a financial incentive system that the central government has set up to entice fishing community organizations to join in and keep up with the activities could have been promoting further reliance on government, negating its original intention. Are the governance ideals of co-management, such as participation and

cooperation, being fostered and valued by the resource communities? Can there be inconsistencies between what is being promoted by the government and what is being valued by the communities, which could impede its effectiveness, especially if the two are conflicting? Given the high expectation that achieving this new mode of governance may represent the only viable option for improving the fisheries situation in Korea (Lee and Shin 2004), insights about values and principles of local fishers and those of government could provide a timely and helpful contribution to promote implementation of this governance reform.

Fig. 2 Map of South Korea (community sites are shown as double circles; triangles indicate survey locations with managers/researchers)

Value and principle statements

We drew 16 values and 16 principles from lists previously developed by the authors based on the review of fisheries resource governance discourse (see Song et al. 2013 or

Chapter 3). Though not universal, each set reasonably offers a comprehensive scope encompassing environmental, social, altruistic and egoistic values as well as principles pertaining to the natural, economic and governing fisheries systems. The sets of 16 are relatively small and manageable, as suggested by Rokeach (1973). Table 2 presents the values and principles and the statements used to portray them. The statements provide contextual descriptions of the domestic fisheries conditions. At the same time, following the guidelines of Dunn-Rankin (1983), they were designed to be simple, direct and short (rarely exceeding 20 words), and each containing only one complete thought. Therefore, the crafting of the statements requires a fine balance between being too specific and being too general. For example, in 'Fishing grounds should be used exclusively by the designated fisher groups' (Table 2(b)), there is no indication of who the designated fisher groups are, and likewise any mention of exact types of fishing ground is purposefully avoided. This is to minimize strategic voting of respondents and to encourage making the judgments based on the underlying concept and not on the specifics that may conjure up attitudinal sentiment or immediate benefits or losses associated with their particular role in the fishery. Iterations of pre-testing with fishing community leaders and policy researchers assisted the development and fine-tuning of the statements. In addition, forward- and back-translations helped ensure cross-cultural and conceptual equivalence between the English and Korean versions.

Table 2 Descriptive statements for (a) 16 values and (b) 16 principles

(a) Values	Value statements presented in the cards
Conformity	Acceptance of fishery rules and regulations

Ecosystem conservation	Healthy marine ecological system
Equality	Equal fishing opportunity amongst fellow fishers
Freedom	Freedom to decide when and where to fish
Hedonism	Enjoyment and pleasure in fishery life
Honesty	Integrity in fisheries governing system
Influence	Strong leadership in fishery management
Knowledge	Comprehensive knowledge on marine ecosystem
Moderation	Moderate catch target
Peacefulness	Fishing villages without conflicts
Secure livelihoods	Secure livelihoods from fishing work
Self-esteem	Sense of pride for working in the fishing industry
Social cohesion	Cohesion among the members of fishing community
Social recognition	Greater public recognition of fishing work
Tradition	Many young people taking interest in fishing tradition
Wealth	High economic income from fishing work

(b) Principles	Principle statements presented in the cards
Adaptability	Fishery rules should be reviewed frequently to better respond to rapid changes in fishing conditions
Adjacency	Access to use a fishing ground should be first granted to those who live near it
Cooperation	Cooperation among fishers and fisher organizations should be increased
Ecological sustainability	Overfishing should be prevented in all fishing operations
Ecosystem integrity	Fishing should be done without disrupting ecosystem integrity
Efficiency	Fishing technology should be enhanced such that fish can be caught with less effort
Equity	Benefits of fishery policy should be applied fairly to all fishers
Exclusivity	Fishing grounds should be used exclusively by the designated fisher groups
High-level decision-making	Central government should provide financial support to coastal fishing communities
Human welfare	Fishery policy should address fishers' needs
Legitimacy	Governing authority should be considered legitimate by fishers
Participation	Fishery rule making should be based on the participation of fishers
Precaution	More closed seasons should be established
Scientific information	Fishery rules should be made based on scientific data
Subsidiarity	Fishery rules should be set at the community level
User-pays	License fees should be charged to fishers for the privilege of using public resources

Elicitation protocol

Each respondent was asked to sort the 16 value cards with the instruction: "The following phrases contain various aspects that may be deemed important in creating a healthy, productive coastal fishery and fishing life. As someone involved in the fishery, how would you place the following aspects in terms of their importance? Please place the cards into the three categories ranging from 'very important', 'somewhat important', and 'little important', in any way you like in the provided grid". Once satisfied with the way the cards were sorted, he/she was guided to offer verbal explanations about the rationale and meaning behind the sorting choices, especially with regard to the values considered very important. The same procedure was repeated for the 16 principle statements with a slightly varied instruction: "The following statements describe several ways as to how coastal fisheries management can be carried out. In your opinion, how important is each statement in guiding coastal fisheries management in your area?" The cards were re-shuffled prior to each survey to ensure random ordering.

Survey process

The survey was conducted during fieldwork to South Korea in 2012. The two main respondent groups were community members dependent on local fisheries resources and government managers/academic researchers/non-governmental consultants. The survey with the former group was conducted in eight fishing communities to account for diverse resource settings that exist in the Korean coastal fishery, whose locations and attributes are displayed in Fig. 2 and Table 3(a).[3] This inclusive setup is expected to hold the findings of the survey in greater relevance to the Korean coastal fishery as a whole, and

induce more systematic comparisons to tease out potential group differences and similarities in values and principles.

Quota sampling was used to target 25 participants at each site, giving thus 200 community respondents in total. Both pile sort and Q sort are shown to generate meaningful results with a relatively small number of participants. Limited member size of communities and irregular work schedules of many members also served as practical constraints to random sample selection. Nevertheless, comparable demographic details across the eight communities were attained with respect to variables such as age, years in fishery and formal education, and gender composition (Table 3(b)). Participation was solicited in the public surroundings of fishing villages, such as streets and fishing wharves, as well as by visiting residential houses during daytime. Individual face-to-face survey was conducted to minimize any social pressure that may exist and thereby influence their response. Respondents comprised adult individuals, both male and female, involved in the production and the marketing aspects of fishery, which include harvesters, processors, retailers, wholesalers, and retired fishers. Although their activities in the fishery as well as the level of dependence on the resources for supporting livelihoods varied, they all drew direct or indirect income from fisheries. Direct observation complemented the survey process during 1 to 2 week long visits to each community. The survey with 25 government fishery managers and researchers took place in their respective offices scattered across the country. Each survey took about 15-30 minutes to complete. Lastly, data verification and preliminary analyses were carried out following data collection, which involved re-visits to the communities and management offices to discuss the findings and confirm its validity.

Table 3 (a) Fishery attributes and (b) demographic information of respondent groups

	Resource dependent community								Manager/ researcher	Total
(a)	Bakmi-ri	Goongpyong-ri	Gusipo	Dongho-ri	Giseong-ri	Jiksan2-ri	Gubok-ri	Sim-ri		
Location	West coast – north	West coast – north	West coast – south	West coast – south	East coast	East coast	South coast	South coast	All areas	-
Main fishery	Clam, octopus, oyster	Clam, octopus, finfish	Crab, octopus, finfish, elver	Crab, octopus, clam, elver	Finfish, sea mustard, abalone	Finfish, anchovy, sea mustard	Mussel culture, finfish, octopus	Mussel culture, finfish	Oversees all fishery	-
Fishing environment	Intertidal area	Intertidal area, water column	Water column, interdital area	Water column, intertidal area	Water column	Water column	Water column, intertidal area	Water column	Oversees all environment	-
Year joined the Jayul program	2004	2007	2003	2007	2001	2006	Not joined	Not joined	-	-
Member size of Jayul community	107	117	72	102	79	75	152^	101^	-	-
(b)										
# of respondents surveyed	25	25	25	25	25	25	25	25	25	225
Male	15	19	23	22	20	19	23	23	23	187
Female	10	6	2	3	5	6	2	2	2	38
Average age+	61	61	54	60	64	59	57	59	49	-
Age range*	39-82	40-79	26-82	37-81	50-80	35-80	39-78	39-77	31-65	-
Years of fishery experience*	3-60	6-60	1-50	1-55	1.5-50	0.5-55	5-60	4-40	1-44	-
Years in formal education+	9	9	8	8	9	9	10	9	17	-

+ denotes average; * denotes range; ^ denotes member size of existing non-Jayul fisher organization (i.e., a fishing village cooperative)

Analysis of results

We first conducted the Kendall coefficient of Concordance W, a non-parametric statistic useful for assessing agreement among respondents.[4] In effect, the test reveals the degree to which respondents in each group agree with one another about which values and principles are more (or less) important. If the test shows significant agreement, each group can be considered a unit, permitting thus an aggregation of all individuals as one group for further analysis. In case of absence of significance, aggregation will take place only among individuals with agreed ranking, creating thus more than one group of respondents. In such instances, more respondents may be solicited to increase the sample size. Persistent disagreement may, however, suggest a possibility of a highly heterogeneous member composition or an existence of smaller factions. As shown in Table 4, the chi-square scores for all nine groups for both sets of value and principle were greater than the upper-tail critical value of chi-square distribution at 95% confidence level, indicating significant in-group agreement. In the analysis that follows, all 25 respondents from each community are treated as a group with the same applying to all managers and researchers. This result also in part helps validating the sample size of 25 respondents targeted in each community.

Table 4 Kendall's W and chi-square scores for the nine surveyed groups (the critical value for α=.05 and df=15 is 24.996)

(a) Values	Bakmi-ri	Goongpyong	Gusipo	Dongho-ri	Giseong-ri	Jiksan 2-ri	Gubok-ri	Sim-ri	Manager/rese

		g-ri							archer
W	0.13	0.14	0.12	0.08	0.11	0.14	0.15	0.13	0.26
X^2	48.58	53.99	46.79	30.66	40.93	52.70	57.84	49.09	99.00
(b) Principles									
W	0.10	0.23	0.16	0.16	0.09	0.08	0.12	0.14	0.28
X^2	37.36	85.47	59.19	58.19	34.86	28.41	44.64	52.29	105.1

Important values and principles

Next, in order to reveal the most (and least) esteemed values and principles, the frequency of each card being sorted "very important" by the nine respondent groups was first analyzed. If the majority of group members, i.e., more than 13 out of 25 respondents, considered a certain value statement to be very important, the group is considered to have prioritize that particular value, and thus is counted as one. For each value and principle, then, the number of such groups was tallied, as displayed in Fig. 3. We further differentiate the majority groups into those in the upper level (with two-thirds majority or at least 17 people) to increase the power of the analysis. The results produce a hierarchy of the values and principles based on importance, and show that four values and three principles were consistently agreed by most groups to be very important (Fig. 3). For values, 'ecosystem conservation' (healthy marine ecological system) was judged to be highest in terms of importance with eight of the nine groups considering it very important according to two-thirds majority, in addition to all nine groups judging it very important based on over-half majority. The top status of this value can be exemplified by respondent explanations such as "this is the foundation of everything involved in the fishery" [R27].[5] Other comments also stressed this value's vital connections to livelihoods, human health, and the sense of place, whose examples include "the

ecosystem is dying; for humans to be healthy, the sea must be healthy first" [R38]. Next, the groups prioritized the importance of statements that represent 'wealth', 'honesty,' and 'secure livelihoods'. Earning income and supporting livelihood were strong desirables in the fishery and fishing life, and honesty, according to the explanation by the respondents, was construed to mean both restraining from illegal fishing as well as an absence of corruption in the system. On the other hand, 'hedonism' (enjoyment and pleasure), 'equality' (equal opportunity at fishing), and 'moderation' (catching a moderate amount) were among the values that garnered relatively little importance.

The principle set also resulted in a clear distinction between those that were highly endorsed and those consistently relegated, as shown in Fig. 3(b). 'Equity' (equitable distribution of benefits) was indicated to be the most important principle in fisheries governance. The prevailing conception of equity among the respondents was that benefits derived from fishery should be distributed proportional to one's level of effort, diligence and/or investment. One community member explains:

> "There are several types of fishers, and among them, those who go on a boat should be given the priority treatment, because they risk their lives the most, and their work is the most physically difficult; that is fairness and equity. Among the boat fishers, benefits should be equally distributed." [R72]

High importance of a conservation-oriented principle 'ecosystem integrity' (fishing without disrupting ecosystem integrity) and a key management principle 'adjacency' (giving priority access to a fishing ground to those who are geographically close) were also widely noted. By contrast, the result identified 'precaution' (a wider establishment of closed seasons), 'exclusivity' (an exclusive use of fishing ground by designated groups),

and ‘user-pays’ (paying license fees for the privilege of resource use) to be among the least important principles, as they rank near the bottom of the importance hierarchy (Fig. 3(b)).

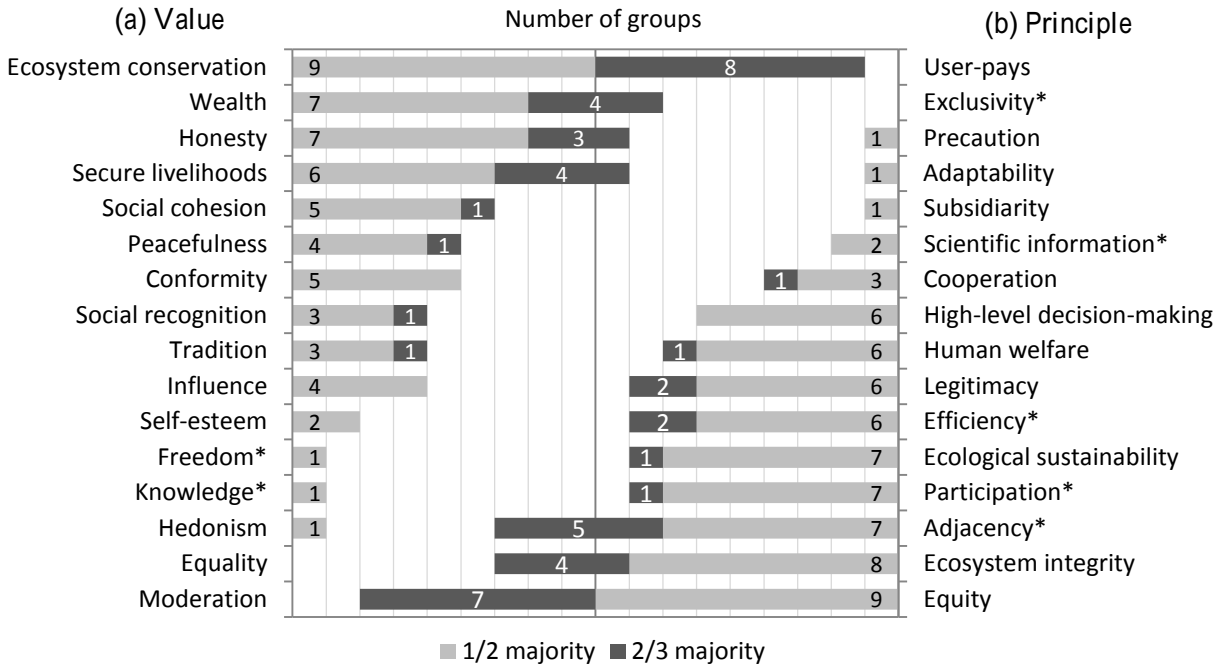

Fig. 3 Importance hierarchy of (a) values and (b) principles (in reverse order) based on the tally of groups who judged each value and principle very important according to two types of majority: over-half majority and two-thirds majority in each of the nine groups (* indicate significant difference beyond .05 level between aggregate community groups and manager/researcher group, see Fig. 4 for details)

Group comparisons

The final step of analysis involved examining the convergence and disparity between respondent groups. First, a quick check for the consolidation of the eight fishing communities and the manager/researcher group was performed using Principal component analysis (PCA).[6] The simple premise is that the groups will end up on the same factor if their sorting results are similar (Brown 1980). For values, all nine groups had significantly loaded on the first factor, while for principles, two factors were retained with the eight community groups loading on one and the manager/researcher group loading on the other. Based on this result, the communities were combined into a single aggregate group while the manager/researcher group was left to form its own group. This result allows the analysis to focus on comparisons between the two most disparate groupings. It also suggests that community respondents, despite their diverseness in locations, fishery experiences and the degree of involvement with the Jayul, held similar underlying value priorities and salient principles when understood from a broad metric of importance.

Next, we conducted the chi-square test, a non-parametric statistic appropriate for assessing the significance of differences among independent groups based on the frequency data (Siegel and Castellan 1988). As shown in Fig. 3(a), among the 16 values, 'freedom' (operational freedom in deciding when and where to fish) and 'knowledge' (comprehensive knowledge on ecosystem) displayed significant difference at 95% confidence level suggesting notable disagreement in the way the two respondent groups regarded these values. Interestingly, these statistical differences appear to have generated from the manager/researcher group's particularly weak emphasis on these two values, as inferred from Fig. 4(a) and illustrated through responses such as "freedom in fishing is

inevitably constrained by fisheries institutions" [R221], and "there is no real need to know everything, since it is possible to have a well-functioning fishery without comprehensive knowledge" [R219].

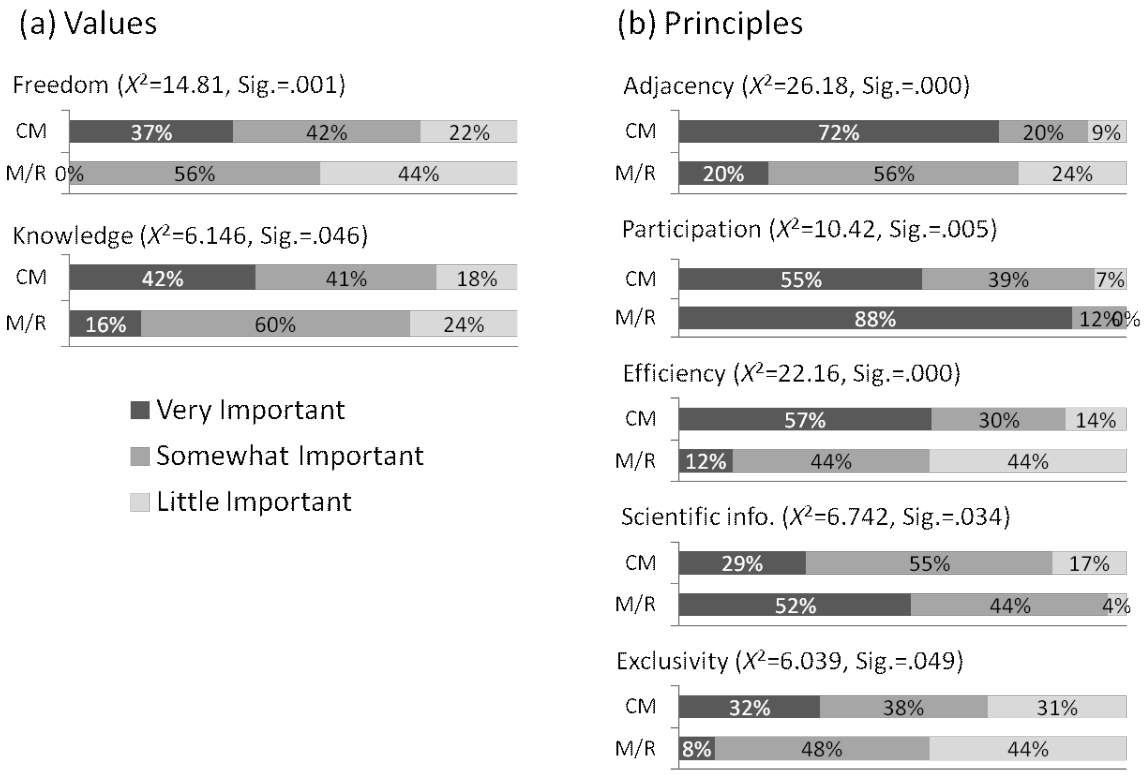

Fig. 4 Percentages displaying the sorting patterns of the significantly different (a) values and (b) principles, compared between aggregate community group (CM, n=200) and manager/researcher group (M/R, n=25)

For principles, a greater range of divergence was observed than the value set, as the two groups significantly differed in five principles: 'adjacency', 'participation' (user participation in rule-making), 'efficiency' (technological enhancement improving catch

per unit effort), 'scientific information' (rule-making based on scientific data), and 'exclusivity'. As shown in Fig. 4(b), the user community group upheld adjacency, efficiency, and exclusivity higher than the manager/researcher group, while they regarded participation and scientific information with less importance than the formal expert group. For example, with respect to adjacency, community members brought forward the arguments of local stewardship, frequent resource use by those who live near, and the need to have a mechanism to regulate outsiders. When it came to the weaker standing of participation, their rationale was attributed to community members' little interest in getting involved in management, seeing it mainly as the government's responsibility. Some also expressed the futility of their participation due to an imbalance of power and asymmetrical knowledge vis-à-vis government officers. This was in stark contrast to the managers/researchers' utmost regard towards participation as the only group selecting this principle as very important with a two-thirds majority (Fig 3(b)).

Discussion and conclusion

This study examined the values and principles of two fishery stakeholder groups as a way of making sense of the complexity inherent in natural resource planning and practice. An exploratory sorting-based method, P+ sort, was developed to elicit mixed qualitative-quantitative expressions of values and principles, and was applied to the case of fisheries co-management program in South Korea. This concluding section discusses the results in light of the governance initiative and reflects on the feasibility, limitations and the future prospects of the P+ sort method.

The results reveal a widespread agreement at the level of values between the community group and the manager/researcher group. While the significant differences in the 'freedom' and 'knowledge' should be acknowledged, given that they were relatively unimportant values considered by the both groups (as observed from the importance hierarchy in Fig. 3(a)), the divergence may not play a crucial role in the overall governance process. Rather, convergence in the highly regarded values of ecosystem conservation, wealth and livelihood security, and integrity would deserve heightened attention since these shared values could serve as the normative foundation for all governance activities and policy direction. Likewise, the high importance of equity and ecological principles is also noteworthy. At its root, both the governors, represented by managers/researchers, and those-being-governed, made up of fishing communities, agree on the basic conceptions of what is desired and what is important for the coastal fishery at large. Holding a similar set of values could signify a common starting ground, to which people can refer back in cases of confrontation or impasse. It offers a refuge when stakeholders want to start fresh, keep things simple, or go back to the drawing board. This is not to say that value conflicts do not exist or can always be avoided, as they likely pervade and persist in any resource context including the Korean example. However, when facing hard choices or no resolutions are in sight, being explicit about the agreed values could present an opportunity for people to come together to form a compromising decision.

The result of this study revealed more acute differences regarding principles, which perhaps have a more direct bearing on the implementation of a co-management system. For example, the manager/researcher group is shown to be an avid supporter of user

participation in management and rule-making, while the community groups' enthusiasm about this key co-management principle is, though considerable, markedly weaker. Hence, despite the many positive developments of the Jayul program in the last decade, the participatory mindset may be slow in being rooted across the communities, substantiating the concerns about the communities' cursory involvement. The government therefore may need to re-evaluate its high ambitions for the Jayul program and also seek an alternative timeline and strategies for its continuing implementation. In the case of the adjacency principle, many managers/researchers were found to object to strengthening local priority access and use rights to nearby fishing grounds for the fear that fishing communities may not always effectively manage a given coastal environment, as indicated by previous examples of mismanagement (see Cheong 2003b; 2005). Yet, adjacency is conceptualized as a key enabling factor towards a more community-empowered approach to fisheries management (Davis and Wagner 2006). Its activation is expected to guarantee a legal as well as a geographical basis for coastal communities to maintain fishing livelihoods. Further, it is considered a defense against the vulnerability of local fishery collapse arising from outside influences, such as large-scale industrial fishers or corporations being dispensed with nearshore fishing privileges. Thus, the differences in these principles could present areas of critical reflection for both resource users and managers.

The occurrence of a general agreement in what people believe to be the most important notions of coastal fisheries but seeing more pronounced differences in how to go about operationalizing them begs further explanation. The pattern observed in this study, which revealed the values displaying a greater convergence than the principles,

finds precedence in another study. The findings of Satterfield and Gregory (1998) showed that while environmental values surrounding forest management did not necessarily differ between groups, questions about preference of more specific management actions generated strong differences of opinion. They argued that there is a problematic "tendency to confuse expressions of values that refer to an individual's fundamental beliefs with operational expressions of those values in terms of context-specific objectives or the means by which desired end-states are achieved" (ibid., p. 633), and added that "…values cannot be considered independently of the detailed and informative contexts in which they are expressed" (ibid., p. 635). In other words, values and principles may have distinct roles to play occupying different thematic niches in one's mindset. In addition, an examination of values without also understanding how they may be communicated at the more operational level of principles can become meaningless, if not altogether misleading. As corroborated by Satterfield and Gregory (1998), the result of this study reaffirms a possibility that disagreements in principles may be underpinned by a shared value base. To put broadly, people may be more similar than they are different when we move away from the visible differences and practical constraints. A diverse set of fishing communities studied here was also in general agreement about what's fundamentally important for the fishery. In such cases, active discussion of the underlying notions such as values and principles could open up a way of clarifying and bridging the differences and leading to policy decisions which various groups can come to accept and appreciate. Facilitating dialogue between groups is expected to improve governing interaction, contributing thus to higher level of governability.

The P+ sort developed in this study offers further support to value-centered research. Enabled through a design that emphasizes local context, approachability and user-interaction, it may offer a chance to systematically explore, update and articulate one's basic ideas such as values and principles. It can also be used to target respondents with a wide range of demographic traits, including senior community members with little formal education or no previous exposure to a value survey, as demonstrated in this case. Comments from the surveyed respondents about the method support this. For instance, they found the method interesting (e.g., "like piecing together a puzzle"), empowering (e.g., "we are learning through this exercise"), and even liberating (e.g., "a load taken off my chest"). They embraced the research idea conveyed, saw relevance, and were satisfied with the outcomes. Several participants wished "more of this type of research" to be carried out, especially by the government officials. The survey nature of the P+ sort also potentially allows a cost-effective way of attaining a large sample size, though in this study the results are illustrative not representative due to the purposive sampling of the community sites[3] and the quota sampling of the respondents.

Despite the benefits it proposes, the method currently has several limitations. Similar to the concern faced in most elicitation procedures that rely on direct question-answer format, the use of descriptive and hypothetical statements to portray values and principles makes respondent judgment sensitive to their wording. It is possible that the same value or principle can be depicted in a number of different ways, including incorporating pictures or other visual stimuli onto the cards. The challenge would be to construct a concise idea for each item that describes a resource context with which all stakeholders can identify. Careful pre-testing of the statements is suggested to help

alleviate this potential shortcoming. Furthermore, making variations in the parameters that make up the design are to be encouraged in future practices. For example, a larger number of scale points (i.e., piles) can be experimented with, which may permit an application of more rigorous and sophisticated statistical analyses. Also, aiming this method at diverse natural resource cases, a different array of stakeholder groups, or an elicitation of other less-tangible concepts such as governing images (see Chapter 5) would test its wider applicability and likely lead to further methodological refinement.

This article responds to the need to make available a wider opportunity for expression of values and principles. As a response to the call to incorporate people's values and principles in the policy domain and to understand their convergence and disagreement among a widening set of stakeholders, the value research, such as that performed here, is a crucial undertaking for achieving more governable natural resource arrangements. The P+ sort may offer a useful methodological avenue with which this endeavor can be further explored.

Notes

1. Relativistic traditions are juxtaposed with axiomatic traditions which operate on the premise that certain values are better, more important, and intellectually defensible than others.
2. The difficulty of ranking increases significantly when the number of objects exceed 20 (Russel and Gray 1994) or even as few as four according to McCarty and Shrum (2000).

3. The selection of the communities was based on three criteria using purposive sampling: (1) member size to ensure that an adequate number of members are available in each community for survey participation; (2) duration of participation in the Jayul program such that the communities who joined the program prior to May 2006 were separated from those who joined later. The duration of participation served as a proxy for the level of experience in the program with an assumption that long-time participants have a higher degree of familiarity and expertise accumulated throughout the years of participation than recently joined ones; and (3) type of fishery to cover a wide operational and geographical characteristics. Final selection produced four clusters of two communities, as shown in Fig. 2.
4. Testing the significance of W, when N is larger than 7, the sample distribution approximates chi-square with N-1 degrees of freedom (Siegel and Castellan 1988).
5. [R27] refers to respondent #27.
6. Principal component analysis was performed through XLSTAT software (version 2012). It used the Spearman's rank correlation coefficient with no rotation of factors.

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Chapter 5 Exploring stakeholders' images of coastal fisheries: a South Korean example

Target journal: Human Ecology

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Abstract

Images that stakeholders have about fisheries can fundamentally influence how fisheries are to be governed, as recent literature has begun to elucidate. They represent underlying perspectives about the issues in question and the world at large such that they may help explain why certain governance decisions and actions come about and how policy ideas become carried forward. While it is crucial to properly identify and discuss them, how they appear and function in an empirical setting is not yet fully understood, making it less amenable to assessing their meanings and generating practical lessons. Using a case of coastal fisheries in South Korea and its governance initiative in progress called 'Jayul', this study captures the images of various stakeholders as they are expressed through an exploratory survey design and inductively formulated themes and categories. The results show a broad range of thematic content and four general dimensions within which images are manifested. In addition to revealing the diversity associated with stakeholders' images, the study is also an illustration of how one can go about conducting an image inquiry and what can be expected from its results, paving ways for future studies.

Implications for the governance situation in Korean fisheries are drawn to demonstrate images' significant bearing on the workings of governance processes.

Introduction

In recent years, a line of thinking has arisen in fisheries governance discourse which focuses on stakeholders' images (Bundy et al. 2008; Cinner et al. 2012; Jentoft et al. 2010, 2012; Kooiman et al. 2005; Thornton and Laurin 2005). These conceptual developments explore what images mean in governance contexts and how they may influence governance processes. Images are "representations of the issues in question and the world at large" (Jentoft et al. 2012: 186), and they provide visions for other governing elements such as regulations and incentives, as well as guide behavior of those being governed. Overall, they form an underlying cognitive framework through which stakeholder views are understood and organized, and their decisions and actions explained. The assertion is that they can help attain a deeper understanding of past experiences, make sense of current trends and events, and even offer a reasonable ground upon which the future course of action can be foreseen, thereby making governance a more proactive endeavor. Hence, images should be properly considered and made explicit in a governance process.

More specifically, according to a review of how images (and other analogous concepts such as mental models and cognitive frames) have been approached and discussed in fisheries (see Song et al. 2013 or Chapter 3), images gain importance in at least three main ways. First, a faulty representation of fisheries realities can mislead

governance effort into perverse consequences. Thomas Huxley's (1883) idea that "all the great sea fisheries are inexhaustible" is one example of the well-publicized images in fisheries policy-making. Secondly, images can exhibit disparity among different stakeholder groups, which pose a potential danger as incompatible images could lead to misunderstanding and confrontation (see also Hall-Arber et al. 2009). Greater awareness and appreciation of different ways of seeing are called for to carefully negotiate the socio-political complexity emanating from potential image disagreements. Finally, a discursive power and hegemonic dominance of certain images are what fisheries governance must also be made conscious of. An ideology or a discourse maintains its discursive power through images it creates and propagates. For example, the neoliberal ideology paints a forceful portrayal of fishing economies as pre-capitalist and a barrier to capital accumulation. This particular image of fishing communities is consequently used to promote a capitalistic mode of production and fisher identity, while repudiating other alternative fishing forms such as subsistence, spiritual, and community-based fishery (St. Martin 2007). Therefore, how images are linked to ideological purposes and how they can become hegemonic becomes another important theme in the ways images influence governance processes and outcomes.

The concept of images is, however, less than clear-cut and invites various interpretations. Its unverbalized appearances, indefinite meanings, and multiple usages make it difficult to clearly delineate the general characteristics of the images captured in a governance system. What constitutes an image? What is the range of different images held by various stakeholders? What is the level of coherence among them? Do images describe future aspirations and carry a normative conviction? Are they imbued with

positive or negative overtones and therefore present a certain outlook on governing matters? Such questions have not been fully examined in the context of an empirical setting. As a result, what is still less apparent are the dimensions within which our understanding of stakeholders' images lie, and this creates challenges in how to study them. Consider a practitioner interested in studying images held by stakeholder groups in a certain locale. He/she needs to first have an idea of what he/she is looking for when searching for the images, how to capture them, followed by how to make sense of the acquired data, i.e., what they really mean. Only then, images can contribute to enhancing an understanding of a particular governance situation, and practical suggestions can be raised.

The studies of stakeholders' images thus far have either focused on their conceptual development (e.g., Jentoft et al. 2010, 2012), or revolved around a particular issue such as marine protected areas (Jentoft et al. 2012) and ecosystem-based management (Bundy et al. 2008), or specific metaphors such as 'fishing as mining' (McCay et al. 2011) and 'the sea as a frontier' (Bromley 2005). In this article, in order to provide a general illustration of what stakeholders' images may look like and how to empirically study them, we take a broad stroke and assess what a wide array of fishery stakeholders might express as their images about the fishery and fishing life, using the case of South Korean coastal fisheries. Through primary data collection using surveys, the elicited responses are inductively analyzed to describe the contours of stakeholders' images as well as to generate policy-relevant insights. Additionally, an exploratory methodological framework designed to serve this objective is offered, tabling one introductory way of elucidating images of stakeholders.

We commence by revisiting key theoretical definitions and attributes of images informed by a wider set of literature, especially as they are approached from the interactive governance perspective. Next, a brief outline of the fisheries situation in Korea is provided including a description of a governance initiative called 'Jayul program'. Following a section on the design and application of the survey method, we present several key thematic areas of the images that emerged as the results of the study. Subsequently, compiled responses allow identification of image characteristics, and we reflect on the findings to discuss their implications for the Jayul governance and formulate suggestions that can inform future directions. We conclude with a summary of potential contributions to method and theory which might encourage further research.

Theoretical conceptions of images from interactive governance perspective

Aristotle regarded images as the main medium of thought (Eysenck and Keane, 2000), and proclaimed that thoughts are impossible without images (Hummel 1993). Despite opposing debates on their utility over the years due in part to their elusive nature (Goldstein 2008), the traditions of anthropology and cognitive science have put great emphasis on images and explored their linkages to aspects such as culture and internal information processing, respectively. In addition, images have become also relevant to the resource governance context. Approaching from the angle of policy decision-making and implementation, the most salient issue becomes understanding how the images that governance stakeholders hold influence policy initiation, execution and evaluation, and in turn how they are affected by the very process. This entry point is supported by an

argument that "individual cognitions or mental models of resources are not irrelevant to environmental decision making, as assumed by content-free framing in terms of utilities" (Atran et al. 2005: 771).

The interactive governance perspective highlights image as one of the fundamental elements representing the normative and cognitive concerns of fishery stakeholders (Chuenpagdee 2011; Kooiman et al. 2005; Song et al. 2013). Images gain additional significance because their disagreements and interactions can affect the overall governability of a fishery system (Chuenpagdee and Jentoft 2009, 2013). Framed as 'meta-level' governance (i.e., what governs governance), images, along with values and principles, underpin the overall governance process, guiding, shaping and inspiring decisions and actions. Kooiman (2003: 29) argues that "anyone involved in governing, in whatever capacity or authority, forms images about what he or she is governing". Similarly, Jentoft et al. (2010: 1315) explains that "governing is inconceivable without the formation of images, and that they are needed for the sake of understanding, communication and action". Such statements affirm that images are omnipresent and integral in the act of governing. Because images can serve a persuasive role and be used as a rhetorical tool to shape policy, it is in the interest of governors, then, to find compelling images that can help clarify or favorably represent their vision of governance (Morgan 1997).

Images are not only the domain of those who govern, however. Every person involved in the fishery holds an idea of what they believe, what they perceive could happen, and what they think should happen (Jentoft et al. 2010), whether they are strong or weak, elaborate or vague. In fact, images are understood to go deeper than simple

opinions stated by stakeholders (Jentoft et al. 2012). Whereas attitudes and perceptions provide a useful way of assessing people's sentiments about specific objects, situations or issues, they themselves are based on other mental constructs, such as values and images, which are slow-changing, few in number and deeply ingrained (Rokeach 1973; Vaske and Donnelly 1999). Images are, instead, "a way of thinking and a way of seeing that pervade how we understand our world generally" (Morgan 1997: 4). Thus, images help describe our life-world: they encapsulate and synthesize numerous independent observations into a coherent model and provide a basis for explaining other additional observations (Jentoft et al. 2012). Further, images have a predictive quality. While real practices and experience shape one's images, the reverse is also true because people can be driven by their ideas held in their images. Because people tend to see the world in the way the images are drawn, and then act in ways that make the world conform to them, they do not just describe what is happening but prescribe how things ought to look like (Carrier 1998: Foster 1965).

Finally, images are typically said to be stable and dependable, treating any inconsistent observations with suspicion or outright rejection. Yet, they do shift over time, and may also go through an abrupt switch at times akin to an epiphany. Boulding (1956) posits that images become what they are through the continuing process of receiving and responding to innumerable messages via face-to-face communication, personal or secondary observation, news media, and policy directives. In fisheries, images may be altered as stakeholders observe changes in the natural conditions or start to engage in new practices. For instance, as a response to a decline in natural fisheries system the image of wild capture fisheries in South Korea has broadened to encompass

stocked fish, i.e., those reared in the hatchery, released as juveniles, and then caught later in the sea. As a result, it is customarily accepted by producers and consumers alike that the stock and release fish are part of the wild fisheries, and only those fully grown in fish tanks or offshore cages are labeled as farmed fish. Also, with an introduction of government policies such as individual vessel quotas in the Norwegian coastal cod fishery, each vessel has begun to be imbued with an image of a self-regulating governor, who is responsible not only for the operation of catching fish, but also for making arrangements with regard to processing, staffing, and managing of the quotas and capital investments (Johnsen 2013).

Case study of South Korean coastal fishery

General characteristics of the fishery

South Korea (officially the Republic of Korea) is located in the southern part of the Korean Peninsula in the Northwest Pacific region (Fig. 1). Endowed with productive fishing grounds in all three adjacent seas – the West Sea, the East Sea, and the Korea Strait which joins onto the East China Sea (Kang 2006), fishing has naturally taken place from ancient times, and helped satisfy much of the domestic fish consumption demands over the years (Hong 1995). Fish occupies an integral part of Koreans' dietary life and intimately connected to their culture even to this date. According to data recorded since 1960s, fish has consistently contributed over 40-50% of the animal protein intake per capita per day (Han 2009). On the production side, Korea ranked 13th in the world in 2010, with inclusion of seaweed production (FAO 2012). In the coastal fishery, there are

nearly 150 target species of commercial significance, which include squid, mackerel, saury, blue crab, anchovy, and hairtail as well as a wide variety of shellfish and seaweeds (Kang 2006). Also, with over 28 licensed fishing gear types, it has the strong character of multi-gear, which include gillnet, hook and line, traps, longlines, and hand gear such as a hand hoe for catching clams (Han 2009). Also, boats weighed under 8 tons are allowed to operate in the coastal waters representing the small-scale sector.

A brief history of governing of fisheries and the 'Jayul' governance initiative

Korean people have always had close ties with the three neighboring seas, using them throughout history for national security, trading, and the associated exchange of cultures as well as for fishing (Hong 1995). In the pre-modern period, many inshore fishing grounds were privatized by clans and village authorities. With the beginning of the Japanese occupation of Korea in 1911, the colonial government took over and restructured Korean fisheries by introducing fishing rights and laws and also founded fisheries cooperatives at the village level. This shift endowed the government with the exclusive power to grant and manage licenses and effectively placed the colonial state in charge of overall fisheries management (Cheong 2004). Following independence in 1945, post-colonial government inherited much of the colonial setup, and the fishery has been chiefly operating under the overarching direction of the central government who sets regulations, issues licenses, enforces rules, and provides benefits and subsidies to communities (Cheong 2004; Choi and Han 2002).

In recent years, however, it was becoming increasingly evident that the 50 years of government-centered management is proving inadequate to account for diverse regional

characteristics, and resolve various environmental and social challenges that have surfaced surrounding fisheries (Cheong 2003; Han 2009). In addition, fishers were prone to rely on the central government for subsidies and policy direction (Lee 2010). As a response to the ineffective management regime, the central government initiated a new institutional arrangement called the "Jayul Community Fisheries Management" in 2001 (hereafter referred to as 'the Jayul'). This governance initiative aims to raise the level of community participation in managing local fisheries and ultimately to instill a sense of ownership in resource users (Lee et al. 2006; MOMAF 2003). Jayul, meaning free will in Korean, is a type of placed-based co-management program where government sets out the institutional framework and provides financial and technical assistance to local fisher organizations, while the latter drafts local constitution that specifies committee composition, membership rules, fishing restrictions and penalties, among others, and carries out the management plan for their fishery.

Since its inception a decade ago, the number of community fisher organizations participating in the program has reached 893 in 2011, and there have been several exemplary cases in which fishing income has increased and illegal fishing have subsided through this process (MOMAF 2005; Uchida et al. 2010, 2012). Yet, doubts have also been raised as to whether this governance reform is genuinely taking root. Many Jayul communities simply exist only on paper with no substantial follow-up activities (Seo and Byeon 2006). Moreover, a financial incentive system that the central government has set up to entice fishing community organizations to join in and keep up with the activities could end up promoting further reliance on government, negating its original intention. For instance, there is a worry that discontinuation of the funding or facing low prospect of

receiving financial benefits may arouse negative sentiments towards further participation in the program and induce communities to lapse back into inaction (Lee 2010).

Fig. 1 Map of South Korea (community sites are shown as double circles; triangles indicate survey locations with managers/researchers)

The central government has expressed the ambition of broadening its participation and benefits to 1,400 fisher organizations by 2014 and to nearly all 2,000 coastal communities nationwide in a foreseeable future (Lee 2010; PPACP 2008). Lee and Shin (2004) also submits that achieving this new mode of governance represents the only viable option available in improving the fisheries situation in Korea. Corresponding to these high expectations, a study of images stakeholders hold about the coastal fishery and their interactions can be undertaken to generate alternate insights as to the Jayul's impeded progress and explore ways it can negotiate its challenges.

Method and study design

With the aim of providing a comprehensive account of stakeholders' images operating in the governance system of Korea's coastal fisheries, we designed and employed a semi-structured survey to target a wide range of fishery stakeholders. A set of short questions was presented in the survey reflecting the four aspects of a fisheries system: the natural, the socio-economic, the governing system, and the governing interactions, as stipulated by interactive governance theory. This scheme, depicted in Fig. 2, follows the idea that images people form about something can be informed by various elements and challenged from multiple angles. In addition, images can be emblematic, and they are typically unverbalized and remain at the subconscious level. As follows, the survey design does not attempt to directly ask about images, while also giving respondents purposely little opportunity to contemplate about them. Instead, the questions seek to capture the first few words that come to their mind, as they likely are the most pressing ideas they have about

the fisheries reality. At the same time, more detailed expression is encouraged if the respondents feel inclined to elaborate on their responses. Lastly, the succinct phrasing of the questions helps to minimize response bias; thus the responses can be of any length and can cover any aspect of the systems in question. Each survey took about 10-15 minutes on average to complete, offering a time-effective way of engaging a potentially large number of respondents.

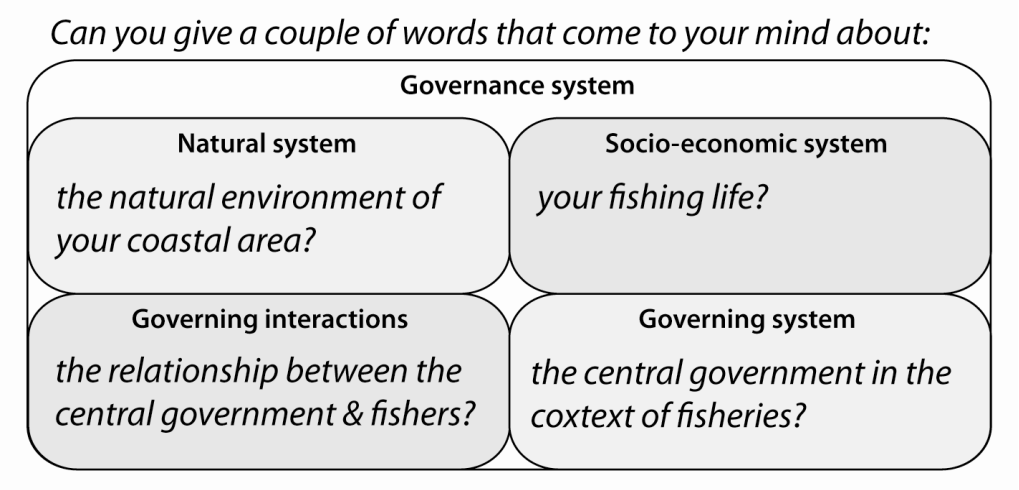

Fig. 2 Survey questions to elicit stakeholders' images about fisheries and fishing life corresponding to four aspects of a governance system

Respondent groups

Fishery stakeholders targeted in the survey included government managers and researchers, as well as resource users and fishing community members, who are increasingly regarded as bona fide actors with different governing roles (Gray 2005; Johnsen 2013; Mikalsen and Jentoft 2001). In order to ensure a comprehensive array of

fishery experiences, fishing environments, and the varying level of involvement with the Jayul, respondents were drawn from multiple fishing communities. Final selection identified eight sites – four clusters of two communities, whose locations and attributes are displayed in Fig. 1 and Table 1, respectively. For instance, the eight studied communities show a diverse set of target fisheries ranging from clam-gleaning in intertidal mudflats in Bakmi-ri and Goongpyeong-ri, finfish-based boat fishery in Gusipo and Jiksan2-ri, to mussel culture in Gubok-ri and Sim-ri. Their involvement in the Jayul program also varies from zero to a decade-long participation. This inclusive setup is expected to hold the findings of the survey in greater relevance to the Korean coastal fishery as a whole, and induce more systematic comparisons between communities to tease out potential differences in images.

Survey process

The survey was conducted during fieldwork in South Korea in 2012. Participation with fishing community members was solicited in the public surroundings of fishing villages, such as streets and fishing wharves, as well as by visiting residential houses during daytime. Individual face-to-face survey was conducted to minimize any social pressure that may exist and hence influence their response. The community respondents comprised adult individuals, both male and female, involved in the production and marketing aspect of fishery, which include harvesters, processors, retailers, wholesalers, and retired fishers. Although their activities in the fishery as well as the level of dependence on the resources for supplementing livelihoods varied, they all drew direct or indirect income from fisheries. As shown in Table 1, 25 participants in each community was targeted using

quota sampling. Limited member size of communities and irregular work schedules of many members, for instance, served as practical constraints to random sample selection. Nevertheless, comparable demographic details across the eight communities were attained with respect to variables such as age, years in fishery and formal education, and gender composition (Table 1(b)). The survey with 25 government fishery managers and researchers took place in their respective offices scattered across the country. Informal chats with additional key informants and direct observation during 1 to 2 week long visits to each community were used to triangulate the data and thus complemented the survey process.

Table 1 (a) Fishery attributes and (b) demographic information of respondent groups

	Resource dependent community								Manager/ researcher	Total
(a)	Bakmi-ri	Goongpyong-ri	Gusipo	Dongho-ri	Giseong-ri	Jiksan2-ri	Gubok-ri	Sim-ri		
Location	West coast – north	West coast – north	West coast – south	West coast – south	East coast	East coast	South coast	South coast	All areas	-
Main fishery	Clam, octopus, oyster	Clam, octopus, finfish	Crab, octopus, finfish, elver	Crab, octopus, clam, elver	Finfish, sea mustard, abalone	Finfish, anchovy, sea mustard	Mussel culture, finfish, octopus	Mussel culture, finfish	Oversees all fishery	-
Fishing environment	Intertidal area	Intertidal area, water column	Water column, interdital area	Water column, intertidal area	Water column	Water column	Water column, intertidal area	Water column	Oversees all environment	-
Year joined the Jayul program	2004	2007	2003	2007	2001	2006	Not joined	Not joined	-	-
Member size of Jayul community	107	117	72	102	79	75	152^	101^	-	-
(b)										
# of respondents surveyed	25	25	25	25	25	25	25	25	25	225
Male	15	19	23	22	20	19	23	23	23	187
Female	10	6	2	3	5	6	2	2	2	38
Average age+	61	61	54	60	64	59	57	59	49	-
Age range*	39-82	40-79	26-82	37-81	50-80	35-80	39-78	39-77	31-65	-
Years of fishery experience*	3-60	6-60	1-50	1-55	1.5-50	0.5-55	5-60	4-40	1-44	-
Years in formal education+	9	9	8	8	9	9	10	9	17	-

+ denotes average; * denotes range; ^ denotes member size of existing non-Jayul fisher organization (i.e., a fishing village cooperative)

Data analysis

Data were analyzed using an inductive 'thematic analysis' procedure, appropriate for capturing intricate meanings and highlighting salient patterns within the data set, as described by Braun and Clarke (2006). Representing a more common and generic form of qualitative data analysis, it offers flexibility in working with various types of data, including the single-word responses or short expressions used in this study (Saldana 2009). The data was first translated from Korean to English by the first author, who holds proficiency in both languages. All responses were transcribed and coded. Whenever a new code (i.e., category) was identified, previous responses were re-examined to assess their relevancy and re-assigned as appropriate. The next phase involved searching for repeated common patterns (i.e., themes) and gathering the relevant coded responses within the identified themes. The resulting themes were reviewed and refined to ensure its representativeness of the coded data as well as its coherency to the overall story it generates. Lastly, we reviewed our findings with community leaders and key informants to confirm its validity. Under this scheme, each response represents an image on the wide-ranging aspects of the fishery/fishing life. The coded responses are organized into a set of identifiable categories, while the categories are then grouped into themes. The themes would therefore represent major areas of collective imagination that are invoked in stakeholders' minds.

Results

Ten most widely-expressed image categories

The list of themes and categories emerged for each respondent group was compared with each other to search for commonality. This resulted in ten most widely-expressed categories across the groups, as shown in Fig. 3. Together with 18 additional categories, they make up a total of 11 themes observed in the overall responses (Table 2). Despite being less prevalent, according to the frequency of the coded responses, the additional categories have certain roles to play in shaping an individual or a group's image about the fishery. Their importance would likely be contingent upon specific geographical and socio-economic contexts. The ten most frequently expressed categories are briefly illustrated, as they are organized according to the four aspects of a governance system.

Table 2 11 image themes and 28 categories generated in the survey representing an inclusive range of stakeholders' images about fisheries and fishing life

Image theme	Image category	Positive (+), negative (–), or neutral (○) images?	Corresponding aspects to a governance system*
Cleanness of the environment	Pollution and environmental degradation due to anthropogenic influences	–	N
	Clean coastal environment	+	N
	Action items for clean coastal environment	○	N
Fish as natural resources	Fish as resources, their productive functions and socio-economic benefits	+	N-S
	Resource depletion and overfishing	–	N
	Management measures for fishery resources	○	N-G
Sense of place	Familiar, characteristic, and idyllic scenery	○	N-S
	Connection of coastal environment to physical health and peace of mind	+	N-S
	Inadequate awareness and mindset about the sea and the fishery	–	N-S
Fishing income and livelihood	Economic and physical difficulties in fishing work	–	S

	Livelihood and income activities	○	S
	Modest or content living	+	S
Rural development issues	Cultural and political marginalization, aging population, and development needs	–	S
	Depleted expectation and hope	–	S
Community cohesion	Strong sense of community	+	S
	Eroding community norms and social capital	–	S
Government duties and structure	Provision of assistance, advice, and fisher-oriented policy	○	S-G
	Government organization and structure	○	G
Enforcement of regulations	Dissatisfaction and resentment towards coast guards	–	G
	Law enforcement against illegal fishing	○	G
Appraisal of government efforts	Gratitude and appreciation for government	+	G-GI
	Unhelpful and ineffective work	–	G-GI
Differences in roles and perspectives	Recognition of differences in roles and perspectives	○	G-GI
	Government as an inflexible armchair expert	–	G-GI
Quality and quantity of interactions	Close relationship, mutual dependence, and frequent communication	+	GI
	Breakdown in communication, and unproductive, hostile relationship	–	GI
	Little or lack of interactions	–	GI
	Hierarchical, vertical interactions	○	GI

* N- natural system; S- socio-economic system; G- governing system; GI- governing interactions

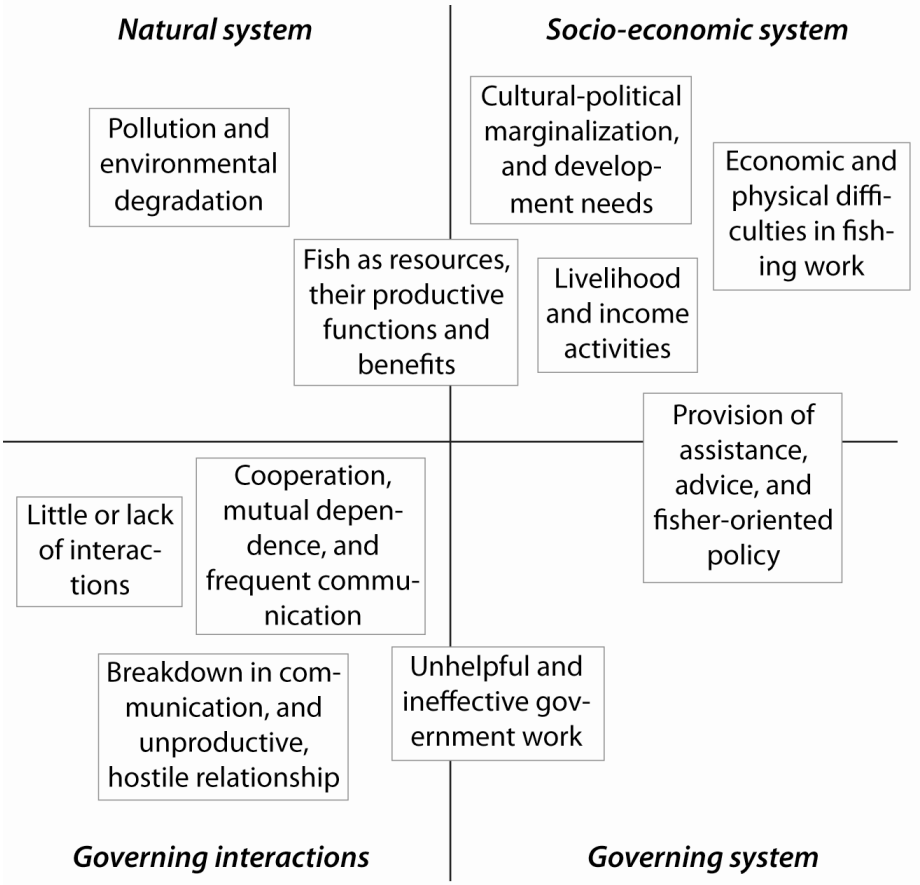

Fig. 3 Ten widely-expressed categories that form the main images about fisheries and fishing life, as conceived by the surveyed stakeholders and prompted by the four aspects of a fisheries system

Natural system

Respondents frequently made reference to negative trends observed in the coastal and fisheries environment. They expressed concerns on human-driven pollution and environmental degradation through remarks such as "garbage/styrofoam", "effluent discharge from upstream or shore-side factories", "ghost gear", "fish kills", "oil spills", "exotic species introduced through ballast water", and "construction of a seawall/tide

embankment that disrupts sand and current movement and creates stagnant water in the blocked estuary". Overfishing or resource depletion of local stocks was another dimension that constituted the image about environmental harm. At the same time, the positive notions of a productive resource system were also made explicit. "Lots of fish in the sea", or the various fish species that are targeted and caught, such as mussel, flatfish, eel, swimming crab, octopus, and manila clam, were some of the direct responses for the natural system envisaged by the surveyed fishery stakeholders.

Socio-economic-cultural system

The socio-economic domain of fishery and fishing life was predominantly conjured up with reference to wealth generation, livelihood activities, and income concerns. On one hand, images focused on great or modest prosperity experienced in the fishery through remarks such as "life is okay even though income is not high", "making a living and putting food on the table is not a big problem; it's a calm, smooth life though not abundant", and "the standard of living among fishers is still generally higher than farmers". More frequently mentioned images, however, depicted harsh realities of a fishing life that relates to physically strenuous labor, vulnerable working environment, and concerns for income, retirement and livelihoods. Examples of responses directly spoke to this desolate picture: "living 'paycheck to paycheck' relying on each day's earning", "for me, there is no option but fishing, whether it works or not; I have to fish till the last day I am able to work", "we are the poorest (in the society)", "debts are a problem; fishing require loans to operate unlike agriculture, and there is no interest relief", "fishing work is on the verge of extinction", and "stagnant seafood price even

when the price of every other product is going up". In addition, wider cultural and rural development deficiencies contributed to the way socio-economic sphere is conceptualized. Aging fisher population is a dominant element as indicated by comments such as "young people are leaving; if I were younger, I would have left too; it's sad but true", "with aging population, there is no vision for the future" and "soon there will be no one to go out on boats". Too few recreational and cultural amenities as well as inadequate education and health facilities were also mentioned. On a bigger societal scale, fishery was viewed as a marginalized sector through comments such as "support to fisheries being placed on a low priority compared to cattle raising and agricultural industries", and "macro policies such as Free Trade Agreements promoting national interests but at the expense of primary industries such as fisheries".

Governing system

The central government has been a major governance actor in the fishery through a hierarchical management system that has been in effect since 1908, when the first Fisheries Act was introduced (MIFAFF 2012). In this study, its presence was found to be framed in two main streams of viewpoints. First, many respondents spoke about government's organization, roles, and responsibilities, with an emphasis on the services they provide to fishers and communities. Provision of financial and technical assistance, policy guidance, instruction and educational sessions, together with enforcement and safety-at-sea activities by the coast guard formed a key area of attention informing the ways respondents imagine the coastal fishery. The other prevailing notion displayed a sentiment highly critical of government's work. Though not all comments were as stark

as this: "they are thieves; fisheries research institutes and government fisheries departments should all be gotten rid of", many still decried government's ineffectiveness, insensitivity and inflexibility. For example, statements like "what they do fail to create any substantial help to fishers", "the coast guard conducts excessive enforcement of regulation on small-scale fishers; they should give a break to small boats", and "it's all an armchair talk; what they know and do is useless, ineffective, and theoretical; it simply doesn't fit with the reality" are illustrations of the typical images characterizing this dominant narrative.

Governing interactions

With regard to the relationship between governing authority and fishing community, two opposing themes, one favourable of the relationship and the other not, were identified to contribute most to the interactions that give rise to image formation. The more prevalent of the two framed their interactions as inadequate, infrequent, and antagonistic. Words observed in the data such as conflict, distrust, discord, protest, resentment, and hostility found in the responses succinctly characterize this viewpoint. A portion of the government managers/researchers' responses were also shown to hold a similar view, illustrating the relationship through phrases such as "oil and water" and "two parallel lines that never meet (unfortunately) which symbolize continuing efforts by the government and fishers, but separately and with different trajectories of thoughts". Among the community respondents, comments such as "there is little contact (with the government), so I don't know" and "interactions are virtually non-existent; maybe for an education session, but even that is perhaps once a year, and I have no business that brings

me to visit the fisheries office" also occupied a substantial share of the responses. They imply, not only inadequate interactions prevail, but also that having no relationship can deprive fishers of any image (e.g., neither positive nor negative) towards the governing system. On the other hand, a view that suggests positive and improved interactions was also present. Some respondents highlighted close relationship, mutual understanding and dependence, frequent communication, active cooperation, and little confrontation, among others. For instance, community respondents in Sim-ri and Gubok-ri submitted that "government fisheries office exists because fishers exist; they treat fishers much better these days", and "there are now many possible (fishery-related) organizations to interact with". In addition, a statement by a government fisheries officer, which says "the relationship should be like a large push cart where one pushes and one pulls as they move together; government can lead and fishers can make suggestions", further describes the positive interactions in the envisioning of the fishery. Such image also provides a fertile ground for the implementation of the Jayul co-management system.

Dimensions of stakeholders' images

The results of the survey point to several dimensions about the general characteristics of stakeholders' images, as summarized in Fig. 4, thus preparing us for a better understanding of what we look for in images and how to make use of them in governance processes. First, it was observed that there are positive, neutral, and negative images. In fact, what was most striking is that often the same issue is presented in all three senses, as shown in Table 2. For instance, the good quality of the natural environment could conjure up a hopeful image of "a tidy, clean and pretty coastal village", while other responses are

framed in a negative connotation by emphasizing polluting elements and environmental degradation. It is also possible that neutral images are brought forward as in the response of "garbage recycling". Thus, it appears that images may carry a certain degree of value judgments, which influence people's outlook on a given subject matter. What determines their disposition in the first place and how the positive or negative responses contribute to certain governance outcomes are two of the potential research questions that can further illuminate the usefulness of images.

Secondly, images can overlap between the different aspects of a fisheries system, as listed in Table 2. While the four systems are used in the survey as prompts to guide responses, a significant portion of the images generated here are shown to be connected to more than one system and imbued with multiple meanings. For example, a theme labeled 'sense of place' bridges the natural and social system by creating images that pertain to emotional well-being and physical health gained from a clean coastal environment and rural lifestyle. Responses such as "living in this coastal environment, my mind opens up and I feel refreshed and relieved" and "this is a longevity village; we have clean air which is good for our health" serve as an illustration of this characteristic. Additionally, a particular image of stock enhancement was mentioned with reference to several different contexts. Regarding the natural system, it was conjured up as a remedy to the environmental condition of depleted natural fish stocks. In the context of socio-economic system, it was prompted as an income boosting project. Similarly, it can also hold the meaning of a government initiative, or as a combination of all of these. Images therefore likely reflect a complex reality, similar to what Jentoft et al. (2012) presents in their model of stakeholders' images about marine protected areas. The fact that images may

not fit neatly into a single category, and that they can lend themselves to different and multiple interpretation is something to be recognized in governance.

In addition, images are also shown to have a time dimension, representing past or future conditions as well as embodying current affairs. People not only describe what they see happening in the present time in their images, but may also reflect on what they saw and experienced in the past to highlight any changes. Furthermore, images may capture what people envisage as a future possibility or what they would like to see, thereby prescribing how things ought to be. Subsequently, images can often have the look and feel of 'causes' and 'solutions' about an issue. Responses about governing interactions provide an example. One image problematizes a past relationship, "in which the government was standing at a higher ground looking down at fishers while fishers looking up to the government personnel". Another image depicts "a need for a proper notice, an explanation of new or changed regulations in advance by the government, and not simply focusing on law enforcement and issuing fines" as a suggestion towards a new and improved form of interactions.

Finally, it is also observed that images may describe an activity as something that is action-based, as opposed to a portrayal of 'how things are' that explains the state of affairs. In the socio-economic realm, prevailing responses drew an image of various livelihood activities taking place in a fishing community, from "going to the beach and collecting oyster and clam with simple gear", and "throwing a large rock out from the boat as part of casting anchovy nets". Another group of images was formed visualizing difficult conditions in coastal fisheries, which depicted stagnant seafood prices, productivity-deprived fishing grounds, tough and physically-demanding nature of fishing

work especially in the cold and dangerous sea, and an unpredictable income inflow, among others. Therefore, images might be directly associated with action or instead provide a context from which action could arise.

To this effect, all images can be situated within the continuum of these four dimensions and classified accordingly. Thinking about images in this way is expected to provide a helpful avenue with which their implications to governance issues can be clarified and elucidated.

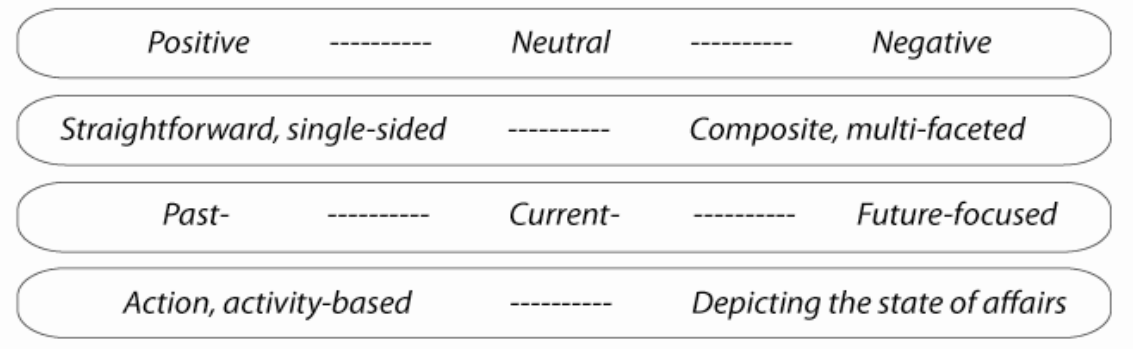

Fig. 4 Four dimensions of stakeholder images outlining their general characteristics as identified in this study

Implications for the Jayul program

The image themes and categories represent areas to consider in reflecting on past governance processes and formulating future directions, as they tell us concerns, aspirations, and otherwise salient features to which fisheries stakeholders find important or influential. Based on the results and the observed community characteristics, we

present three major areas of discussion and illustrate the potential utility of exploring stakeholder images in drawing out Jayul governance implications. Specifically, we seek to explain what aspects of the Jayul program align with the fishery stakeholders' images of the fishery and their fishing lives, and what disagree; how images help make sense of the current progresses and challenges of the program, and which images need to be addressed in promoting its sustenance and effectiveness.

Strengthening local environmental stewardship amid macro coastal development

First, all fishery stakeholder groups identified pollution as a widespread problem to the local fishery by citing a large range of polluting elements. Further, they held aspirations towards a clean coastal environment, which also connects to increases in resource productivity and human health. This is one of the prevailing themes where stakeholder images closely align with the intent of the Jayul program and also where progress at the local level has been made. Various cleanup activities have been a key component of Jayul activities emphasized and practiced over the years with many communities engaging in monthly coastal clean ups (MOMAF 2003, 2005; Uchida et al. 2010). For instance, in the two of the Jayul communities studied in this study (Gusipo and Giseong-ri), noticeable differences in coastal tidiness was observed. Gusipo, in particular, has constructed a garbage/ghost gear collection point in the central area of their harbour, which has greatly contributed to cleaning up the shore and enhancing resource productivity in the nearby water.

A sub-set of images in the 'pollution and environmental degradation' category concerning macro anthropogenic processes may, however, show that local stewardship

can be thwarted by the occurrence of large-scale coastal development activities. The effects of these macro developments are often far-reaching and even irreversible, as they create a direct impact on the natural and socio-economical make-up of fishing communities (Choi 1998; Kang et al. 2004). Construction of a seawall which blocks an estuary or a nuclear power plant which affects seawater temperature, for instance, may overwhelm and discourage an individual or a community to the extent that their stewardship initiative and commitment to act with their images of clean local environment is compromised. For example, rubbish, burning of garbage, and rotting old gear were widely observed in the harbour in Sim-ri, a non-participant in the Jayul program. A reason for inaction inferred from the images of community members could be that Sim-ri opens up to highly industrialized Masan bay, one of the most polluted bays in Korea (Rye et al. 2011). Being confronted with more than 30 years of chronic pollution and contamination problems may have caused coastal inhabitants to feel powerless against the large-scale projects and to become disillusioned about local cleanup activities. A fisher respondent in Sim-ri elaborated on this image by stating that "acting to prevent pollution is difficult, as the industry is first configured to produce pollution; things that we manufacture are in the end all pollutants, and disposing them on land eventually all ends up in the sea". He added that "in his fishing practice and daily living on the coast, he knows what to do and what not to do, but finds it all difficult to prevent the sea from getting polluted". Thus, as these images reveal, ensuring the environmental goals of the Jayul program would benefit from paying greater attention to the (negative) impacts of large-scale development processes. This point further reminds us the importance of

considering the Jayul program in the larger context of macro socio-economic policy and regional traits.

Addressing livelihood concerns and dependence on government intervention

Income motives and improvement of livelihoods were identified as another leading theme in the stakeholders' images about the fishery. Consistent with this, generating direct benefits to community members through non-trivial income increase has been one of the principal aims of the Jayul (Lee 2010), and is presumed to be a prerequisite or the 'bottom line' for keeping communities motivated and interested in carrying out the Jayul activities. To this end, through the financial and advisory support of the government and non-governmental organizations, there has been a sustained effort involving projects such as stock enhancement activities, construction of drying and icing facilities, and tourism ventures (MOMAF 2005).

From the results of this study, it also became clear that respondents including both fishers and managers/researchers hold strong images of government assistance and intervention as being integral to the fishing life. With examples such as "advice, guidance, instruction, leadership", "government support for subsidized fuel and gear repair", "law enforcement against illegal fishing by coast guards", and "stock enhancement by releasing juveniles", the prevalence of this image category could represent a recognition of the roles that government can play, and perhaps should continue to play to a degree, even with the active implementation of the Jayul program.

On the other hand, the issue of government compensation has surfaced as a thorny subject for both Jayul and non-Jayul communities. Given the macro-societal preference

for large-scale coastal development concerning land reclamation and industrial construction in Korea (Yoon and Yeo 2005), compensation for the damages incurred to fishing has become a topic of intense pursuit and scrutiny among fishers, as it could allow them to acquire instant wealth (Lee 2008, 2011). The compensation is in large part granted on an individual basis, which may lead to competition and jealousy among fishers, and weakening of community unity. It also presents little incentive for a community to organize as a group, and is therefore considered a major impediment to the community's decision to join the Jayul program. As a key informant overseeing the Jayul program at the national level confided, "once the compensation relating to the development project becomes a possibility or is applied to a community, the community cannot usually mobilize itself to participate in the Jayul". Also, in order to be subject to a maximum compensation amount, a community tends to shy away from being associated with another government assistance-linked scheme (such as the Jayul). Such dependence on government intervention shown through the stakeholders' images helps explain and reaffirm the challenges the Jayul has faced in establishing itself as a voluntary and nationwide initiative and acts to substantiate the doubts raised about the self-directedness of the Jayul communities.

Engendering cordiality and balance of power in governing interactions

The images also suggested that fishery stakeholders' view of the governing authority was greatly shaped by the interactions with the coast guard. While the coast guard's role was acknowledged and appreciated by some, a prevailing response of the community respondents objected to the way they carried out their work. As they protest against too

much interference and inflexibility in enforcing rules, such images represent a concern to Jayul implementation. An excessive system of regulation and sanction may stifle the spirit of co-management and create an antagonistic environment in which the coast guard is dreaded as a dominant authority figure to be complied with or a nuisance to be avoided, rather than a governing partner. For example, responses such as "coast guards look down on fishers; fishers go through an insulting and bitter experience" and "the new coast guard office was set up here in Gubok-ri a few years ago, and now law enforcement has been too severe; this is making things way too inconvenient and it is tiring to always watch for their action" depict the coast guard as an unwelcomed actor in the minds of fishers. Even the fishers in Bakmi-ri and Gusipo, who maintain a well-established Jayul program with generally productive relations with the coast guard, were shown to discreetly break certain rules and avoid contact with the coast guard whenever possible.

A similar observation can be made about government managers and researchers. According to the images of community respondents, the governing authority was effectively reduced to 'armchair experts', who may be well-versed in the theory and be proficient in working out the numbers, but are out of touch with on-the-ground realities and have little understanding of the contextual details.

At a more superficial level, a so-called "image makeover" would be useful in dispelling the negative and hostile representation of the governing authority and branding themselves as working partners. This may be achieved through enabling frequent field visits and providing institutional support that rewards flexibility in rule enforcement. But these images on governing interactions are most likely rooted in a more entrenched power-suffused relationship amongst actors. Community responses such as "fishers need

to follow government's guidance and do what it tells them to do" and "as long as fishers follow the law, there is no problem" exemplify such viewpoint that assumes the government's role as a leader and the fishing communities' subordinate position. Addressing this fundamental issue would require a structural adjustment that stretches beyond the perimeters of the Jayul. For one, it would involve relinquishing some managerial grip on the part of the governors and accepting higher autonomy in decision-making on the part of those-being-governed (see Chapter 6). Dealing with power would not be necessarily about creating a power-neutral situation, but to recognize its dynamics and strive towards a productive balance of power. Adopting a mindset of humility by managers and researchers might be the first step required to foster this cognitive shift. With growing confidence and prosperity through successful Jayul organization, fishing communities may also feel empowered thereby elevating the images of themselves. As this analysis shows, stakeholder interactions, characterized with friction and antipathy, appear prevalent. In order to help foster a more horizontal mode of fisheries governance consistent with the aims of the Jayul program, engendering cordiality and balance of power would represent an area requiring appropriate consideration.

Conclusion

This study is an exploratory assessment of the stakeholder images in the South Korean coastal fisheries. The objective is two-fold: to derive inductively the major thematic contents of their images, and at the same time to delineate the general characteristics of images as they surface from an empirical setting. The scope of this inquiry was therefore

set deliberately broad, involving a wide range of fishery stakeholders, minimally-phrased probing questions, and an open topic that deals with fishery and fishing life as a whole. The simple and succinct research design adopted in this study is suited for targeting a greater number of respondents (over multiple study sites) and geared towards eliciting dominant images. Comparisons among communities of diverse geographical and governance setup are also enabled. As it offers a different type of image analysis, we expect this design can serve as a supplement to an extensive ethnographic research that involves full-length interviews and sustained interaction.

Based on this method, the elicitation of images generated a diverse array of themes and categories. Not only reaching into different facets of a fisheries system, images are also shown to simultaneously represent multiple situations with blurred thematic boundaries. Other dimensions of images include positive, negative, or neutral connotations attached to them, and action-oriented versus depicting the state of things. Moreover, images are imbued with a time component: their expression is grounded in past events, current trends, or future aspirations, which can be framed as causes or solutions to an issue in mind.

Through these characteristics, images tell us what is on stakeholders' minds as the underlying concerns and aspirations about the issues in question and the world at large, forming basis for people's decisions and actions. Therefore, images help explain why a certain fisheries condition comes about and offer an indication of how it should proceed. A discussion of the key images in the South Korean coastal fishery, together with the observed features of the visited communities, give details to why the voluntary implementation of the Jayul program has been faced with difficulty: (1) impacts of large-

scale coastal development and macro policy trends may thwart the promotion of local environmental stewardship; (2) government assistance and intervention is still seen integral to maintaining the fishery and fishing life; and (3) power-suffused and antagonistic interactions are widespread leading to mistrust and unproductiveness in the relationship between government/university and fishing community. It is conceivable that all three images are linked and could interact to create a combined effect. Likewise, the diversity of stakeholder images would pose similar challenges of having to make sense of multiple perspectives, but it also may reveal synergistic opportunities in identifying how a fisheries system can be made more governable. We submit that a closer inspection of the images is a useful undertaking in deepening an understanding of governance initiatives, and thus we encourage continuing exploration into this topic.

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Chapter 6 Instituting governance transition through co-management: a case of South Korean coastal fisheries

Target journal: Ocean & Coastal Management

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Abstract

Institutions are structural constraints that provide regularity, reduce uncertainty and shape people's interactions, acting to enable or hinder governance change. This is relevant to the fisheries context, with various forms of institutional arrangements, such as co-management, being initiated to promote a transition from a hierarchical, centralized system to a more collaborative form of resource governance. In this article, governance transition in South Korea's coastal fisheries, facilitated by the 'Jayul Community Fisheries Management' program, is studied. Its institutional aims are the focus of the analysis, followed by how they align with the 'mindsets' of fishery stakeholders, which forms part of the local context. Such features and their relationship are important areas to consider in understanding how this governance transition would work in practice. Taking a broad approach to analyze institution, the study includes not only the more-frequently-researched regulative aspect, such as rules and law enforcement, but also the normative and cultural-cognitive dimensions, which consider social norms and cultural images. The results describe partial, and at times acute, mismatches between these components, and

help to highlight the impeded progress of the Jayul implementation. Overall, this article demonstrates the care needed in attuning institutions to people's underlying ideas, and suggests possible pathways promoting a range of institutional aims, which can be used to contextualize various community setups existing in the fishery.

1. Introduction

Modern governance concept has recently been applied to fisheries, as a new way to address an increasingly vulnerable resource status, illegal fishing, and acute socio-economic issues such as poverty and marginalization, (Béné and Neiland, 2006; Chuenpagdee, 2011; Folke et al., 2005; Kooiman et al., 2005; Sissenwine and Mace, 2003). This has meant an increased emphasis on stakeholder participation, setting of clear visions and operating principles, and devolution of authority and responsibility, among others. The typically-held hierarchical, unilateral governing of the central government buttressed by the regulation and enforcement regime is giving way to consensus, trust, and cooperation-based mechanisms entailing more direct involvement of multiple actors and resource user groups (Meuleman, 2008). Not many would disagree with this transition need, especially for fisheries governance given the complexity of the issues, although many researchers and practitioners may still have questions about its efficacy. For instance, co-management can be path-dependent, meaning that outcomes may have already been largely determined by the time it was conceived and initiated (Chuenpagdee and Jentoft, 2007). There are also social and political concerns arising during implementation such as the participation paradox (Suárez de Vivero et al., 2008), elite

capture (Platteau and Abraham, 2002), and the lack of capacity of resource user communities (Fabricius et al., 2007). Consequently, less fruitful attempts at governance change have been observed around the world (e.g., Cheong, 2005; Cudney-Bueno and Basurto, 2009; Pinkerton, 1999; Scholtz et al., 1998). In achieving fishery sustainability, these challenges point to a need for a comprehensive analysis of the governance situation in order to foster a shift towards a more effective collaboration and local resource users' participation.

Part of the analysis of governance change concerns the institutional domain. Most commonly defined as structural constraints that provide regularity, reduce uncertainty and shape people's interactions, institutions create an enabling or controlling environment for governing decisions and actions (Chuenpagdee and Song, 2012 or Chapter 3). Through its inertia and stability, institutions can work to resist change and reinforce the status quo (Scott, 2008). Yet, they can also trigger positive feedback, thus serving as a catalyst in bringing changes to the system. 'Getting institutions right' would hence be an important task for any governors concerned with reaching their new or established governing goals.

Given the premise that institutions play a crucial role in affecting how governance takes shape and operates, this article aims to demonstrate its relevance by undertaking an institutional analysis of a co-management system in South Korean coastal fisheries. Governance transition has been undergoing in Korea's fisheries through an implementation of a new institutional arrangement called 'Jayul Community Fisheries Management' program (hereafter referred to as 'the Jayul'). Though top-down in nature, there is a firm belief among government officers and academic researchers that an active and meaningful participation of fishers in the management of local fishery can be ensured

if and when the 'change in mindset' of fishers takes place. In other words, embracing a new set of convictions consistent with the aims of the Jayul on the part of fishers is regarded as a necessary condition for ushering in a more collaborative form of governance. Recognizing this critical link to a successful governance transition, this article approaches the feasibility of the change in mindset from an institutional perspective. More specifically, the analysis focuses on what the Jayul program aims to promote, what mechanisms it relies on for its implementation, how its aims match the existing 'mindset' of fishery stakeholders, and what effects the mismatch creates towards the 'mindset change' as well as governance transition. A broad approach to analyze institution advanced by Scott (2008), which has been recently introduced to the field of fisheries, is utilized in this research in order to gain deeper insights into these inquiries.

The article commences with an elaboration of institution as drawn from interactive governance theory and the analytical framework as informed by Scott (2008). Following a description of the empirical setting and the method, the results section traces the key institutional elements that the Jayul program embodies and attempts to foster in the coastal fisheries. Next, how the institutional aims match the prevailing mindsets of the fishery stakeholder groups is described using examples from South Korea, based also on the studies about their values, principles and images (see Chapters 4 and 5). Lastly, the article concludes with discussion about the implications for the program's future implementation and a reflection on this institution-mindset linked approach and its potential contribution to fisheries governance in general.

2. Theory and analytical framework

Kooiman et al. (2005)'s interactive governance theory considers institutions one of the central aspects in governance:

> [governance is] the whole of public as well as private interactions taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them (Kooiman et al., 2005, p. 17).

Governance relies on the proper functioning of institutions to maintain its structure and to enable societal interactions. But the reverse is also true; the functioning of institutions is also contingent upon specific governance circumstances within which they are situated. According to the above definition, 'caring for' institutions is a necessary part of governance undertaking, implying that institutions are not stand-alone entities but meshed into a wider societal and historical context. Institutions therefore require a context-based treatment as to their design and implementation. For example, despite the best intention and careful design, an institutional arrangement such as co-management might be stymied by a lingering culture of distrust between government and fishers (Pinkerton, 1999). Also, disjuncture in regulations between different levels of government can create legal loopholes that can nullify the community-based management of a local fishery (Cudney-Bueno and Basurto, 2009). As highlighted in the case of South Korea, the 'mindset' of fishers could constitute another crucial part of the cultural context (Chapter 4 and 5), which the design and implementation of co-management could therefore consider.

In this analysis, a mindset is conceptualized to comprise three meta-governance concepts – values, images, or principles. Generally underpinning the cognitive and

normative internal decision- and action-generating process, they appear to have distinct roles to play and occupy different thematic niches in one's mindset and, i.e., (1) general value priorities of an individual, (2) his or her images about the world/fishery, and (3) governance principles he/she subscribes to (see Chapter 2).

The people's mindset and the institutional arrangement (represented by the meta- and the second order of governance, respectively, according to the interactive governance perspective, see Chapter 1) can be theorized to hold a coupled relationship. Institutions delimit individual freedom and thought processes while individuals take strategic actions, reflecting their underlying values, images and principles, to create, maintain, and transform institutions (Giddens, 1984; Kjaer, 2004; Scott, 2008). This 'structure-agency' duality becomes even more pronounced in the context of change. Talcott Parsons submits that institutionalization takes place when people shed their idiosyncratic mindsets and begin to conform and orient themselves to a common set of normative standards and value patterns (Scott, 2008). In other words, individuals internalize these established shared norms so that they hold them as the private basis for their action. At the same time, institutions also evolve, and "much of that evolution comes about as a result of the somewhat disparate values of individuals who are recruited into the institution" (Peters, 1999, p.149). The disparate values may spark innovation and controversy inducing changes in institutions themselves. From this, instituting co-management would be about two things: (1) affecting members' mindsets so that they align with the institutional structures and aims (i.e., structure informing agency); and (2) institutional arrangements being designed and practiced in accord with the mindsets of fisheries stakeholders (i.e., agency informing structure). Hence, an analysis that examines the match between the co-

management and people's mindsets would help highlight this reciprocal interaction. Further, an understanding of the content and the extent of mismatches, for example, is expected to provide insights about the feasibility of the mindset change and eventually the governability of the co-management implementation.

Many fisheries scholars have taken an interest in institutions. In particular, the resolution of collective action problems in common pool resources arguably forms the most prominent and influential angle of study of fisheries institutions thus far in both coastal settings (e.g., Basurto, 2005; Caballero Miguez et al., 2008; Ostrom, 1990) as well as the high seas (e.g. Berkes et al. 2006, Hanna 1999). More recently, however, a new trend has emerged in fisheries research, which highlights a broadening purview of institution (Chapter 3). Drawing from a scheme formulated by Scott (2008), authors such as Jentoft (2004) and de la Torres-Castro and Lindström (2010) have called for a more balanced analysis that not only focuses on the regulative dimension most closely associated with the common pool resource inquiry, but also normative and cultural-cognitive aspects, which have largely remained peripheral in institutional discourse. As such, institutions grounded in cultural habits, social taboos, or religious beliefs, for example, can equally create a robust effect on shaping fishers' actions as much as what formal and informal rules and incentives might prescribe.

Specifically, the broad-based analytical framework defines institution as comprising three 'pillars' – regulative, normative and cultural-cognitive. According to Scott (2008), the regulative pillar is concerned with setting regulatory frameworks and enforcing them. It relies on the mechanisms of rules, incentives and sanctions to shape people's actions. It is expedient and coercive in nature, arousing self-interest as well as

fear of punishment. The normative pillar involves defining goals and designating appropriate ways to pursue them through activation of values and norms. It appeals to social obligation and conformity as opposed to the benefit-cost calculations of regulative rule. Binding expectations are at work, and feelings of shame or pride are activated. The cultural-cognitive pillar emphasizes the extent to which action is informed and constrained by shared knowledge and common belief systems. Under this view, compliance would occur because other types of behavior are simply inconceivable and unorthodox. Relying on symbols and culturally-supported images to give meanings, routines are followed because they are taken-for-granted as simply the way things are done. Together, they define legal, moral and cultural boundaries of people's actions (Scott 2008). It is acknowledged that "each element is important and, sometimes, one or another will dominate, but more often – in robust institutional frameworks – they work in combination" (ibid., p. 47).

3. Description of the empirical setting and methods

3.1. General characteristics of South Korean coastal fisheries

South Korea (officially the Republic of Korea) is located in the southern part of the Korean Peninsula in the Northwest Pacific region (Fig. 1). Endowed with productive fishing grounds in all three adjacent seas – the West Sea, the East Sea, and the Korea Strait which joins onto the East China Sea (Kang, 2006), fishing has naturally taken place from ancient times, and helped satisfy much of the domestic fish consumption demands over the years (Hong, 1995). Fish occupies an integral part of Koreans' dietary life and

intimately connected to their culture even to this date. According to data recorded since 1960s, fish has consistently contributed over 40-50% of the animal protein intake per capita per day (Han, 2009). On the production side, Korea ranked 13th in the world in 2010 with inclusion of seaweed production (FAO, 2012). In the coastal fishery, there are nearly 150 target species of commercial significance, which include squid, mackerel, and blue crab, as well as a wide variety of shellfish and seaweeds (Kang, 2006). Also, with over 28 licensed fishing gear types permitted in coastal fishery, it has the strong character of multi-gear (Han, 2009).

Fig. 1 Map of South Korea (community sites are shown as double circles; triangles indicate survey locations with managers/researchers)

3.2. Governance history and structure

In the pre-modern period, many inshore fishing grounds were privatized by clans and village authorities. With the beginning of the Japanese occupation of Korea in 1911, the colonial government took over and restructured Korean fisheries by introducing fishing rights and laws and also founded fisheries cooperatives at the village level (known as

uchon-gyes). This shift endowed the government with an exclusive power to grant and manage licenses and effectively placed the colonial state in charge of overall fisheries management (Cheong, 2004). Following independence in 1945 the post-colonial government inherited much of the colonial setup, and the fishery has been chiefly operated under the overarching direction of the central government, which sets regulations, issues licenses, enforces rules, and provides benefits and subsidies to communities (Cheong, 2004; Hong, 1995). A common classification of coastal fishery emanating from this management tradition specifies three types of fishing, i.e., license-, permit-, and report-based (see Chapter 1 for more details). First, license-based fisheries include those taking place in intertidal and nearshore areas such as shellfish and seaweed gleaning, fixed gear operation, and aquaculture. The harvesting privileges are licensed to lawful holders allowing them to maintain exclusive management and fishing rights to a designated area. Much of the areas subject to licenses are 'village-owned' fishing grounds. They are governed by respective fishing village cooperatives (i.e., uchon-gyes), who therefore have been the main occupants of this fishery. More recently, however, the licenses are increasingly being conferred or leased out to private individuals to operate the fixed gear or aquaculture in keeping with the rising scale of production and capital investment (Cheong, 2003a). The second type of fishery involves fishing using vessels and gears in the inshore and offshore waters. Regulated through issuance and withdrawal of quinquennial fishing permits by the county and city governments, the permits are held by individual fishers, who may be members of uchon-gyes and/or sector-specific fishing gear associations. The third type is called 'report' fishery. Although it has the highest number of certificate holders (121,453 in 2009) among the three types, it forms a minor

part, as it allows fishers to carry out smaller-scale, rudimentary type of fishing operations on an individual basis. City or county government responds to requests of each fisher by issuing a certificate which is valid for five years (MIFAFF, 2012). In addition to the above, other instruments of the centrally coordinated fisheries management regime include technical regulations (e.g. mesh size, catch size, and closed seasons) and the Total Allowable Catch (TAC).

3.3. Jayul Management Fisheries Community – 'the Jayul'

In recent decades, it has become increasingly evident that the 50 years of government-centered management is proving inadequate to account for diverse regional characteristics, and resolve various challenges such as stock depletion, illegal fishing, and decline of coastal villages (Cheong, 2003b; Han, 2009). In addition, fishers were prone to rely on the central government for subsidy and policy direction (Lee, 2010). As a response to the ineffective management regime, the central government initiated a nationwide program called the Jayul in 2001. This new institutional arrangement aims to raise the level of community participation in managing local fisheries and ultimately to instill a sense of ownership among resource users (Lee et al., 2006; MOMAF, 2003). Jayul, meaning free will in Korean, is a type of placed-based co-management program where government sets out policy guidelines and provides financial and technical assistance, while a local fisher organization drafts and carries out a management plan for their fishery.

Since its inception a decade ago, the number of community fisher organizations participating in the program has seen an over 10-fold increase to reach 893 in 2011, and

there have been several exemplary cases in which fishing income has increased and illegal fishing has subsided through this process (MOMAF, 2005; Uchida et al., 2010). Yet, doubts have also been raised as to whether this governance reform is genuinely taking root (OECD 2011). Many Jayul communities exist only on paper with no substantial follow-up activities (Seo and Byeon, 2006). In addition, a financial incentive system that the central government has set up to entice fishing community organizations to join in and keep up with the activities could be promoting further reliance on government, negating its original intention. For instance, there is a worry that discontinuation of the funding or facing low prospect of receiving financial benefits may arouse negative sentiments towards continuation in the program and induce communities to lapse back into inaction (Lee, 2010).

Such concerns underscore the challenges facing the implementation of the Jayul program. The central government has expressed the ambition of broadening its participation and benefits to 1,400 fisher organizations by 2014 and to nearly all 2,000 coastal communities nationwide in a foreseeable future (Lee, 2010; PPACP, 2008). The initiative is supported by government officers and researchers, such as Lee and Shin (2004) who submit that achieving this new mode of governance represents the only viable option available in improving the fisheries situation in Korea. Corresponding to these high expectations, there is a need for a thorough understanding of the Jayul program and its interactions with fishing communities. To this effect, this article looks at what the Jayul program is set up to institute and how it fits with the mindset of the fishery stakeholder groups.

3.4 Study methods

Primary and secondary data for this study was collected during two fieldtrips to South Korea in 2009-2012. A review of written documents (including academic papers, government reports, and media articles), informal chats with key informants, and direct observation were used for the analysis of the Jayul as an institutional arrangement. The study of people's mindset was conducted using a mixed-method survey which targeted two groups: fisheries resource dependent community members (n=200) and government managers/academic researchers/non-governmental consultants (n=25) (see Chapter 4 and 5 for full details). Fig. 1 shows the various survey locations. By using a set of latent concepts – values, images, and principles – to represent one's mindset, the survey elicited participants' underlying aspirations and concerns, their understanding of the operational guidelines for the fishery, and their outlook on the fishing life in general. Much of the data collection, including the survey and the document analysis, was carried out in Korean language by the author who holds proficiency in the language.

4. Results

The result presents the institutional aims of the Jayul program as shown on the official documents and as reflected by key informants. They are related to all three pillars of institution under the scheme of Scott (2008). First, the cultural-cognitive elements are introduced, followed by the aims that characterize the normative aspect. Lastly, the key regulative components of the Jayul are assessed. The subsequent section explores the

(mis-)match between the aims and the mindset by pairing up the three pillars with the meta-governance concepts. A summary is provided in Table 1.

4.1 Institutional aims of the Jayul

4.1.1 Cultural-cognitive elements

The Jayul, first and foremost, aims to foster self-reliance and local-initiatives among resource user communities. The term Jayul stands for 'free will', 'on one's own initiative', or 'autonomous'. A government publication (PPACP, 2008, p.9) sets out a vision for the Jayul as: "with minimum control and involvement of the central government, fishery resources get adequately managed and utilized by fishers themselves with self-created rules that fit the local context." From this, it appears that the Jayul marks a rather dramatic turn towards community-based governance through advancing the image of fishers and community members as the bona fide leaders and managers of the local fishery. At the same time, however, ambivalence on the part of the central government is also observed with regard to the degree of community self-reliance and autonomy being aspired. The same document also submits a differing view. It prescribes that the central government would establish an overarching framework of objectives, means and directions for the Jayul, and under this guideline, a detailed management scheme that involves a specific fishery, target species, and fishing ground would be created by fisher organizations (PPACP, 2008). This latter view imagines the Jayul not as a self-directed, autonomous community initiative, but a contained one under the auspices of government partners and other centrally-positioned actors, whose evaluative and advisory role is perceived to be integral to the process (Lee, 2010; MOMAF, 2003). This

inconsistency presents a potential source of confusion at the most basic level of conceptualization. A more precise delineation of Jayul's images would help attain policy coherency by clarifying stakeholders' roles and responsibilities, and send clear messages to the public about what the Jayul hopes to achieve.

Notwithstanding the ambivalent nature of the Jayul, many researchers and government managers converge on the view that Jayul is a 'cultural movement' to instigate sweeping improvements in coastal communities (Lee and Shin, 2004; MOMAF, 2003; PPACP, 2008). This is a departure from seeing it as a narrow sector-based project set up to produce specific and quantifiable outcomes, such as fishery income enhancement. This view highlights the criticalness of mindset change within wide community members from simply relying on government direction and support to taking on increased responsibility and bearing a sense of ownership for local resources in order to make coastal villages a more livable and viable place. To this end, sustained participation in projects such as stock enhancement activities, coastal clean-ups, fishing ground monitoring, and community events and businesses have been identified and being promoted as what will trigger the shift in the mindset of community members.

4.1.2. Normative elements

Another aspect emphasized in the Jayul is community norms. It attempts to advance the notion that self-reliance and local-initiatives promoted is not necessarily to be carried out by each individual fisher but as an organization in a collective setting. It aims to foster a sense of oneness, brotherhood, or fellowship for the greater good of a fishing village (PPACP, 2008). The Jayul is a group activity: fishers can participate only as a group,

most typically through uchon-gyes or area-based gear associations. It thus encourages strengthening of an existing organization or creating a new one in its absence. Subsequently, it appeals to social capital, social networks and mutual coercion to help deter illegal fishing, achieve equitable production and distribution of fishing income, resolve disputes, and raise participation in community activities (Bodin and Crona, 2009; Grafton, 2005). In the present study, this sentiment is echoed by several informants, that the promotion of a community norm is a crucial element of what the Jayul embodies and is trying to institute. For example, a fisheries officer in Gochang County observed a greater degree of willingness to follow rules and to cooperate among community members at more established Jayul communities, while in less established sites, suspicion and disputes were more prevalent. Similarly, the president of the Jayul Association, a nascent non-governmental body representing the Jayul communities at the national level, commended the foresight of the initiators of the Jayul for not only advocating the self-reliance component but also emphasizing community values as a complementary institutional element in the promotion of governance change.

4.1.3 Regulative elements

Participating in the Jayul program, first and foremost, requires that an interested community creates a local constitution that specifies committee composition, membership rules, fishing restrictions, and penalties, among others. A research output published by the Ministry of Marine Affairs and Fisheries (MOMAF) stipulates that the self-created rules of the Jayul community should be set within the legislative boundary of the central government such that they do not negate or conflict with the national fisheries regulations

(MOMAF, 2003). It also adds that in cases where the technical fishery rules of the Jayul community are deemed more appropriate, through consultations with the central government, the national fisheries regulation may be revised. Hence, the current legislative setup appears to present a nested hierarchical system in which Jayul community rules are encouraged to govern the specifics of the local fishery operation, and yet they themselves are governed by the national fisheries regulation.

Promoting the Jayul in the regulative dimension, however, involves at least another level of rule-setting, i.e., the national-level recognition of those Jayul rules by the central government. In December 2004, the Fisheries Law underwent a revision to provide indirect guidance to the implementation of the Jayul (PPACP, 2008). The Act 70 proclaims that, (1) in terms of provision of administrative, technical and financial assistance, government will give priority to those fishery groups that have created and implemented their own rules to protect fishery resources, improve fishery management, and maintain social order; (2) the Ministry of Marine Affairs and Fisheries will determine the details on the methods and processes for providing assistance including evaluation metrics for community rules and the definition of eligible fisher groups. Notwithstanding these broad clauses that set the protocol for government assistance to encourage community fishery initiative, an official recognition of the Jayul program as well as the community-created rules in the national legal domain remains absent. The uncertain status of the Jayul-created rules in the overall regulative system may, however, undermine their efficacy and legitimacy, which is further discussed in section 4.2.3 below.

4.2 (Mis-)*matches between the Jayul aims and stakeholder's mindset*

4.2.1 Cultural-cognitive – Images

So, how do these aims of the Jayul compare with the mindsets of the people? First, the prevalent image of aging fishing community expressed by survey respondents appears ill-fitted with the ideas of self-reliance, self-direction and local-initiative endorsed by the Jayul. As presented in Chapter 5, this is an image that portrays a lack of younger generation of fishers in fishing communities, likely reflecting the general societal trend of aging population and out-migration of young people in rural areas (Cheong, 2003b; DeWind et al., 2012; Kim, 1982). Aside from the conventional socio-economic problems of labour shortage and stagnation of regional economy, the absence of younger generation could pose further difficulty to the implementation of the Jayul. Several respondents expressed concerns with regard to the declining aptitude and enthusiasm of an older generation of fishers to follow new currents of knowledge and try embracing a new mode of governance. For instance, a Jayul consultant who has retired from an official government fisheries officer duty (Respondent #218) stated:

> "The most important thing is having young people in fishing villages to overcome the situation of aging population. Young people can act as a catalyst for vitality. From them, ideas are more quickly generated and practiced. But currently even the community leaders are often senior members, let alone the members themselves. This has an implication for the Jayul; senior members generally repel new ideas, such as what the Jayul embodies. As a result, an impetus for new projects suffers."

Likewise, a pessimistic outlook on fishery emanating from this image was also noted. Fishers' comments include "...fishing will end with our generation; who will come here knowing that it presents a tough life?" (Respondent #87), "there are no young people

coming here (to live in fishing villages), plus I don't want to recommend it either" (Respondent #168), and "young people after graduating university do not want to get into fishery, they form an idea that fishery will not work for them" (Respondent #190). As such, the trend of aging population and out-migration of young people may now have been accepted as a dominant cultural image, with any deviation seen as an oddity. This could pose an additional hurdle to achieving sustainable and viable fishing communities, and further serve as an institutional constraint for the implementation of the Jayul.

In addition, a widespread image of the government as a provider of support and direction to fishing communities may represent another mismatch that inhibits the mindset change (see Table 1). According to the survey (see Chapter 5), responding to the question of what is first conjured up in the mind about government, words such as 'financial and technical assistance', 'policy guidance', 'educational sessions', and 'enforcement and safety-at-sea activities by the coast guard' formed a major part of the vocabulary for both fishers and managers/researchers, informing the ways respondents imagine the coastal fishery. Such views seem to confirm the centrality of governance assistance in the functioning of coastal fishery, and acts to substantiate the doubts raised about the self-directedness of the Jayul communities. A provincial fisheries officer (Respondent #222) commented:

> "Fishers think that they are naturally entitled to receive subsidized fuel. Fishers also would not be so keen in stock reinforcement activities if it meant that the expenses are paid by themselves, and not come from public tax money. They think it is a government's apparent duty to provide such assistance to fishers."

Representing a community perspective, a fisher who engages in abalone aquaculture (Respondent #52), shared a similar idea about the necessity of government support:

> Yes, it might be true that receiving and expecting to receive support might make people lazy. But aging population is a serious phenomenon, and government support is ever more necessary. Without it, fishing communities might collapse in no time. Collapse of fishing and agricultural societies mean collapse of the whole country. So the government need to maintain necessary living and working conditions in the fishing communities by providing appropriate and necessary support.

Responses such as these exemplify the culture of reliance on government support, and add to the weight of this deeply-ingrained modus operandi. Changing the mindset of fishery stakeholders to embrace self-reliance and local-initiatives would thus hinge upon how well the pervasiveness of this image can be attenuated or even reversed. This may appear a difficult undertaking, nevertheless one that would contribute positively to facilitating the Jayul implementation.

Table 1 Summary of mismatches between the institutional aims of the Jayul program and the mindset of fishing communities organized under the broad analysis scheme inspired by Scott (2008)

	Institutional aims of the Jayul program towards coastal fishing communities	Mindset of fishery stakeholders represented by values, images, and principles
Cultural-cognitive	Self-reliance and self-initiative in fishing communities, notwithstanding government's ambivalence towards the degree of community autonomy aspired	Images confirming long-held reliance by fishers on government assistance and policy direction

	Jayul as a pan-community cultural movement to raise the general livability of coastal area, going beyond a narrow sector-based project with specific objectives	Images depicting aging population and out-migration of young people in fishing villages – reducing the acceptability of new governance ideas such as the Jayul
Normative	Community cohesion and social norms; 'doing it as a group'	Values suggesting prevalence of individualistic mindset and operational traits involved in the permit-based boat fishery
Regulative	Drafting of local fishery rules and community activities, notwithstanding a lack of recognition of the Jayul in the national fisheries law	Principles indicating subordinate position of local fishery rules to national regulations and lengthy amendment process in making national regulations in line with local fishery rules

4.2.2 Normative – Values

The spirit of cooperation and community norm advocated through the Jayul program may also find a mixed trajectory when seen from the perspective of stakeholders, through their prioritized values. The importance hierarchy of 16 values was formed based on the survey responses of two respondent groups: fishers/community members and government managers/researchers (Chapter 4). First, the relatively high standings of the social cohesion and peacefulness values by both groups suggest that overall unity and harmony within and across fishing communities are important goals. This can be considered a positive fit in terms of facilitating the mindset change to institute community norms. However, an individualistic, competitive, and private mindset appears more evident when observing the relatively little regard given to the equality value (i.e., equal fishing opportunity amongst fellow fishers) and the cooperation principle (i.e., cooperation among fishers should be increased). Another notable outcome is the significant gap in the

degree of importance for the freedom value (i.e., freedom to decide when and where to fish) between the two groups. In this case, respondents in the fisher/community member group valued operational freedom in fishing much higher than those in the manager/researcher group, citing reasons that a fisher should be free to fish whatever and in however ways as long as the activity is within the legal boundaries of regulation.

The individualistic and competitive mindset is identified to be a particularly thorny issue in the boat fishery based on the permit system (see Chapter 1 for details on this fishery type). Clearly-demarcated fishing boundaries are elusive in practice. Illegal fishing and fisher conflicts tend to be more widespread, and reliance on regulative measures alone to control the fishing operation has failed in many cases. Similar to the situation of common pool resources (e.g., Ostrom 1990), the Korean case of boat fishery can be understood as grappling with the "tragedy of the commons", in which competition and privately-held behaviour prevails. The survey responses also echoed the sentiment of weak community norm in the boat fishery. For instance, an owner-operator in Dongho-ri who targets mixed species (Respondent #128) stated:

> "Fishing, as I see it, is an individual activity; one works individually and earns own money. If you have the means and power to do it, do it. If not, you don't do it. There is no 'let's do this together'"

Similar views were expressed emphasizing that fishing is an individual business. They further elaborated that "…therefore, community rule is not possible" (Respondent #107), "leadership is not very important" (Respondent #121), "there is little dependence on cooperation among fishers" (Respondent #144), "[boat fishery] cannot have a

group/organized system" (Respondent #181), and "a fisher is free to go anywhere as long as he is within the legally-permitted provincial boundaries" (Respondent #116).

Situated within this hyper-individualistic mode of fishing operation, it remains uncertain how the weak social norm among fishers can be elevated to enable the initiation and sustenance of Jayul organization in the boat fishery. Lee and Shin (2004) affirms that the permit-based boat fishery is a sector that requires the Jayul governance the most, given the urgent challenges regarding overfishing and economic unviability, but the one that faces the most difficulty in implementation. Such acknowledgement adds to highlight the normative predicament in activating community values, bringing the boat fishery under the guidance of the Jayul, and therefore instituting a widespread governance transition in the Korean coastal fishery.

4.2.3 Regulative – Principles

In the regulative sphere, setting of local fishery rules at the community-level is stipulated to be a core component of the Jayul program (Table 1). Local rules are expected to reflect on-the-ground realities and regional fishery characteristics more effectively and also serve as an essential mechanism in creating the idea of a self-manager of a local fishery. These rules are drafted and agreed among the Jayul members and later reviewed and approved by the Jayul program adjudication committee at the regional level, which comprises representatives from fishing community, government, academia, and non-governmental organizations. It thus may be assumed that people involved in the Jayul program would naturally recognize the necessity and utility of having community rules in place. The survey result displaying an importance hierarchy of 16 principles (Chapter 4), however,

revealed that the subsidiarity principle (presented to respondents as 'fishery rules should be set at the community level') garnered considerably little importance to both fisher/community member group and manager/researcher group. Several responses by the fisher/community members, in particular, illustrate this sentiment. A fear of corruption and elite capture forms one major reason, described by comments such as "this can be dangerous; community rules can be abused by those who make them, serving their own interests" (Respondent #97), and "government should set the regulations, otherwise local elite who has influence and money can distort the rules for their own benefit" (Respondent #111). Also, low legitimacy conferred to community-level rules was mentioned: "government regulations and restrictions should be what needs to be upheld and followed; ...when fishers make their own rules, they would take them lightly and violate them often." (Respondent #139), "if rules are made at the community level, it is doubtful that it will be complied; other communities would have a different set of rules and conditions, so there can be losses and people raise objections" (Respondent #182). Hence, many people saw little reason for the setting of community-level fishery rules. While all Jayul communities have composed local rules as a requirement to be part of the Jayul program, this situation casts doubt as to the true appreciation and usefulness of them. Contrasting the main objective of the Jayul, the generally weak enthusiasm about community rules would create a hindrance to its ongoing implementation.

The analysis points to another concern in reference to the degree of authority or influence community-level rules should hold, compared to the regulations set at higher levels. As mentioned earlier, the local fishery rules are only allowed to be established within the boundary of national regulations. This implies that, in the case of abalone, for

instance, the voluntary size limit in a Jayul community can only be set greater than the national standard of 7 cm declared by the Fisheries Resources Protection Decree. While this example makes common sense, the current system can also be counterproductive and frustrate the efficacy of Jayul community rules. For example, a nationally-enacted seasonal closure for swimming crab (Portunus trituberculatus) in Gochang County spanned between June 16 and August 15 in 2012. However, local fishers observed in the last few years that crab in this area were still moulting near the end of August, possibly due to changes in sea temperature. Given this environmental change, resumption of fishing on August 16 does neither benefit the ecosystem nor fishers due to low product value of soft shell crab. While the fishers of the Jayul community of Gusipo voluntarily agreed to abstain from fishing in the adjacent fishing ground until the end of August, fishers who travelled from other areas (which is legal under the permit system) dismissed the local resolution and started targeting crab once the official period expired, with the claim that they are simply following the national regulation. Unfortunately, this created a situation where local fishers were forced to enter crab fishing, driven by the fear of resource scarcity and the 'race-to-fish' mentality. In response, the local fishers have approached the government about making an adjustment in the national regulation. Yet, the revision process likely poses a Herculean task to communities as it would involve an enactment of ministerial ordinances or a tabling of an amendment at the National Assembly. Adding to resentment and disputes against visiting fishing fleets, this case exemplifies how national fisheries regulation can interfere with the Jayul rules that aim to reflect resource dynamics and practical regional differences.

Subsequently, the current setup of the regulative system inadvertently weakening the standing of the Jayul institutional arrangement has become a real possibility. Useful inquiries would include streamlining the regulative institutions such that Jayul community rules can take precedence over national laws, where deemed appropriate, and adjusting the review process so that they can be integrated into the overall rule system in a more efficient and responsive manner that involves less time and lower cost. In this sense, the adaptability principle (i.e., fishery rules should be reviewed frequently to better respond to rapid changes in fishing conditions), which garnered relatively little importance in the survey, can be activated and utilized to a greater degree in the future (Chapter 4). Efforts such as these are expected to contribute to creating appropriate regulative mechanisms that would help bridge the gap between the institutional aim and people's mindsets.

5. Discussion

In its 11th year of implementation, the Jayul has expanded nationwide and support has grown over the years from both the government sector as well as from communities. It carries high hopes and great ambitions to help the coastal fishing communities move into prosperity. Emphasis has been on fostering greater participation of fishers and developing a sense of autonomy in the management of local fishery, similar to the vision of co-governance (Kooiman et al., 2005). Its aims, as observed from the analysis here, are noble and well-meaning, and it has been called that a change in mindset of fishers and resource-dependent community members would provide the crucial link in translating them into reality. Not many would have thought that this process is quick and easy, as evident from

the many articles and papers written on the Jayul program which raise several concerns. Yet, reviewing the mindset of the fishery stakeholders, as studied through the meta-governance concepts of values, images, and principles (Chapter 4 and 5), and juxtaposing them with the aims of the Jayul program, as done here (Table 1), shows that the challenge of mindset change is indeed a complex proposition. Have the institutional aims of the Jayul been overly idealistic? Is the ability to institute an underlying shift in people's mind overestimated? This result suggests that the successful implementation of the Jayul may be delayed unless there is a way to address the mismatches between the institutional arrangement and the peoples' mindset. In addition, a more critical observation would point to the question of whether the change in mindset has been a rather unfounded claim or a wishful thinking without the concrete plans or instruments in place to actually make it happen. Although beyond the scope of this article, the possibility of the phrase being used as a 'lip-service' to the promotion of the Jayul forms another notable inquiry for assessing the course of governance transition.

In light of this analysis, sweeping changes in the mindset of fishers has not fully materialized at the national scale. In addition, the prospect of this change does not readily appear at the moment. However, the observed cases of fishing communities thriving under the Jayul scheme (see MOMAF, 2005), including several of those studied in this research, suggest that some communities have made the Jayul program work for them and brought about changes to improve their community life. Such cases demonstrate a closer alignment of the mindset with the Jayul institutions occurring at a local level. Perhaps, one way to move forward, then, is a 'contextualized' approach to the Jayul aims. Rather than adhering to one set of overarching objectives, as currently is the case, a range of

aims can be provided (or even formulated through a collaborative consultation process akin to the spirit of the Jayul, see Jentoft et al., 2012). Various degrees of self-reliance may be specified, for instance, from very little to very high, recognizing that different communities could flourish under a different setup, depending first and foremost on their inherent qualities, as suggested by the governability framework (Chuenpagdee, 2011). This exploration would allow a continuum of governance mode to exist which spans between hierarchical-, co-, and self-governance.

According to interactive governance theory, the ultimate goal of governance is to make fisheries systems more governable, given the multiple problems and issues facing the fishery (Bavinck et al., 2013). A transition into a more collaborative mode, and the implementation of the Jayul program in South Korea, may be approached more from this angle of governability. This would mean that conforming to the Jayul institution may not be easily applicable to all communities, given disparate fishers' mindsets. In such cases, insistence on the Jayul could in fact make things less governable. While a continuing promotion of the Jayul program through affecting people's agency should be encouraged in most communities, it is also suggested that a re-consideration of the institutional aims to include a range of governance mode is a worthy venture that could raise the quality of fishery management in those communities shown to be greatly distanced from what the Jayul hopes to achieve.

6. Conclusion

Understanding the process of governance transition through an examination of institution-mindset relationship forms a useful analysis for gauging an efficacy of such move. Theoretically, this approach suggests a way of studying the interactions between the meta- and second-order of governance. It also directs our attention to the 'structure-agency' duality much discussed in the wider literature. Applied to practice, the South Korean example provides an opportunity to link the co-management institutional arrangement with the 'change in mindset' of resource user communities and to explore the (mis-)matches between the two parts. This was done using an analytical scheme that takes a holistic view of institution comprising a cultural-cognitive, a normative and a regulative dimension. The analysis reveals that the Jayul co-management program intends to promote a 'cultural' movement that enhances self-reliance and social capital in coastal communities. It also encourages drafting and carrying out local fishery rules to better reflect regional fishery characteristics and to help disseminate the idea of a self-manager. Yet, misalignments of these aims with what fishery stakeholders fundamentally hold to be important suggest challenges ahead. The dominant image of government assistance may overwhelm the promotion of self-direction, especially with a weak presence of a younger generation of fishers. The individualistic values ingrained in the boat fishery also do not correspond well with the community norms. Furthermore, low regard for local-level management principles may stifle the influence of Jayul community rule system. As a result, the change in mindset, arguably a critical component to Jayul implementation, may face a longer, if not ungovernable, trajectory. Overall, this article demonstrates the care needed in attuning institutions to people's underlying ideas. It highlights their interplay and its potential effects on the progress of governance transition.

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Chapter 7 Conclusion

This dissertation research adds to the existing body of knowledge on governance transition by exploring two key formulations of the interactive governance theory – meta- and second order of governance, i.e., people's mindset and institutions, respectively. Research questions are informed by the nascent concept of governability, which is related to the overall quality for governance of the whole fisheries system, attributed to both inherent and constructed characteristics of the system-to-be-governed, as well as the capacity of the governing system and how the two systems match. In the context of this research, key questions include: What are the 'mindsets' of fishery stakeholders, as represented by, and studied through, their values, images, and principles? Do their values, images and principles agree or differ among fishery stakeholder groups, and to what extent? What does the co-management program as an institutional arrangement aim to promote, and how do they compare with the 'mindsets' of fishery stakeholders? Governability of a fisheries system hinges upon these factors and this is demonstrated from an application to the case study of South Korean coastal fisheries. The research process involved an interpretation and conceptualization of the theoretical ideas and also development of methods that would enable primary data collection of these under-researched aspects of natural resource governance. In doing so, an understanding of the governance situation in Korean fisheries is enhanced and policy-relevant insights generated. The major points of this thesis are summarized at four levels in the following

section. The chapter concludes with an identification and description of four main future research interests, followed by a reflection on governability concept.

Major conclusions

Theoretical contributions

This dissertation research is one of the few studies focusing on the meta-level of governance. Meta-governance implies 'governance of governance'. In other words, there is something beyond what is visible and apparent which drives resource managers' decisions and actions. Similarly, citizens, resource users, or those-being-governed also have their own logic of action and ways of imagining the world around them. These may vastly differ between the two groups or they may overlap to a great degree. According to the interactive governance theory, this remains an important research issue. An empirical study of meta-order elements, as done in Chapters 4 and 5, could reveal a fundamental divide between key stakeholder groups, for instance, offering a clue as to why governing actions may face indifference or resistance. Likewise, it can provide guidance on how to sustain certain initiatives by building on what values, images and principles stakeholder groups may have in common.

While the boundaries between values, images, and principles may not be clearly drawn, when considered together they can be conceptualized to have distinct enough roles to play in one's mindset, i.e., (1) general and relatively abstract value priorities of an individual, which transcend specific situations; (2) images about the world/fishery, which may act as an information filter or a model for how things work; and (3) governance

principles one subscribe to, which provide yardsticks for their conduct. They are also argued to be slower-changing, fewer in number and more deeply ingrained than opinion-based constructs such as attitudes and perceptions. Chapter 2 proposes a framework for the articulation of these meta-level elements in unison.

On another level, institutional thinking, which forms the second order of governance, has been the focus of many fisheries research. The most dominant form has been the common-property analysis of Ostrom and her colleagues (Berkes 1989; Ostrom 1990; Ostrom et al. 2002), which proposes and tests institutional ideas for solving collective action problems, such as the "tragedy of the commons," in the context of fisheries and other common pool resources. As a version of rational choice approaches to institutions, it assumes that economic calculations drive individual behaviour, and the rules that prescribe and permit behaviour are conceived as institutions that help reconcile individual and collective rationality. As submitted in Chapter 3, this line of thinking has led to the wide implementation of regulative fisheries management schemes that include incentives, access regimes, and property rights.

The work of W.R. Scott (2008) on institutions details an inclusive spectrum of institutional components that stem from various theoretical approaches, as reiterated in Chapter 3. Taking account for not only the well-advanced regulative aspect, but also the normative and cultural-cognitive dimensions highlighting shared goals, social norms, habits, and common knowledge among others, this analytical framework can be used to reflect a broadening perspective occurring in the study of fisheries institutions. However, a direct application of this approach to empirical cases has been limited up to now. The

attempt to apply this to South Korean fisheries in Chapter 6 is therefore a novel contribution.

Methodological advances

This dissertation offers an innovative method, P+ sort, to elicit values and principles of stakeholders. The method strikes a fine balance between making use of quantitative and qualitative data, among other things. Data collection in P+ sort is guided by a use of a sorting board, a deck of cards to be sorted, and a questionnaire booklet that contains verbal follow-up questions. P+ sort builds on the simplicity of pile sorting as well as draws from a more structured Q sort technique to help guide the sorting exercise. Because the method is simple, user-friendly and intuitive, it offers additional benefits of being able to accommodate a greater number of items (i.e., the values and principles) than standard ranking or rating procedures, and of inducing implicit comparisons among these items. As illustrated in Chapter 4, the resulting sorting pattern is analyzed with frequency statistics and non-parametric tests, and it acquires a deeper meaning through an examination of the qualitative information obtained during the sorting exercise. This instrument contributes to the call in literature for wider methodological options for value elicitation, which can supplement the well-established contingent valuation and other more conventional survey exercises.

Understanding images from the governance perspective, as this dissertation research has done and which Chapter 5 focuses on, is a relatively recent theoretical initiative. Similar to the study of values and principles, it requires a methodological exploration, which involves, in this case, rapid-appraisal style questions, developed as

part of the survey package to elicit the images fisheries stakeholders have about the fishery and fishing life. The questions are designed to seek out pressing ideas that lay in the sub-conscious realms of the respondents, organized around four governance sub-schemes (i.e., natural system, social system, governing system, and governing interactions). 'Thematic analysis' procedures are used to systematically interpret their responses and inductively derive salient categories and themes.

Case study application: South Korean coastal fisheries

Generally speaking, fisheries of South Korea have not been as widely studied as those in neighboring countries in the region, such as Japan. Yet, South Korean fisheries and the coastal communities could provide a fertile ground for fisheries research given the complex and dynamic narratives enmeshed in the place. Within the country, fisheries remain in the periphery of social, economic and industrial policy, but at the same time a strong and persistent government mandate on supporting coastal fishery (perhaps rhetorically) is being maintained. Externally, macro-influences such as regional climate changes, a growing influx of imported seafood, shrinking fishing grounds due to an establishment of Economic Exclusive Zones in the neighbouring seas, tense maritime border disputes with North Korea, and illegal intrusion of Chinese fishing fleets in Korean waters, all place the South Korean fishery in a vulnerable, but a lively position. The appeal of the South Korean fishery as a research context is further stimulated by the exceptional significance of fish and fisheries to national psyche in terms of food culture and recreation.

The new co-management-style program, 'Jayul Fisheries Community Management,' is part of the change that the coastal fishery must recognize and adapt to. Implemented since 2001, it was designed to help alleviate the socio-economic and resource challenges faced in the fishery and coastal villages through greater community participation in management. Initiated by the central government and being supported by the various levels of governmental and non-governmental fisheries organizations, this governance effort has grown in size with nearly half of about 2,000 fishing communities nationwide registered in the program in 2011. Amid this expansion, however, the sustainability of the program in each participating community is being put into question with lingering doubts about the financial and motivational capacity of the communities. The situation raises a question as to whether stakeholder's mindsets (i.e., values, images, and principles), and/or structural hindrances (i.e., institutions) are configured in such a way that impedes its progress. In addition, change of mindset of fishers and resource-dependent community members towards the visions of the Jayul program is claimed to be an integral factor in facilitating this governance shift. Findings from the main chapters of this dissertation (Chapters 4, 5 and 6) are discussed in the context of the Jayul by considering features influencing people's mindset in terms of their contribution to making the program and its implementation more or less governable.

In this backdrop, the survey was crafted to elicit the values and principles of two main stakeholder groups, resource-dependent fishing community members and formal managers/researchers. This was carried out to understand what they consider to be more important and whether they are different or similar between the groups. In this study, ecosystem values and socio-economic values (such as wealth and secure livelihoods) are

frequently expressed as the most important ones. Virtuous trait of honesty/integrity is another highly desired value shared across the fishery stakeholders. Few group differences are observed in the values, likely implying that both the governors and those-being-governed hold a similar conception of what are ultimately desired for the fishery and fishing life. In other words, it can be concluded that they share a basic value system, providing thus a firm platform for the implementation of the Jayul (Chapter 4).

The principles regarded as very important by the respondents include equity, adjacency, and ecosystem integrity. But in the context of governance transition, two principles that arguably hold grave implications to local-level management and community empowerment display significant group disparity. Adjacency is a highly important principle to fishers and other resource-dependent community members, while the government managers/academic researchers do not find it as important. Conversely, participation in fishery management is a principle regarded as very important by the manager/researcher group, while the same degree of importance is not evident in the community group. These key differences represent a likely source of underlying disagreement in how the fisheries governance is to be conducted (Chapter 4). The implementation of the Jayul may suffer as a consequence.

With respect to images, the study reveals the diversity and complexity of aspirations and concerns that fishery stakeholders have about the fishery and fishing life. Solicited under the rubric of four governance sub-systems, the inductively derived image categories and themes include environmental degradation, fish as resources, cultural-political marginalization of the sector, livelihood demands, and ineffectiveness of governing authorities, among others. Composite images that reach into multiple themes such as

"healthy lifestyle from clean coastal environment" and "socio-economic assistance as government policy" are also observed. Other general characteristics of images are elucidated. For example, images are shown to be imbued with negative, neutral, or positive overtones, or indicate past events, current states or future activities. Collectively, a set of dominant images underpin stakeholders' primary depiction of realities, as shown in Chapter 5. How well the governance effort in question (i.e., the Jayul program) meshes into the main currents of stakeholders' images would, thus, present an inquiry of practical significance.

Lastly, from the broad view of institutions, the Jayul program may be understood as a governance strategy aimed at instituting self-reliance and self-initiative in fishing communities. It also emphasizes community cohesion and group activities through the drafting of local fishery rules and the application of social norms to implement them. Hence, the resulting locus of the governance change is envisioned to reside at the local fishing communities. Yet, the long-held, and still prevalent, culture of reliance of fishers on government assistance and policy direction acts as a counter-institutional force that could impede a wide establishment of the Jayul program. Additionally in the regulative dimension, the subordinate legal position of local fishery rules to national fishery regulations can work to render community initiatives ineffective, negating the visions of the Jayul program. As discussed in Chapter 6, such misalignments between these components could hinder the promotion of the Jayul program, and further the progress of governance transition. Overall, the findings demonstrate the care needed in attuning institutions to people's underlying ideas, and suggest pathways for an incorporation of multiple, contextualized institutional possibilities.

Practical governance insights

Approached from the unique angle that combines the novel theoretical visions with the methodological innovations summarized above, the analyses taken in this dissertation research generate several practical insights that hold implications for the governance situation of South Korean coastal fisheries. First, the convergence of the highly regarded ecosystem values, economic and livelihood values, and integrity in fishery matters between the key stakeholder groups deserves major attention, as the endorsement of these values could serve as the normative foundation of all governance activities and policy direction. With stakeholders holding a similar set of values, a common ground could be forged, and governance effort could be directed based on these values. It would also need to visibly promote these shared values, if it is to garner the long-term support of stakeholders (both governors and community members) and to produce intended outcomes. The current emphasis of the Jayul program on the ecosystem and socio-economic values through various coastal clean-up and income enhancement activities is to be continuously supported. A missing link lies, however, in the promotion of the 'honesty/integrity' in the governance system, which is shown in the study (Chapter 4) to hold high importance. The Jayul program should consider ways to integrate this value in its implementation, e.g., through a document or budget transparency scheme, or a seafood traceability system.

Next, as gathered from the findings of principle importance, user-participation in rule-making is not widely considered very important among the surveyed resource community members. Hence, despite the many positive developments of the Jayul

program in the last decade, the participatory mindset may be slow in taking root across the communities, substantiating the concerns about the communities' cursory involvement. In the case of the adjacency principle, the managers/researchers appear wary of strengthening local priority access and use rights to nearby fishing grounds for the fear that fishing communities may not always effectively manage a given coastal environment. Yet, adjacency is conceptualized as a key enabling factor towards a more community-empowered approach to fisheries management by providing a legal as well as a geographical basis for coastal communities to maintain fishing livelihoods (Davis and Wagner 2006). At the same time, it may also help guard against the vulnerability of local fishery collapse arising from outside influences, such as large-scale industrial fishers or corporations being dispensed with nearshore fishing privileges. Hence, the government and other promoters of the Jayul program should carefully assess the validity of the adjacency demand and whether creating or strengthening priority access to a fishing ground to nearby fisher communities can further enhance the efficacy of governance change in South Korea.

The prevailing images of fishery stakeholders produce three main policy-relevant insights, as discussed in Chapter 5. Aligning with the images of environmental degradation and aspirations for clean, productive natural surroundings, the Jayul program should intensify the promotion of environmental stewardship at the community level. However, it is also understood that the local-level effectiveness may prove futile if not accompanied by an effort to engage with wider environmental/industrial policy. This is because the large-scale impacts of coastal development and extensive industrial pollution can reach deep into the consciousness of the coastal community members, nullifying thus

local stewardship. Secondly, the focus on income enhancement as part of the Jayul activities appears consistent with a widespread image stakeholders have about the socio-economic facet of the fishery. However, fishers and community members also hold strong images of government assistance and intervention as being integral to their fishing life. Heavy dependence on government support reaffirms the doubts raised about the self-directedness of the Jayul communities and eventually about the sustainability of the program. Thirdly, a prevailing image indicates a perceived lack of cordiality and relevance in the government's approach towards fishers. At a more superficial level, a re-portrayal of government's self-images would be useful in dispelling the negative and hostile representation of the governing authority and branding themselves as working partners. More fundamentally, however, a rigid power differential that leads an unproductive relationship between managers/researchers and fishers would need to be addressed to help foster a more horizontal mode of fisheries governance consistent with the aims of the Jayul program.

Finally, assessing the aims of the Jayul program and juxtaposing them with the mindset of fishery stakeholders, as studied through the meta-governance concepts of values, images, and principles (Chapters 4 and 5), shows that the challenge of mindset change is indeed a complex proposition. The result suggests that the successful implementation of the Jayul may be delayed unless there is a way to address the mismatches between the two parts. In light of this analysis, it is not surprising that sweeping changes in the mindset of fishers has not fully materialized at the national scale. There are, however, several communities who have experienced improvements, demonstrating a closer alignment of the mindset with the Jayul institutions occurring at a

local level. One possible way to move forward is a 'contextualized' approach to the Jayul aims. Signalling a departure from adhering to one set of overarching objectives, as currently is the case, a range of aims can be provided instead, or alternately formulated through a collaborative consultation process. Various degrees of self-reliance may be specified, for instance, from very little to very high, recognizing that different communities could flourish under a different setup. This exploration would allow a continuum of governance mode to exist, spanning between hierarchical-, co-, and self-governance. While a sustained promotion of the Jayul program should be encouraged in most communities, it is also suggested (Chapter 6) that a re-consideration of the institutional aims to include a range of governance mode is a worthy venture that could raise the quality of fishery management in those communities shown to be greatly distanced from what the Jayul hopes to achieve.

Future research directions

Drawing from the insights gained in the study, four areas of research interests can be further explored to improve the current approaches and gain new meanings.

How values, images, and principles are linked and influence each other

This research proposed values, images, and principles as three overlapping but unique parts of what constitutes one's mindset. Each element was mainly approached separately: they were introduced and empirically studied on its own although the insights can be juxtaposed and combined at a later stage. This individual approach was a necessary one

given the exploratory nature of the study, in which the validity of each element would need to be first explained and demonstrated. Here, it was shown that they have distinct roles and occupy different thematic niches in one's mindset. Therefore, a consideration of all three elements would make an analysis of meta-governance a more complete one. The next research step, however, would call for a more holistic stance. What is most meaningful may not be the separate accounts of the values, images and principles, but how they work together to influence governance processes and outcomes. How are they related to each other? Can we delineate how values affect images and vice versa? Is there perhaps a supra-concept that lends itself to analyzing these elements in a more blended manner? An in-depth study into their internal dynamics remains a key topic for future governance research.

'Change in mindset' and governmentality

A shift of people's values, images, and principles may be approached and seen through another theoretical viewpoint that is more sensitive to the dynamics of power. In the governance and policy context, manipulation of citizens' or the public's mindset is a governing strategy many see necessary and even commonsensical (see Kinzig et al. 2013). Yet, as with any governing activities, this represents an exercise of power, and one that tends to take place in a unidirectional manner from governors to those-being-governed. In this respect, a Foucauldian concept of 'governmentality' appears to be a useful optic to further explicate the claims of mindset change (see Chapter 2 for an introduction). Governmentality embodies that governing (gouverner) is most effective when it colonizes modes of thought (mentalité) of citizens (Sawyer and Gomez 2008). It

opens up an inquiry into governor's calculated thoughts and actions that seek to shape and regulate the way people conduct themselves according to specific ideas or ideals (Dean 1999; Agrawal 2005). Therefore, using governmentality as an analytical frame to examine how techniques of changing the values, images, or principles of stakeholders play out empirically and theoretically is a worthwhile effort. Interactions between stakeholders and their power relations that lead to governmentality is, of course, one form of governing interaction, which can be explored using the interactive governance perspective as a condition of governability.

The case of South Korean coastal fisheries also illustrates this possibility. While various government-sponsored measures including financial incentives, expert advice/guidance, study trips are in place to encourage communities to join the Jayul program and to exercise self-regulatory practices, what is identified as vital in facilitating a long-standing establishment is for fishers themselves to embrace the mindset of being the owners and the self-managers of their local fishery. To this effect, government officials and academic researchers claim that only this 'persuasion' will truly enable effective community-regulation, and that an emphasis on changing the mindset of fishing community members is ultimately what the central government strives to govern in reality. A focused study of which and how governing instruments use power to their advantage to propagate this rationality, therefore, signifies another branch of extended governance research. Drawing on governmentality and actors' values, images, and principles, such inquiries are also expected to provide a way to make power issues more explicit in the interactive governance theory (Jentoft 2007).

Methodological improvement

Operationalizing the meta-order governance concepts necessitated a certain degree of methodological tinkering. Elicitation of values and principles involved a questionnaire survey method that utilizes a semi-structured sorting technique and simple statistical analyses. The image study also relied on the development of a set of open, succinctly-phrased questions. While they were adequate for the research objectives set out in this study, they represent early attempts, with limitations that invite further development. They were effectively geared towards scoping out a general collection of values, images, and principles to help draw out their conceptual boundaries, rather than facilitating an in-depth study of certain specific elements. As future studies may examine a focused set of salient values, images, or principles, additional methodological adjustment can be reasonably expected. This could take an extensive qualitative route through lengthened interview processes and dedicated ethnographic research. On the other hand, it is also possible to imagine a large sample-size questionnaire survey aided by sophisticated statistical analyses with the aim of generalizing the result over a large population. Above all, a continuing research attention would be required to further explore a mixed approach that relies on both qualitative and quantitative contribution. Finally, because this research was cross-sectional, it was unable to examine how responses changed over time. Such a line of inquiry could provide clearer insights into the dynamic forces that shape people's responses that construct their underlying notions. It may also allow estimating the actual degree of changes made with regard to mindset. Thus, future research would benefit from a longitudinal design to improve the understanding of the processes involved in the formation and evolution of people's values, images, and principles.

Application to other governance efforts

The normative approach advanced in this research, especially combined with the institutional analysis, can be extended to examine other popular fisheries instruments, such as marine protected areas (MPAs) and individual transferable quotas (ITQs), and other governance efforts directed at aquaculture expansion, post-harvest process modernization, and consumption policy. How do these governance initiatives align with what stakeholders conceive to be important and desirable? And how does the particular setup of institutions works to regulate the course of these initiatives? Such inquiries would serve a useful way of predicting and understanding their standings and prospects. Future applications would also provide a litmus test for gauging the robustness of this approach. In the process, new insights may surface, challenging and improving the core ideas raised in this research – overall providing a valuable addition to the way we understand fisheries governance.

Final reflection – governability

Governability concept offers a new way of approaching governance problems. Focusing on the holistic quality of governance systems to deal with various problems that may arise, it asks different types of questions than the more conventional governance analyses which may be performance-, task-, or outcome-oriented. Its primary focus is not in knowing the most direct way to reach an outcome per se, but instead it examines whether a governance system in question is more or less conducive to dealing with the complexity

and diversity of a problem that is in flux and interacting. The task is then to understand the level of governability of a system (e.g., a coastal fishery) in the context of a particular problem (e.g., community sustainability), and seek ways to inform action that will enhance governability.

This research focuses on two aspects of the governance system that influence governability. The meta-order elements are qualities of the system-to-be-governed and of the governing system, which are mostly inherent but may also be constructed, through interventions such as the implementation of a Jayul. The second aspect is institutions. Institutions pose certain structural constraints that bestow rigidity, orthodoxy and consistency into a governance system, such that the system (and actors within) is encouraged to perform in certain ways but restricted in another ways. In this sense, institutions would serve to increase the governability of the system or lower it. Furthermore, in the process of institutional change, interactions that take place between institutional elements (e.g., rules, norms, and customs) being promoted and the typically entrenched, slow-changing people's mindset may create mismatches resulting in conflicting and unstable conditions. Thus, attentive consideration towards the institutional design and implementation would be an important undertaking for ensuring a more governable system.

Chuenpagdee and Jentoft (2013) offer an analytical framework useful for gaining insights about governability, starting with an examination into the degree of 'wickedness' of societal problems. The wicked nature may arise from the value conflicts, trade-offs and hard choices of various actors involved, who may have different and even contradictory and incompatible ideas of what they want and how things should be. Governability

assessment would help reveal how and why their ideas differ (or agree for that matter) and point to where the intervention should lie.

In improving governability, then, changes made to the system may result to benefit certain groups of people while disadvantaging others depending on what the system is made governable for. A system may be viewed highly governable by some, but not-so-governable from the perspective of others. Examples of dictatorship or mafia ruling over a neighborhood can represent a highly governable system in terms of economic growth or social unity, but not from the yardstick of social justice or human rights. Chuenpagdee and Jentoft (2013, p.340) also submit that considering a myriad of features that give rise to the wickedness of governance, "an industrialized aquaculture system to be more governable than, for instance, the more "chaotic" system of small-scale fisheries in Lake Victoria". When taken at face value, such statements can create a danger of leaving small-scale fishery proponents in dismay and questioning whether high governability is in fact something to be strived for.

As this research has investigated the crucial role of governance actors' normative stance and the need to articulate it more clearly, governability as an analytical tool must be grounded in an explicit normative base. A recent exchange among the thinkers of governability reminds us that governability is not a goal in itself, but rather a means to an end. Hence, while the overall goal of governance is to enhance governability, any discussion of governability, including its assessment and application, must be made in the context of normative goals. Understanding stakeholders' values, images, and principles is expected to help highlight this often overlooked, but essential, aspect of governance.

Interactive governance theory and the governability concept is an evolving entity. Using interactions as a heuristic to understand societal governance, interactions are to be found at every level. Values, images and principles stand to compete or co-exist among themselves representing the meta-order of governance. Institutional elements operate vis-à-vis each other forming the second order. Governing instruments, fishers' actions, and fish stocks also engage in more concrete transactions representing the first order of governance. Therefore, the interaction-based thinking could contribute to finding appropriate ways of thinking about, making sense of, and improving our world, and the fish and humans in it. Overall, this perspective has grown to be one part of a larger effort to alleviate widespread challenges occurring in fisheries and natural resource sectors in general. To continue on this difficult but hopeful journey, an ongoing exploration and refinement of the ideas elaborated in this research is thus widely encouraged.

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Appendix I Survey instrument (for resource-dependent community members)

January 2012

Dear Sir/Madam:

We are conducting research concerning the management of Korean coastal fisheries and the *Jayul* programme, as part of a PhD study at the Department of Geography at Memorial University in Canada. Through the use of this survey, we wish to learn about what you judge to be important aspects of coastal fisheries and your views on how coastal fisheries should be carried out.

The objective of this survey is to obtain opinions of fishers, fishing community members, central and county government officials, and members of non-governmental organizations concerning the underlying priorities in the management of coastal fisheries. The responses will be analyzed and, along with other information revealed in the study, will contribute to the discussion about how to improve coastal fisheries management to address the current issues and challenges, and ultimately enhances the fishing way of life in coastal communities.

The survey contains five sections:
Section 1 – Your involvement in fisheries
Section 2 – General importance sorting exercise
Section 3 – Management guideline importance sorting exercise
Section 4 – Keywords exercise
Section 5 – Your viewpoint about fisheries
The survey should take about 30 minutes to complete.

Please note that there are no trick questions and there are no right or wrong answers. Your participation is completely voluntary and your responses will be kept **strictly confidential and anonymous**. If at anytime you wish not to continue, please feel free to withdraw from the study. There are no penalties for an incomplete survey. The survey results will be numerically transformed and recorded in a spreadsheet for further analysis. Qualitative information will be coded but without direct identifying information to protect your anonymity. All data will be kept in a locked storage facility for five years before being destroyed. ***By completing the survey, it is understood that we have your permission to use the information you have provided for the purpose of this research.***

This survey has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at +1 (709) 864-2861.

If you have comments or questions, or wish to receive a copy of the final report, please contact myself or my supervisor, Dr. Ratana Chuenpagdee, at ratanac@mun.ca or by telephone at +1 709 864-3157.

We truly appreciate you participation and sincerely thank you for your kind assistance!

Sincerely,

Andrew Song ☎ +82 (0)10 5536 1473 ✉ amsong@mun.ca

Section I: Your involvement in coastal fisheries

1-1. What type of fishing or aquaculture work are you engaged in? (type of license, gear type, boat size, target species, member of cooperative/gear association/other fishery-related organization)

1-2. What are the operational characteristics of your work (e.g. duration and spatial range of operation, frequency, number of crew/employees)? Please describe.

1-3. How many years have you been involved in the(se) fishing work?

1-4. How many years have you lived in the current fishing village (if applicable)?

1-5. Do you consider yourself a full-time or a part-time fisher?
□ Full-time fisher □ Part-time fisher □ Others: _____

1-6. Roughly how much percentage of your yearly income is coming from fishing work?
□ Less than 50% □ About 50% □ More than 50% □ Others: _____

1-7. Do you have other income-generating activities or work? Please specify.

Section II: General importance sorting

Sorting instruction:

The following phrases contain various aspects that may be deemed important in creating a healthy, productive coastal fishery and fishing life. **As someone involved in the fishery, how would you place the following aspects in terms of their importance?** Please place the cards into the three categories ranging from 'very important', 'somewhat important', and 'little important', in any way you like in the provided grid.

1. Healthy marine ecological system
2. Fishing village without conflicts
3. Equal fishing opportunity amongst fellow fishers
4. Freedom to decide when and where to fish
5. Comprehensive knowledge on marine ecosystem
6. High economic income from fishing work
7. Secure livelihoods from fishing work
8. Enjoyment and pleasure in fishery life
9. Moderate catch target
10. Sense of pride for working in the fishing industry
11. Integrity in fisheries governing system
12. Cohesion among the members of fishing community
13. Strong leadership in fishery management
14. Public recognition of fishing work
15. Young people taking interest in fishing tradition
16. Acceptance of fishery rules and regulations

2-1. Please rank the cards in the 'very important' category from the most important being placed in the left.

2-2. Why do you consider these cards to be very important?

Important aspects of coastal fisheries

Very important								
Somewhat important								
Little important								
Very imp. ranked								

Section III: Management guideline importance sorting

Sorting instruction:

The following statements describe several ways as to how coastal fisheries management can be carried out. **In your opinion, how important is each statement in guiding coastal fisheries management in your area?** Please place the cards in the three categories ranging from 'very important', 'somewhat important', and 'little important', in any way you like in the grid provided in front of you.

1. Fishery rules should be set at the community level
2. Fishing grounds should be used exclusively by the designated fisher groups
3. Fishery rules should be reviewed frequently to better respond to rapid changes in fishing conditions
4. Fishery rules should be made based on scientific data
5. Central government should provide financial support to fishing communities
6. More closed seasons should be established
7. Overfishing should be prevented in all fishing operations
8. Fishing should be done without disrupting ecosystem integrity
9. Fishery policy should address fishers' needs
10. Fishing technology should be enhanced such that fish can be caught with less effort
11. Benefits of fishery policy should be applied fairly to all fishers
12. Access to use a fishing ground should be first granted to those who live near it
13. License fees should be charged to fishers for the privilege of using public resources
14. Fishery management should be carried out with the participation of fishers
15. Cooperation among fishers and fishery organizations should be increased
16. Governing authority should be considered legitimate by fishers

3-1. Please rank the cards in the 'very important' category from the most important being placed in the left.

3-2. Why do you consider these cards to be very important?

Guidelines important in managing coastal fisheries

Very important								
Somewhat important								
Little important								
Very imp. ranked								

Section IV: Keywords exercise

4-1. Can you give us a couple of words that come to your mind about the natural environment of your coastal area?

_____ _____

4-2. Can you give us a couple of words that come to your mind about your fishing life?

_____ _____

4-3. Can you give us a couple of words that come to your mind about the central government in the context of fisheries?

_____ _____

4-4. Can you give us a couple of words that come to your mind about the relationship between the central government and fishers?

_____ _____

Section V: Your view of fisheries

5-1. Do you think your view is shared by others?

☐ Yes ☐ No ☐ Do not know

5-1-1. If Yes, with which group of stakeholders? (Check all that apply)

☐ Other fishers in your community
☐ Other fishers outside of your community
☐ Non-fishing members of your fishing village
☐ Government officials and researchers
☐ Other: _____

5-1-2. If No, why not? Please explain.

5-2. Have you heard of the *Jayul* programme?

☐ Yes ☐ No → If No, go to Question 5-5.

5-2-1. If Yes, does what it aims to do fit well with your view of fisheries? Please explain.

☐ Yes ☐ No

5-3. Has the *Jayul* programme affected the way you view the fisheries? Please explain.

☐ Yes ☐ No

5-3-1. If yes, how are your new perspectives on fisheries different from the past?

5-3-2. If no, why not?

5-4. Do you think the *Jayul* programme is a good idea? Please explain why/why not.

5-5. Do you think the fisheries that you are involved with will be _____ in five years from now?

☐ Better ☐ Worse ☐ Same ☐ Other: _____

5-6. Age: _____ 5-6-1. Your gender: ☐ Male ☐ Female

5-7. What is the highest level of education you have completed?

☐ Elementary school ☐ Middle school ☐ High school
☐ University/college ☐ Graduate school ☐ Other: _____

Appendix II Survey instrument (for managers/researchers)

January 2012

Dear Sir/Madam:

We are conducting research concerning the management of Korean coastal fisheries and the *Jayul* programme, as part of a PhD study at the Department of Geography at Memorial University in Canada. Through the use of this survey, we wish to learn about what you judge to be important aspects of coastal fisheries and your views on how coastal fisheries should be carried out.

The objective of this survey is to obtain opinions of fishers, fishing community members, central and county government officials, and members of non-governmental organizations concerning the underlying priorities in the management of coastal fisheries. The responses will be analyzed and, along with other information revealed in the study, will contribute to the discussion about how to improve coastal fisheries management to address the current issues and challenges, and ultimately enhances the fishing way of life in coastal communities.

The survey contains five sections:
Section 1 – Your involvement in fisheries
Section 2 – General importance sorting exercise
Section 3 – Management guideline importance sorting exercise
Section 4 – Keywords exercise
Section 5 – Your viewpoint about fisheries
The survey should take about 30 minutes to complete.

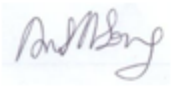
Please note that there are no trick questions and there are no right or wrong answers. Your participation is completely voluntary and your responses will be kept **strictly confidential and anonymous**. If at anytime you wish not to continue, please feel free to withdraw from the study. There are no penalties for an incomplete survey. The survey results will be numerically transformed and recorded in a spreadsheet for further analysis. Qualitative information will be coded but without direct identifying information to protect your anonymity. All data will be kept in a locked storage facility for five years before being destroyed. ***By completing the survey, it is understood that we have your permission to use the information you have provided for the purpose of this research.***

This survey has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at +1 (709) 864-2861.

If you have comments or questions, or wish to receive a copy of the final report, please contact myself or my supervisor, Dr. Ratana Chuenpagdee, at ratanac@mun.ca or by telephone at +1 709 864-3157.

We truly appreciate you participation and sincerely thank you for your kind assistance!

Sincerely,



Andrew Song ☎ +82 (0)10 5536 1473 ✉ amsong@mun.ca

Section I: Your involvement in coastal fisheries

1-1. What type of fishery or aquaculture-related work are you engaged in? (organization, expertise, main tasks etc)

1-2. How many years have you been involved in the(se) fishery-related work?

1-3. Are there types of fishery, coastal areas or fishing villages that you are most familiar with?

1-4. More specifically, what are your roles and responsibilities relating to coastal fishery management or policy, if any?

1-5. Do you have, or have you had, any involvement in the development or implementation of the Jayul programme?

Section II: General importance sorting

Sorting instruction:

The following phrases contain various aspects that may be deemed important in creating a healthy, productive coastal fishery and fishing life. **As someone involved in the fishery, how would you place the following aspects in terms of their importance?** Please place the cards into the three categories ranging from 'very important', 'somewhat important', and 'little important', in any way you like in the provided grid.

1. Healthy marine ecological system
2. Fishing village without conflicts
3. Equal fishing opportunity amongst fellow fishers
4. Freedom to decide when and where to fish
5. Comprehensive knowledge on marine ecosystem
6. High economic income from fishing work
7. Secure livelihoods from fishing work
8. Enjoyment and pleasure in fishery life
9. Moderate catch target
10. Sense of pride for working in the fishing industry
11. Integrity in fisheries governing system
12. Cohesion among the members of fishing community
13. Strong leadership in fishery management
14. Public recognition of fishing work
15. Young people taking interest in fishing tradition
16. Acceptance of fishery rules and regulations

2-1. Please rank the cards in the 'very important' category from the most important being placed in the left.

2-2. Why do you consider these cards to be very important?

Important aspects of coastal fisheries

Very important								
Somewhat important								
Little important								
Very imp. ranked								

Section III: Management guideline importance sorting

Sorting instruction:

The following statements describe several ways as to how coastal fisheries management can be carried out. **In your opinion, how important is each statement in guiding coastal fisheries management in your area?** Please place the cards in the three categories ranging from 'very important', 'somewhat important', and 'little important', in any way you like in the grid provided in front of you.

1. Fishery rules should be set at the community level
2. Fishing grounds should be used exclusively by the designated fisher groups
3. Fishery rules should be reviewed frequently to better respond to rapid changes in fishing conditions
4. Fishery rules should be made based on scientific data
5. Central government should provide financial support to fishing communities
6. More closed seasons should be established
7. Overfishing should be prevented in all fishing operations
8. Fishing should be done without disrupting ecosystem integrity
9. Fishery policy should address fishers' needs
10. Fishing technology should be enhanced such that fish can be caught with less effort
11. Benefits of fishery policy should be applied fairly to all fishers
12. Access to use a fishing ground should be first granted to those who live near it
13. License fees should be charged to fishers for the privilege of using public resources
14. Fishery management should be carried out with the participation of fishers
15. Cooperation among fishers and fishery organizations should be increased
16. Governing authority should be considered legitimate by fishers

3-1. Please rank the cards in the 'very important' category from the most important being placed in the left.

3-2. Why do you consider these cards to be very important?

Guidelines important in managing coastal fisheries

Very important								
Somewhat important								
Little important								
Very imp. ranked								

Section IV: Keywords exercise

4-1. Can you give us a couple of words that come to your mind about the natural environment of your coastal area?

_____ _____

4-2. Can you give us a couple of words that come to your mind about your fishing life?

_____ _____

4-3. Can you give us a couple of words that come to your mind about the central government in the context of fisheries?

_____ _____

4-4. Can you give us a couple of words that come to your mind about the relationship between the central government and fishers?

_____ _____

Section V: Your view of fisheries

5-1. Do you think your view is shared by others?

☐ Yes ☐ No ☐ Do not know

5-1-1. If Yes, with which group of stakeholders? (Check all that apply)

☐ Fishers participating in the Jayul programme for many years
☐ Fishers participating in the Jayul programme for few years
☐ Fishers not participating in the Jayul programme
☐ Non-fishing residents in fishing villages
☐ Other government officials and researchers
☐ Other: _____

5-1-2. If No, why not? Please explain.

5-2. Have you heard of the *Jayul* programme?

☐ Yes ☐ No → If No, go to Question 5-5.

5-2-1. If Yes, does what it aims to do fit well with your view of fisheries? Please explain.

☐ Yes ☐ No

5-3. Has the *Jayul* programme affected the way you view the fisheries? Please explain.

☐ Yes ☐ No

5-3-1. If yes, how are your new perspectives on fisheries different from the past?

5-3-2. If no, why not?

5-4. Do you think the *Jayul* programme is a good idea? Please explain why/why not.

5-5. Do you think the fisheries that you are involved with will be _____ in five years from now?

☐ Better ☐ Worse ☐ Same ☐ Other: _____

5-6. Age: _____ 5-6-1. Your gender: ☐ Male ☐ Female

5-7. What is the highest level of education you have completed?

☐ Elementary school ☐ Middle school ☐ High school
☐ University/college ☐ Graduate school ☐ Other: _____