

Chapter 3

The Value of Values for Understanding Transdisciplinary Approaches to Small-Scale Fisheries



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Abstract The key lesson values bring to transdisciplinarity is that the latter should not be confused with synthesis. Rather, a careful theoretically-informed consideration of values suggests that engagements across difference – disciplinary, fisher and non-fisher, policy-maker and activist, male and female, wealthy and poor, etcetera – are necessarily extremely difficult. They involve challenging, and often failed, efforts to translate between varying perceptions, paradigms, and priorities. Communications among those who are different from one another are tricky and subject to accumulating histories that may bring actors together, but may also build suspicion, distrust, and conflict. In this chapter, we do not seek to propose an answer to the process questions of value-sensitive transdisciplinary engagement. Rather, we contrast implicit and explicit approaches to value through six approaches to studying small-scale fisheries: economic valuation; ecosystem services; political economy; social wellbeing; interactive governance; and, post-normal science. This comparative analysis shows not only the benefits, but also the challenges, that are at play in constituting a value-sensitive transdisciplinary approach to small-scale fisheries.

Keywords Held values · Assigned values · Objective values · Relational values · Translation · Knowledge · Power · Governance

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3.1 Introduction

The project *Too Big to Ignore: Global Partnership for Small-Scale Fisheries Research* (TBTI) that stimulated this volume was conceived on a transdisciplinary foundation. TBTI recognized from its inception that small-scale fisheries are diverse, complex, and dynamic human enterprises that should be understood at the intersection of different academic and non-academic perspectives. TBTI's motivation is more than simply fostering holistic methods for describing small-scale fisheries, however. It also holds that transdisciplinary modes of understanding small-scale fisheries are necessary for governance that is more attuned to the particularities of small-scale fisheries. In TBTI's language, transdisciplinarity is thus a basis for better small-scale fisheries governability (e.g., Bavink et al. 2013). The intent of this chapter is to argue that transdisciplinarity also has the benefit of bringing out the centrality of values to discussions of small-scale fisheries when values are so often left implicit.

The advantage of transdisciplinarity in relation to values is that it is premised on the idea that different ways of knowing coexist. As no one perspective is complete, and each has its own strengths, blind spots, and interests, transdisciplinarity advocates for bringing into dialogue different approaches to knowledge and ways of being in the world, with all the difficulties of translation that doing so poses (Brosius 2006). Implicit within different approaches to knowledge, both disciplinary and cultural, are often different understandings of what value is and what is of value (Brosch and Sander 2016b). Given this plurality of perspectives on value, we begin with a simple overarching definition of value as reflecting the importance something holds for us (Brosch and Sander 2016a). Values are reference points for evaluating something as positive or negative, as desirable or objectionable (Kaiser 2012). They are rationally and emotionally binding, giving long-term orientations and motivations for behaviour and action (Kaiser 2012). Not only does a plurality of value perspectives exist, but also, and more fundamentally, a plurality of values exists in modern society and among individuals and cultural groups. Complicating analysis, values, like culture, are not static, but dynamic. Transdisciplinarity does not offer a path to synthesize perspectives, but rather, by bringing attention to the variations and contradictions in how small-scale fisheries are valued or not valued, it offers an approach that brings different ways of knowing and valuing in relation to one another.

The plurality of values manifest in fisheries governance (Jentoft and Chuenpagdee 2009), and small-scale fisheries, is at the heart of wicked social policy problems (Rittel and Webber 1973). Such problems have no straightforward technical solution, but require the hard work of any human collaboration: patience, tolerance, and acceptance of mistakes and miscommunications; an acknowledgement of accumulating histories that may bring parties together, but may also build suspicion, distrust, and conflict; and the recognition that different parties in negotiations of value will have different power to affect discourses of value. Wicked problems tend to reoccur with new and challenging variations. The engagements across difference that transdisciplinarity fosters – beyond discipline, profession, gender, socio-economic class, etcetera – necessarily leads to translation problems across differ-

ences in perception, paradigm, and priority. Seeking consensus on the values of small-scale fisheries through transdisciplinarity is thus a wicked problem. Indeed, consensus may not be possible or even desirable for post-normal science problems at the science-policy interface, where facts are uncertain, values are in dispute, stakes are high, and decisions are urgent (Funtowicz and Ravetz 1993). Value plurality forces us to accept difference and embrace tolerance if we are to forge solutions together.

This chapter sketches the potential of linking transdisciplinarity to the study of values and valuing in small-scale fisheries. Our transdisciplinary approach is predicated upon relating contextually-specific ways of knowing. These may be academic disciplinary, interdisciplinary and multidisciplinary, as well as non-academic indigenous and local experiential ways of knowing (Berkes 1999; Lam 2014). Transdisciplinary knowledge is relational; it emerges through ongoing exchanges among differently positioned individuals and groups and thereby holds the promise of transcending boundaries and particular contexts.

Thus, the core of our chapter juxtaposes value perspectives in six approaches to studying small-scale fisheries: economic valuation; ecosystem services; political economy; social wellbeing; interactive governance; and, post-normal science. We reflect on the lessons that emerge from four case studies by researchers working from different disciplinary foundations in three countries: two cases in Canada and one in Australia and in Brazil. Given space limitations, we cannot be exhaustive in terms of approaches (we leave out commons theory, for example) or representative in terms of the areas of the world that we cover. We do not attempt to synthesize the approaches, but rather explore how they complement and contrast with each other. Our intention is to stimulate others to extend the analysis to other approaches and places relevant to small-scale fisheries.

3.2 Transdisciplinary Approaches to Values in Small-Scale Fisheries

As values permeate all aspects of human existence, their study has led to diverse value conceptions. Consequently, no coherent theory of values exists, but rather multiple taxonomies and understandings of values have emerged from different disciplinary lenses. Our objective here is not to review or to summarize those perspectives, as this has been done thoroughly (Brosch and Sander 2016b), but rather, we wish to highlight perspectives that have influenced the fisheries literature. We do this to contrast the perspectives and to open up new space for inquiry into values in small-scale fisheries.

Two value distinctions have been particularly influential: values as objects or relations and values as held or assigned (Brown 1984; Chan et al. 2016; Rabinowicz and Rønnow-Rasmussen 2016). The relation-object distinction is concerned with what values are (Chan et al. 2016). The relational perspective emphasizes how values emerge from social interchange and histories, while the objective points to the possibility of freezing value, so that perceptions of value can be translated among

actors with a single currency, such as money (Graeber 2001). Objective values are collectively agreed and transacted upon. While those value ‘objects’ are simplifications, they are also necessary referents through which to share information and negotiate meaning. Held values, in contrast, are ideas that guide how humans navigate their worlds (Brown 1984). They are products of experience and upbringing that draw on social and cultural influences, including ideology and religious beliefs. Assigned values point to the human propensity to give greater or lesser importance to diverse aspects of life and the world, including material objects, ideas, subjective states, or affective relations with others (Brown 1984). From the perspective of economic theory, one’s stated preferences are related to held values, while exhibited preferences in behaviours are closely connected with assigned values. A contrasting, more relational social science view sees held and assigned values as reciprocally connected, in the sense that they inform each other through one’s life experiences (Johnson 2018; Song 2018), though in a complex, non-linear fashion. We argue that a rich understanding of values, appropriate to transdisciplinarity, has to encompass each of these distinctions, and the productive tensions among them, as facets of a broader notion of values.

The case of small-scale inland fishing on Lake Winnipeg in Manitoba, Canada, as summarized in Box 3.1, illustrates the power of held values to shape behaviour: commitment to fishing on Lake Winnipeg is driven in part by the sense that fishing realizes the held value of freedom. However, freedom is not a settled, universal value; rather, it is a value that is given meaning in opposing ways, with contradictory implications for fishery policy in Manitoba.

Box 3.1 Freedom and Fishing on Lake Winnipeg, Manitoba, Canada (Sölmundur Pálsson)

At 5 AM, a fisher on Lake Winnipeg looks outside his kitchen window to check the weather, even though he knows it really doesn’t matter what the weather is: he still will go out to fish. Whether in 20 °C on open water or in –30 °C on the frozen lake, the fisher will go out to catch Walleye or Whitefish. Values drive his actions: the value of the potential catch, of course, by which he contributes to supporting his family, but also the value of the great satisfaction that his job provides. In this, the fisher acts consistently with the observation that fishers often have high levels of job satisfaction (Pollnac and Poggie 2006). Yet, this driving value of satisfaction from fishing as an occupation is not as straightforward as it seems, as fishers on Lake Winnipeg (and likely elsewhere) conceive of that satisfaction in fundamentally opposing ways. To understand this point, it is necessary to understand a little about the history and contemporary politics of fishing on Lake Winnipeg.

In August 2016, the newly elected conservative government in the province of Manitoba announced that they would opt out of the Freshwater Fish Marketing Act (1985) or, in other words, they would withdraw from their participation in the Freshwater Fish Marketing Corporation (FFMC). This had been a promise of the Progressive Conservative Party during the 2016 election

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Box 3.1 (continued)

campaign, reflecting the party's longstanding criticism of the FFMC. During the 2016 campaign, the Progressive Conservatives received support from groups of fishers from Lake Winnipeg and Lake Manitoba who were disgruntled with FFMC's operations. It was a controversial decision, for two main reasons: (1) the lack of broad consultation with fishers (especially First Nations' fishers with whom consultations are required by law), and (2) only a minority of fishers on Lake Winnipeg, much the largest population of commercial fishers in Manitoba, supported the decision.

The FFMC was established in 1969 to break the exploitative relation that existed between fishers and fish buyers by nationalizing the right to market and export fish from Manitoba. The mandate of the FFMC was simple: to stabilize the market for fish by buying all the legally caught fish that fishers offered. For more than 40 years, state intervention increased fisher incomes and autonomy and, with other state-imposed regulations, reduced resource overexploitation (Johnson and Pálsson 2015). In recent years, however, divisions have arisen among fishers over the FFMC. The debate amongst fishers concerns the political values that frame the satisfaction derived from fishing for different fishers.

Maritime anthropologists have identified the independence, or freedom of fishing, as a central component of how fishing conveys satisfaction (McGoodwin 1990). The debate over the FFMC shows that freedom is itself a contested value. One group of fishers sees freedom through a neoliberal lens, with freedom achieved only when the state and state bureaucracy exercise minimal control over fisher economic activity. Their rhetoric is of the "free market" that enables them to sell their fish to whomever they want. They argue that without the slow bureaucratic practices and the lack of incentives of the FFMC, they will receive higher prices and therefore enhance the financial security of their families. A second group of fishers, however, sees the state, acting through the FFMC, as a vital part of achieving their freedom. This group's rationale is tied closely to the collective memory of fishers as indentured to fish buyers in the years prior to 1969. They see the FFMC and, by extension, the state, as a buffer against the global market and larger companies that might seek to dominate the Lake Winnipeg fishery. This 'freedom' from competition with much more powerful external competitors is what allows fishers to sustain their own operations. Their ability to control their own operations allows them to be their own bosses and gives them certain freedoms: control over their own time and control over how much time they can choose to spend with their families (Johnson and Pálsson 2015).

The Lake Winnipeg case shows that the definition of freedom as a value is often taken for granted as the neo-liberal view of freedom from the state. The contrasting views held by different Lake Winnipeg fishers illustrates, however, that freedom is highly contested, as is the value basis by which fishers derive satisfaction from their professions.

3.2.1 *Economic Valuation*

Economic valuation encompasses approaches in fisheries economics that commonly inform fisheries policy, where neo-classical economic methods inform judgments of appropriate interventions to achieve societal benefits for, or through, fisheries. Economic valuation approaches are oriented towards objective and assigned values. This is evident in the classic contribution of fisheries economics to management that aspires to achieve bio-economic equilibria for individual species of fish over time (Gordon 1954; Clark and Munro 1975) and in debates over whether there are limits to the assumption that privatization will result in sustainable fisheries outcomes (Clark et al. 2010; Pitcher and Lam 2010). The economic valuation approach is present in arguments for the diverse material benefits of small-scale fisheries (Thomson 1980; Pauly and Zeller 2016). In all fisheries, efforts are made to identify optimal economic arrangements for realizing objective social benefits, such as maximum sustainable yield, economic return, or employment. Values are assigned, with focus on the benefits derived from particular fisheries or economic arrangements. Commonly, such benefits are reduced to, or commodified using, the standard metric of money.

An illustration of the economic valuation approach is given in Box 3.2, which focuses on a debate between indigenous fishers and the government of Australia. While indigenous fishers are keenly aware of the values that underpin their position in the debate, governmental fisheries management actors do not appear to recognize that their approach to economic valuation is anchored in commodity values, even with regard to conservation.

Box 3.2 Values as a Window to Understanding Divergent Perspectives in Fisheries Management (Annie Lalancette)

The case of the tropical rock lobster fishery in Torres Strait, northern Australia, illustrates how a discourse analysis focused on values can help understand why management perspectives between actors may differ – even when some objectives seem compatible (Lalancette 2017b). In the last decade, this fishery has been rocked by access and resource ownership disputes between indigenous Torres Strait Islanders and non-indigenous Australian fishers. Torres Strait Islanders assign a high value to tropical rock lobster or *kaiar* – it is the commercial fishery where they are the most active and Islanders view it as a key element of achieving self-determination. Although Islanders' practices support their cultural resilience and *kaiar* sustainability (Lalancette 2017b), they are under considerable pressure from decision-makers to change their approaches to fishing in order to increase their catch (Lalancette 2017a).

The main management objectives defined in the Torres Strait Fisheries Act (1984) are protecting the environment, protecting the Torres Strait Islander traditional way of life (focused on subsistence fishing), optimal utilization of

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Box 3.2 (continued)

fisheries, and economic development. These objectives promote values of conservation and utilitarianism framed by the maximum sustainable yield; i.e., tropical rock lobster should be caught up to a pre-determined target point and only conserved beyond that specific catch level. They also reflect neoliberal values such as individual freedom, wealth accumulation and commodity production. Such a perspective supports fisheries management that is single-species, technical and centralized. It favours measures such as limited access, output controls with a preference for individual transferable quotas, and incentives that encourage profit-maximizing behaviour (Lalancette 2017a).

While Torres Strait Islanders share some objectives with those outlined in Australian legislation, what they consider to be good management significantly differs from conventional fisheries management. Islanders' overarching aspiration for self-determination is expressed through objectives of 100% ownership of territories and resources. For Islanders, good fisheries management starts with them being in control and respecting *Ailan Kastom*, rather than a limited focus on subsistence fishing. This means that management should be decentralized and founded on customary marine tenure, in which traditional owners control access to resources based on local abundance and needs, kinship affiliations, personal relationships and reciprocity.

Torres Strait Islanders' concerns regarding the sustainability of *kaiar* are motivated by stewardship responsibilities and inter-generational equity. The *kaiar* fishery is important economically as a primary or supplementary income, for its welfare functions, and as one of the few employment alternatives in the region. *Kaiar* also supports subsistence and food security, learning, knowledge transmission, cultural practices and the maintenance of social and kinship networks and relations, ultimately strengthening Torres Strait Islander identity (Lalancette 2017b; Mulrennan and Scott 2002). For Islanders, a sustainable fishery is thus one that can provide for both the environment and people in the future. The general view is that what remains in the sea is a long-term investment, making the tenet "take only what you need" a central component of Torres Strait Islander management.

The Australian government sees tropical rock lobster as a cornerstone of economic development for the region, as do Torres Strait Islanders. However, Islanders emphasize community wellbeing and generally reproach wealth accumulation. Their desire to improve their economy does not supersede other values, such as spending time with family and in the community and participating in cultural and ceremonial life (compare to *Vida Simples*, Box 3.3). Islanders tend to prefer small boats with low overhead costs because it gives them the freedom to choose when and how much they will fish. Good management is thus one that can support the economic viability of their small-scale operations. It should accommodate various and flexible levels of efforts and participation so that fishers can adapt to changing responsibilities, oppor-

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Box 3.2 (continued)

tunities, and ecological conditions, as well as respond to different economic needs, capabilities and personal preferences.

Equity in benefit distribution is an important value for Torres Strait Islanders. Most Islanders are adamant that the fishery should provide equal opportunities to everyone in terms of access, catch and revenue – regardless of one’s level of effort and participation. Islanders tend to disapprove of regulations or technologies that confer an advantage to some fishers over others. For example, there is a strong awareness and concern for free-divers who must compete with hookah divers. To level the playing field, Islanders have devised informal rules, such as prohibiting the use of hookah on top of reefs and hookah bans by some communities in their waters.

According to Torres Strait Islanders, good management is best achieved by a combination of restraint, careful adoption of technology so that fishing is not “too easy”, respect of Torres Strait Islander institutions and norms, and adjusting effort to environmental conditions. As opposed to the conventional fisheries management view, these constraints are not considered “inefficiencies”, but viewed as positive effort controls.

A comparison of the discourses of Torres Strait Islanders and Australian government managers shows that they share similar objectives in terms of sustainability: protecting the traditional way of life of Torres Strait Islanders and economic development. These sustainability objectives are informed, however, by different values. A nuanced understanding of values might be able to explain users’ resistance to fisheries measures by highlighting potentially adverse consequences and their varied impacts on different groups.

3.2.2 *Ecosystem Services*

Ecosystems services’ orientation to value is similar to economic valuation, as a result of its methodological debt to neo-classical valuation approaches. As pointed out by many (Agarwala et al. 2014; Hicks et al. 2016; Acott and Urquhart 2018), ecosystem services approaches to values were initially premised on a linear understanding of the services generated by ecosystems for human users. These were understood in assigned value terms, and as reducible to objective monetary measurements (Millennium Ecosystem Assessment 2005; Chan et al. 2012). This approach was able to estimate values for provisioning, regulating, and supporting ecosystem services, but was accompanied by a fourth category of cultural ecosystem services that fit awkwardly with the other three and required an understanding of culture as an object produced by natural processes. This is a reductionist understanding of culture that eviscerates it of its core interpretive and social relational

quality, in contrast to recognizing that cultural values are both derived from and embedded within community and ecosystem relationships (Lam and Borch 2011; Lam and Pitcher 2012b).

In recent years, efforts have been made to reconfigure the ecosystem services approach to better understand how culture serves as a context through which ecosystem services are recognized and given value, rather than reducing culture to an ecosystem product. These efforts have sought to integrate attention to held values and a relational approach to values (Chan et al. 2016). Authors working in small-scale fisheries have played a significant role to reorient the conceptualization of value in ecosystem services. Hicks et al. (2016), for example, apply the idea of elasticity from economics to look at the social and cultural factors that shape the value given to ecosystem services. Acott and Urquhart go further and use a co-constructionist approach to human-environment relations to argue that ecosystem services are products of particular histories of human-environment engagements (Acott and Urquhart 2014, 2015; C. White 2018). Both cases demonstrate that economic valuation methods have to be complemented, and qualified, by qualitative research to reveal how definitions and valuations of ecosystem services vary by social context.

3.2.3 *Political Economy*

Political economy, in the contemporary Marxian sense, can be understood as a theory of value creation where value is the product of human labour. This situates political economy as focused on assigned and objective values: humans create objects that acquire (are assigned) value from the work that went into producing them. Political economy's analytical richness, however, comes from the additional crucial observation that all labour is social in two senses. First, labour is social in that it is a collective product, with products of labour made by people acting directly or indirectly in concert with each other. Second, what we choose to labour for is a social and cultural question, such that held values influence what is meaningful labour and what are meaningful products of this labour. Value, in the political economy sense, can be crystallized in socially produced objects (that may or may not be material, e.g., an informal fishing regulation), but which only take value because of the social relations that literally and symbolically make them. Political economy thus also focuses attention on relational and held values.

This theoretical starting point can lead to a profound analysis of the hidden dimensions and dynamics of power in the production of commodities within capitalism (see Graeber 2001; Taussig 2010 [1980]). It is important to acknowledge political economy's fruitful conceptualization of power in relation to value. Power is made manifest through the production of values or, in other words, material advantage can confer benefit in shaping the discursive ground out of which values emerge. Thus, in fisheries, held values such as the need for development, heightened

commodity-based production, privatization, or environmental protection are not simply objects that can be rationally debated on their merits in public forums (as interactive governance holds), but are social constructs whose ambiguities are honed and manipulated in efforts to control both people and resources (Pálsson 2006; Pinkerton and Davis 2015). For example, fishery resources may be valued as commodities giving profit to commercial fishers or as living resources with ecosystem and social relationships for local and indigenous communities (Lam and Pitcher 2012b). These contrasting valuations of fish, as either alienable property that can be valued in a market or inalienable property that cannot, can favour industrial-scale fisheries over small-scale fisheries or fisheries over conservation or vice versa. The process of commoditization, analyzed as a societal selection pressure that favours an economy of things over relationships (Manno 2000), can be seen holding or assigning value to objects over relations.

3.2.4 *Social Wellbeing*

The distinction between relations and objects is central to the social wellbeing approach. Social wellbeing emerged from the field of international development built on the crucial insight that poverty is not just an economic matter of income, but a multi-dimensional phenomenon (Agarwala et al. 2014). Poverty involves not only material deprivation, but also relational incapacity, and subjective stress. These material, relational, and subjective dimensions constitute the analytical core of social wellbeing's multidimensional framing of ways in which people seek to live well in terms that make sense to them. Values are relevant to social wellbeing as guides to aspiration; they frame that which is necessary or preferable to live well (Fischer 2014; Johnson 2018). Social wellbeing thus has a relational sensitivity to values, including the recognition that material objects and ways of living are perceived through lenses informed by context, history, and practice (S. White and Ellison 2007).

For small-scale fisheries research, the three dimensions of social wellbeing (Coulthard 2012b) provide a way to structure the analysis of how meaning and value emerge in particular social-ecological contexts. How people, in relation to their environments, co-construct histories and influence behaviours with and of each other have valued material, subjective, and relational aspects that can lead to more or less sustainable fisheries. The insights that a social wellbeing approach may bring to understanding how particular values affect conditions for fisheries governance is illustrated in Box 3.3. Leite shows how a cultural orientation and particular frustrating histories of engagement help explain why one group of Brazilian small-scale fishers are leery of state efforts to involve them in governance.

Box 3.3 Small-Scale Fishers' Values as a Barrier to Participation in Fisheries Governance (Marta Leite)

I love my life, this 'simple life'! It is the best life, you know? People from the city pay to have a little taste of our life, they want to rent our house, go fishing in our boat, buy our fish, isn't that funny? – Caiçara Fisher, Ubatuba, Brazil.

Understanding fishers' motivations and behaviours is fundamental to managing small-scale fisheries' long-term sustainability. Nevertheless, fishers' behaviours and choices are typically complex and comprise a set of economic, social and cultural considerations (Coulthard 2012a). The Social Wellbeing Approach offers a powerful tool to expand and deepen our understanding of how values shape small-scale fishers' behaviours. In the case below, it explains their engagement (or not) with local fisheries governance institutions.

Indeed, in Ubatuba, a Municipality on the Southeastern Coast of Brazil, small-scale *Caiçara* fishers' cultural value of "*Vida Simples*" (the Simple Life) has played a significant role in defining behaviours in times of change posed by rapid economic development, including fishers' disengagement with the fisheries governance process.

Vida Simples is an expression that speaks to the embrace of life that is both modest and humble. Faith in God, family 'togetherness', freedom to fish, autonomy and ties with friends and neighbours compose some of the central elements of this way of life. Moreover, humility, the *Caiçaras'* unique and ubiquitous sense of humour, and an aptitude for living life in the present were all described as important components of what it meant for participants to live the *Caiçara Vida Simples*. The embodiment of this lifestyle captures a major piece of *Caiçaras'* cultural identity, and, we argue, has important consequences for local fishers' lack of interest in taking part in meetings with government. This is occurring even as the discourse of inclusion features prominently in recent policy initiatives within Brazilian fisheries management institutions.

For *Caiçara* people, in large part due to an extensive history of loss of land and access to natural resources, a clear and persistent distrust in government institutions remains, creating significant challenges for fishers' participation in government initiatives for inclusive governance. Another aspect is the prevalence of policies representing conservation interests, both on land and at sea. The consequence is a tendency of fishers to resist engaging with fisheries governance, as observed in this research and demonstrated by other studies in the area (Bockstael et al. 2016; Trimble et al. 2014; Trimble and Berkes 2013).

We offer a complementary explanation, however, based on the concept of *Vida Simples*, from the perspective of the fishing community studied. We make the argument that *Caiçara* fishers also mediate their potential participation in government-driven initiatives based on deeply-rooted cultural tendencies.

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Box 3.3 (continued)

For example, some of the *Vida Simples* related values that act as barriers to engaging with governance are avoiding conflict, the embrace of a ‘laidback’ persona, appreciation for autonomy and independence, freedom from regimentation, living in the moment, and communicating through humour, as opposed to through formal and technical languages. These values conflict with the governmental model of engagement, i.e., the ‘meeting’, and discourage fishers’ participation, resulting in low representation of fishers in government-organized functions.

Yet, while *Caiçara* fishers from Ubatuba generally choose not to engage in meetings with the government, they do find alternative and more “silent” ways of responding to their lack of voice in defining their own freedoms and wellbeing priorities. This is achieved, simply, by electing not to cooperate with imposed restrictions and to resist the power imbalances to which they are subject. While this takes several forms, one of the most prominent is through the practice of illegal fishing, which in turn only heightens the barriers between local fishers and government management agencies. Disobeying fishing policies and fishing illegally represent strategies to maintain their lifestyles in the face of change, but with severe consequences for fishing households, including marginalization, arrest and loss of fishing gear. These consequences have direct impacts on the overall wellbeing of the fisher and his or her family. We argue that only through a deeper cultural analysis can we better understand the challenges of encouraging fisher engagement and buy-in for fisheries management. A governance model that is culturally sensitive may offer a better chance of success.

3.2.5 Interactive Governance

Interactive governance theory provides a systems-based set of analytical tools for analyzing the characteristics and relations of governance in particular settings. It is not a formal theory of how governance works, but rather a set of tools for analyzing particular governance arrangements and their performance (pers. comm. Svein Jentoft). The premise of interactive governance is normative: enhancing understanding of the different components of particular governance arrangements and contexts, while also enhancing capacities for engagement among actors and groups in governing, will result in better governance outcomes. Interactive governance theory has been applied widely to fisheries in the past 15 years (Kooiman et al. 2005; Bavinck et al. 2013; Jentoft and Chuenpagdee 2015).

In its analysis of fisheries as systems, interactive governance identifies three different levels or orders of governance, addressing: (1) practical, day-to-day, operational questions; (2) institutional organization and maintenance concerns; and (3) attention to the ideal or philosophical underpinnings of governance systems. Values are integral to this last, third-order level of governance. In interactive governance

theory, values are held, underpinning how governing is approached, but are also assigned, depending on the foundational held values of a given governance system. The interactive governance approach advocates reflexive understanding of value motivations as a basis for more transparent negotiations of interest in governance, but it is not fully relational, as it also sees values as objects that can be categorized and associated with particular individuals or groups (Song et al. 2013). Unlike the ecosystem services approach, where value is a benefit from the environments in which we live, or political economy, where value is the product of human labour, interactive governance does not posit a theory of how value is created, but rather just assumes that values shape social interactions.

3.2.6 *Post-normal Science*

Values are central in post-normal science approaches to problems at the science-policy interface, where facts are uncertain, values are in dispute, stakes are high, and decisions are urgent (Funtowicz and Ravetz 1993). Post-normal science warns against arbitrary separations between facts and values, embraces complexity, and focuses on the quality of the scientific process, which is seen as recursive (e.g., participatory and iterative) and reflexive (i.e., the analyst is part of the analysis). It stresses recognition of the plurality of publics – and hence the plurality of values – that typify wicked problems (Rittel and Webber 1973) and advocates compromise, rather than consensus. Issue resolution is via an ‘extended peer community’, involving scientific disciplinary experts, concerned citizens, and diverse stakeholders, engaged in deliberative dialogue to frame the problem, assess the options, and control the quality of knowledge (Van der Sluijs et al. 2008). Post-normal science is transforming science (Gluckman 2014) and governance (Pitcher et al. 2017), particularly in areas of conflict, where the use of evidence is contested due to different norms and values.

In fisheries, characterized by high system complexity and uncertainty (Ludwig et al. 1993; E. K. Pikitch et al. 2004; Dankel et al. 2012), fishery openings, quotas, harvest allocations, and other contested decisions that affect multiple participants and groups must be made prior to each fishing season. Implementing a transdisciplinary post-normal science approach, the Canadian Pacific herring fishery case study in Box 3.4 presents an innovative value- and ecosystem-based management approach to resolve resource conflicts. With an extended peer community of scientists, indigenous communities, artists, industry, government, and civil society, collaborative governance solutions Lam and Pauly (2010), Lam and Pitcher (2012a) were explored through a participatory stakeholder process to explicate their values and preferences for alternative fishery management strategies. The ecological impacts and risks of these strategies were also modelled. By thus making values more transparent in resource conflicts, such as between indigenous communities and industry or small- and large-scale fisheries, it is possible to foster sustainable and just fisheries policies and legitimate governance interventions.

Box 3.4 Explicating Values to Resolve Conflicts in Fisheries (Mimi E. Lam)

The herring is the most important fish for all the islands, all the area. We're hoping that all the Haida Gwaii herring stocks will get better. I'd like to see it closed 'til all these areas get herring. – Haida elder and retired commercial fisherman, Haida Gwaii, Canada

Missing in traditional fisheries management and governance, and vitally important to recognize for small-scale fisheries, is the explication of values to aid decision-makers in resolving the inherent policy trade-offs that emerge when diverse stakeholders and communities have competing interests. Post-normal science offers a lens that explicitly recognizes and addresses the plurality of values that often exists in resource management contexts and gives rise to highly contested policy arenas. In these conflicted situations affecting diverse stakeholders, it is important to extend the peer community beyond scientists and policy-makers to involve holders of local experiential and indigenous knowledge, incorporating their beliefs and values in the decision-making process. We have developed an innovative, participatory value- and ecosystem-based management approach that combines practical ethics with ecological modelling (Lam et al. 2017; Pitcher et al. 2017; Surma et al. 2018). This approach can facilitate conflict resolution and decision-making at the science-policy nexus by explicating values often at the source of conflicts, but masked as stakeholders advocate for specific management strategies. Ultimately, by promoting more inclusive, transparent, and accountable governance, our approach can enhance ecological sustainability and societal welfare.

In western Canada, the Pacific herring fishery conflict between local and indigenous communities and the herring industry (see 'Herring Quest' video: <http://perf.oceans.ubc.ca/projects/current-projects/herring-people/herring-quest-stakeholders-values/>) reflects diverse ecological, economic, and cultural values of herring (Lam et al. 2017; Pitcher et al. 2017; and Surma et al. 2018). Pacific herring (*Clupea pallasii*) are small pelagic forage fish that play a pivotal ecosystem-provisioning role within marine food webs, linking predatory fish, marine mammals, and seabirds to its planktonic invertebrate prey (E. Pikitch et al. 2012; Ellen K. Pikitch et al. 2014; Surma et al. 2018). Pacific herring supports several commercial fisheries, including roe herring, spawn-on-kelp, and food and bait (Haas et al. 2016), and provides seasonal export revenue and income to local fishers and processors. Herring spawn-on-kelp is also a traditional food for many coastal indigenous peoples, including the Haida, the indigenous inhabitants of Haida Gwaii, a remote northern archipelago with a rich marine ecosystem and cultural heritage (von der Porten et al. 2016; Jones et al. 2017). The scientific basis for management of the fishery is uncertain due to complex ecosystem interactions that link herring to its predators and prey (Surma et al. 2018). Meanwhile, harvest quotas for herring are set annually (DFO 2016), which makes decisions urgent and often contested.

(continued)

Box 3.4 (continued)

In community-based research designed to facilitate collaborative governance solutions for the Pacific herring fishery conflict, Haida Gwaii community and herring industry members ranked a set of values and identified their preferred scenarios for fisheries management (Lam et al. 2017; Pitcher et al. 2017). While value rankings were similar for both groups, their scenario preferences differed markedly, suggesting that the link between values and preferences is nuanced and complex. Values may run counter to an individual's or group's interests in some settings, particularly in highly politicized contexts, such as the resource management conflict here. Also, individuals can have similar overarching values, but interpret or apply them differently, depending on their local circumstances and the differential benefits and impacts accrued from the fishery (illustrated by the value freedom, Box 3.1). However, focusing on common value priorities and scenario preferences, and excluding the extreme management options preferred by one group but not the other, reveals a compromise strategy to manage the roe herring and spawn-on-kelp fisheries separately, with distinct harvest control rules. This takes into account the differential values and impacts of the two fisheries. Explicating values thus opens up room for dialogue and compromise among diverse stakeholders and highlights the benefits of embedding a value- and ecosystem-based management approach within a post-normal science framework to resolve conflicts and policy trade-offs in fisheries.

The two central themes of this book, transdisciplinarity and small-scale fisheries, now need to be made explicit in relation to these various approaches to values. First, with regard to transdisciplinarity, all but the first approach above are more than disciplinary, but come to their multi-dimensional approaches in different ways. Among them, only post-normal science can strongly make the claim to be fully transdisciplinary in terms of integrating non-academic knowledge, but the clear attention of all except economic valuation to relational ways of understanding values suggests openness to inclusion of diverse ways of knowing. The held-assigned and relational-objective distinctions suggest a guide to how all six approaches relate to each other, while recognizing contradictions and incompatibilities. Second, as the references in each section show, each approach has generated literatures that indirectly or directly reflect on values in small-scale fisheries. Some of these contributions are reductionist, emphasizing the material assigned values of small-scale fisheries, while others are much more evocative, focusing on relational values, including meaning, sense of place, and spiritual or religious values. In arguments for the general societal value of small-scale fisheries (Johnson 2018), both are necessary, perhaps with the assigned-values group serving the tactical purpose of speaking the language of policy and the relational-values group truer to the fullness of values experienced by many small-scale fishers.

3.3 Conclusion

Transdisciplinarity is about the recognition that ways of knowing are plural and that, to address human problems, it is necessary to engage in ongoing efforts to create and sustain bridges between different perspectives on the world. Complicating that task are the held values and processes of valuing aspects of the world that guide human engagement with each other and with our environments. Power is implicit within values seen relationally, as values so often are the basis for ranking groups, objects, and ways of knowing against each other. Transdisciplinarity, therefore, needs to integrate attention to values in its translation efforts and to recognize that such efforts always need to be attuned to the relations of power within which they operate.

These transdisciplinary considerations are as relevant to questions of governance in small-scale fisheries as they are to any other human endeavour. In this chapter, we have reviewed some of the ways in which values emerge in different approaches to small-scale fisheries and we have provided four illustrations of the importance of taking values into account in the sector. Each of the cases shows in particular how attention to values forces consideration of different ways of knowing, and especially the importance of fishers' knowledge. But the attention to values in the cases shows that transdisciplinarity as an effort to communicate across different ways of knowing is far from straightforward. Lam shows, in the herring fishery case study, that even when we assume that a commonly understood set of values can be defined, different individuals and groups may interpret and act upon seemingly shared value priorities in divergent ways. Transdisciplinarity thus should be seen as a space for negotiation, hard choices, and trade-offs (Coulthard 2012a), rather than a path to finding a clean common ground. History is important as well, as Leite's case of *Vida Simples* makes clear. Efforts to build transdisciplinary understanding can face serious challenges due to the build-up of past interventions by the state or outsiders whose actions made little effort to take into account fisher values, such as those associated with the idea of *Vida Simples*. In the Lake Winnipeg case of Pálsson, different understandings of freedom, as a value, align with different political positions. Any effort to build transparent transdisciplinary space has to recognize that the very terms themselves are not settled and that some interpretations of fundamental value terms have greater political credibility than others. Lalancette shows that Torres Strait Islanders' knowledge systems rest on culturally important values that conflict with more powerful neoliberal values that are the basis for the Australian government's approach to assigning value to fisheries. All four cases suggest that transdisciplinary engagement has to recognize differences of power, which complicate the assumption that just heightening transparency with regard to values can foster trust.

To conclude, values complicate the transdisciplinary ideal in productive ways. They put a check on assumptions that transdisciplinarity is a silver bullet to resolve problems in small-scale fisheries. They suggest, rather, that transdisciplinarity is like any other human endeavour, in that it suffers translation problems, duplicity, frustrations, and conflict, all of which require hard work and patience to address.

Nonetheless, the principle of inclusion that underpins transdisciplinarity, and its foregrounding of the coexistence of different knowledge systems, makes it an important addition to the governance toolkit.

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