

IDS Bulletin

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ENGAGED EXCELLENCE

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Moving Beyond Co-Construction of Knowledge to Enable Self-Determination

J. Marina Apgar, Tero Mustonen, Simone Lovera and Miguel Lovera

Abstract It is increasingly recognised that co-construction of knowledge which brings together researcher-derived understanding, with local, practitioner or non-researcher understanding is necessary to address current global challenges. Emerging empirical evidence suggests challenges remain in bridging across scales and ensuring inclusion of the marginalised. It is unclear whether espoused approaches are in practice enhancing the wellbeing of those currently on the front lines of ecological, social and political crises, or, whether they are inadvertently increasing inequality. In this article, we explore co-construction from our experience as embedded researcher–practitioners through two case studies: the ecological restoration of fisheries by the Skolt Sámi in Finland, and the conservation of agro-ecological and forest management practices by peasant communities in Paraguay. We challenge the idea that co-construction of knowledge is sufficient to engage with regressive institutional and political dynamics that continue to marginalise, arguing for a focus on self-determination to be the foundation for co-construction.

Keywords: co-construction, marginalised, self-determination, indigenous knowledge.

*tomorrow is a new day
other animals
I converse with the fire
tomorrow
it too will have another language
new migration routes for tomorrow's reindeer
the stones will have different traditions
an alien time within time,
alien*

Poem by Nils-Aslak Valkeapää from the North Sámi Society (Gaski 2003: 246). Reproduced here with kind permission.

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1 Introduction

Addressing today's 'grand challenges' such as climate change and increasing inequality requires participatory and interactive approaches to research (Mauser *et al.* 2013; Hage, Leroy and Petersen 2010; Huntington 2011). At the heart of these approaches is a recognition that there are different ways of understanding and knowing the world, and a belief that bringing these together may provide more holistic responses which are better suited to addressing systemic challenges (Godemann 2008). A multitude of approaches to bridging knowledge exist, such as post-normal science (Funtowicz and Ravetz 1995), transdisciplinarity (Bergmann *et al.* 2012), sustainability science (Spangenberg 2011), Mode 2 (Gibbons 2000), and participatory action research (Reason and Bradbury 2008). While each develops its own nuanced perspective, they share co-construction as a common methodology. Here, we understand co-construction as a process through which different forms of knowledge that stem from different research disciplines (and their epistemologies) and non-researcher ways of understanding are brought to bear on real-life challenges linked to environmental sustainability. This approach moves beyond 'knowledge integration' models common in natural resource management (e.g. Bohensky and Maru 2011), and sits within broader approaches to adaptive co-management (Armitage *et al.* 2008) or co-governance (Kooiman *et al.* 2008) which call for sharing of power, equality and support for social learning.

Indigenous peoples comprise approximately 5 per cent of the world's population, yet they customarily own, occupy or use 22 per cent of the world's land surface and manage 11 per cent of the world's forests, making them important contributors to sustaining the world's remaining biodiversity (Maffi 2005; Maffi and Woodley 2012). Further, much of the world's agrobiodiversity is in the hands of peasants who produce a large proportion of the world's food through agro-ecological practices that provide a broad array of social and environmental benefits (IAASTD 2009; Altieri and Toledo 2011). In spite of a progressive international policy framework supporting their rights,¹ many of these rural communities remain politically marginalised (Coates 2003). They hold knowledge that can support improved environmental management, yet paradoxically, are at the front lines of environmental disruption. As the indigenous scholar Linda Tuhiwai Smith (1999) argues, power relations that stem from colonial interactions continue to obscure and marginalise indigenous peoples' knowledge and practices. In such conditions, engagement of marginalised communities in co-construction initiatives form part of a broader project of decolonisation and social and environmental justice.

As Polk (2015) notes, most co-construction processes remain 'located' within research settings and Choudry and Kapor (2010) argue that the richness of knowledge production from within social movements tends to be overlooked by researchers. Our understanding of co-construction, therefore, tends to be limited to how research reaches out to 'other' forms of knowledge. Seldom, in scholarly circles, do we hear about the experience from the perspective of the 'others'. Our starting premise

in this article is that if research is to ignore the political processes of contestation that co-construction is embedded within, we run the risk that enthusiasm and well-meaning efforts to include the knowledge of local and indigenous communities may, unknowingly, be fuelling greater inequality.

Our aim is to share learning from experiences with co-construction driven by marginalised communities in response to their own goals. First, we provide a brief critical review of the history of bridging between indigenous and local and scientific knowledge, identifying risks and opportunities. We then share two case studies from current work with indigenous and peasant communities. We recognise that definitions of communities as ‘indigenous’ and ‘peasant’ are fraught with political and analytical conundrums of representation (Posey 2002). We have chosen to use the terms adopted by the people whose experiences we support and share because we firmly believe in their right to name themselves. We do not, however, claim to be representing their views. Our positionality as authors of this article is as locally embedded practitioners who are bridging to external research institutions, with two of the co-authors (TM and ML) working locally through longstanding relationships of trust, and two (MA and SL) supporting indigenous and peasant movements over several decades. We share learning from our experiences with: (i) ecological restoration of fisheries by the Skolt Sámi in Finland in collaboration with Snowchange Cooperative, and (ii) assessing the resilience of community conservation initiatives of peasant communities in Eastern Paraguay in collaboration with the Global Forest Coalition and the Center for Studies and Research of Rural Law and Agrarian Reform (CEIDRA) of the Catholic University of Asunción.

2 The risks of co-construction for indigenous knowledge

We use the term indigenous knowledge (IK) following Posey (2002: 27) who argues that it is an umbrella term that includes all forms of local and traditional knowledge. Anthropologists have shown that IK is situated in institutions and social practices, that it is fluid, and constantly engaging with processes of representation and power (Raffles 2003; Agrawal 1995, 2002). Co-construction processes that work with researcher-derived knowledge and IK are, from this perspective, implicitly embedded within the political struggles of indigenous peoples and peasant communities (e.g. Bryan 2009; Turnbull 2009). Environmental management, however, has historically taken a more instrumental view of IK, with researchers and practitioners seeking to use it to fill gaps or validate scientific knowledge to improve the way natural resources are managed (e.g. Johannes 1993; Huntington 2000). The general trend has been to seek to ‘integrate’ IK into externally derived models in ways that are seemingly unaware of the politics within which knowledge is created, contested, negotiated and promoted.

More recently, the advent of relational and dynamic approaches of managing ‘social-ecological systems’ (Berkes 2012) has created more space for all knowledge, including IK, to be recognised as embedded

in social and cultural institutions and practices that enable more sustainable resource management. This is echoed in sustainability approaches, where we see a growing appreciation that co-construction processes are not isolated experiences of knowledge exchange, but are embedded within institutional and societal dynamics (e.g. van Kerkhoff and Lebel 2015; Polk 2015). Particularly in progressive and wealthier national contexts such as North America, New Zealand and Australia, co-construction has now been codified within processes that espouse co-management, described as 'the sharing of power and responsibility between government and local resource users' (Berkes 2009: 1). These approaches create a window of opportunity for co-construction to become a vehicle for sharing power with marginalised groups.

In practice, however, the success of co-management is still measured by the extent to which there is formal recognition of IK, with little analysis of how this recognition affects broader community processes of self-determination. As Nadasdy (2003), for example, shows for the Kluane First Nation in Canada, formal recognition of IK in a shared governance arrangement led to their knowledge becoming subject to a bureaucratic process based on government set measures. As a result, a range of external governance mechanisms replaced traditional practices on the land (such as hunting) that were necessary to reproduce knowledge. The formalisation of IK for the purpose of joint governance, therefore, can potentially lead to co-option and assimilation, putting at risk cultural and social practices including embedded leadership and engagement with the land (Apgar 2010; Apgar, Argumedo and Allen 2009; Lehtinen and Mustonen 2013) which are central to the creation and use of IK. Co-management approaches, therefore, may have moved conceptually towards understanding social dimensions, but they still struggle to overcome the inherent inequality between researchers and communities (e.g. Cinner *et al.* 2012).

In poorer contexts, co-management is even more challenged to overcome marked power relations between 'implementers of co-management' and local communities and often leads to further marginalisation (Béné and Neiland 2004; Wilson *et al.* 2006). As Altamirano-Jiménez (2013) argues, IK is, in many contexts, only embraced when not perceived as a threat to imposed development models. In situations where formal rights of communities are not recognised, co-construction and co-governance approaches are inherently threatening. As others have argued (e.g. Wohling 2009) the disparate power relations that often exist between researchers or managers pushing their models and knowledge on to 'other', and usually poor communities, can perpetuate their marginalisation further.

In summary, instrumental approaches to engaging with IK in environmental management fail to appreciate the broader political and social processes within which knowledge is created and contested. Yet even with co-management and transdisciplinary approaches that move beyond the technical, challenges remain in ensuring quality engagement

across multiple stakeholders, that is contextually embedded and that ensures equity and inclusion of the marginalised (Lebel, Wattana and Talerngsri 2015; Bowen *et al.* 2015). Evidence suggests that it is necessary, but not sufficient, to espouse equality if researchers are aiming to minimise the risk that marginalised communities face through engaging in co-construction. Given these ongoing challenges, how can researchers and marginalised communities negotiate their way through the messy contestations that are inherent in co-construction processes?

3 Case studies

Ecological restoration of the Näättämö River, Finland

Fishing in the fresh waters of Northern Eurasia has been the defining activity that has allowed indigenous communities of the region to survive historically through harsh winters and short summers, with early records of fishing nets dating back 10,000 years (Mustonen and Mustonen 2011). Specifically, the Näättämö watershed in the Finnish–Norwegian borderlands is a major Atlantic salmon stream (Feodoroff and Mustonen 2013) with a wide diversity of fish species (Niemi *et al.* 2001). Today it is the home of the Skolt Sámi indigenous peoples, most of whom live in the community of Sevettijärvi, Finland. The Skolt Sámi, often referred to as the most traditional of the Sámi indigenous nations, were forced to relocate to this area from their former homelands in present-day Russia in 1944, in the aftermath of the Second World War. They have rebuilt their traditional economies of reindeer herding, hunting and fishing in this new homeland and have, through time, resisted assimilation into European ways of life. Their practices are embedded in the distinct ways in which all indigenous societies of the Arctic understand and engage with time–space which is markedly different to linear scientific environmental management models.

For the indigenous peoples of the Arctic, the driver of life and society is constant change. Most change is a welcome and natural cycle of life. Time, space and engagement with place is understood by the Sámi as circular, and hunting, fishing and other subsistence activities act as means of communication, exchange and relationship building with the tundra and taiga, and through them with the universe. The community thus maintains relationships and reciprocities with natural systems through their everyday engagement. A central component of this engagement are ‘events’. An ‘event’ is often interpreted as embedded in its immediate geographical surroundings, but also in the mythical–spiritual deeper layers of mind and memory. Thus, an ‘event’ can be understood in multiple ways. It may contain links to mythical times, which are passed down as oral narratives and histories or exist simultaneously in the present and in myth–time. If it involves significant animals, such as the raven, a bird of knowledge, creator and trickster in Arctic societies, it is highly significant. Some places may also represent ‘events’ and can embody dual or multiple beings too; for example, sacred places such as grave sites or those containing stones or trees. Elders and spiritual people in the communities guide the community to form relationships with and build meaning through an ‘event’, which

symbolises the reciprocal and deep connection between the Sámi and their traditional lands. The embedded experience of life on the land is, therefore, central to Sámi IK.

Today, management of the Näättämö salmon fishery is part of the Atlantic salmon management bilateral agreement between Finland and Norway. In 1973, Finland re-confirmed the responsibilities the state inherited from Russia towards the recognition of Sámi rights as enshrined in the Skolt Act of Finland. It provides for user rights for 'traditional lifeways' of herding, fisheries and hunting, but in practice has been poorly implemented. In spite of recent attempts by the states of Finland and Norway to converse with different Sámi nations on questions of cultural, linguistic and land rights, the Eastern Sámi peoples feel that their cyclical and non-linear views of the world have not been adequately included in the management of natural resources. They argue that this has, in part, led to the demise of the ecosystems, and is consequently threatening their way of life (Skolt Sámi Nation and Snowchange Cooperative 2011).

In response, the Skolt Sámi engaged in a community-based initiative to understand the status of, and ecologically restore, damaged parts of the Näättämö basin. The initiative was supported by the Snowchange Cooperative. Beginning in 2011, it is the first attempt at a formal process of co-management through co-construction of IK and science in Finland. It aimed to respond to the negative impacts of climate change, and the need to address past ecological damages. All activities were designed and prioritised by the Skolt Sámi themselves and the initiative was co-managed by Snowchange and Skolt leaders. Snowchange has pioneered alternative approaches to the established Sámi Studies (Smith 1999), advocating for Sámi as agents and co-researchers in the Arctic climate change assessments (Arctic Council 2005). This follows the idea that the community in question decides, steers and guides the research, while research and cultural organisations such as Snowchange provide a 'bridge' between the world of peer-reviewed science and IK. The transdisciplinary team built for this initiative included geographers, limnologists, biologists and social scientists, all selected based on their openness to experiment with new approaches. The relationships of trust that were built through the bridging of Snowchange meant that day-to-day exchanges between community members and researchers tended to be welcoming and informal.

Co-construction was facilitated through bringing IK and science into a joint process of understanding ecosystem changes and relating them to livelihoods strategies. The initiative started with rigorous baseline work which included preparation of the Eastern Sámi Atlas (Mustonen and Mustonen 2011) containing information of indigenous governance of water bodies practised prior to large-scale colonial presence. Local fishermen and women added to this through conducting interviews in their Skolt language about the salmon, place names and past environmental change, helping to record traditional knowledge (Feodoroff and Mustonen 2013). Building on the historical baseline,

local fishermen and women then led environmental monitoring of the watershed in 2013 and 2014.

During the summer field season, they recorded their observations with digital cameras, and shared them with the science team, developing a new field method called ‘visual-optic histories’ (see Mustonen 2015). The method led to detection of new species arriving in the ecosystem. For example, the appearance of the southern *Potosia cuprea* scarabaeid beetle was first interpreted as a significant ‘event’ in the Skolt world and was documented through oral history. Field photographs and observations by the Skolts were combined with a species identification by an insect specialist confirming a new geographical discovery. Observations of water level and temperature fluctuations linked to salmon movement patterns and changes in water quality such as algae blooms and foam, were also co-constructed through sharing local monitoring data with limnological data publicly available for the basin.

During the Atlantic salmon fishing season, Skolts kept records of their catches. Catch statistics were then compared with the scientific surveys of the amounts and qualities of salmon swimming up the river. The Skolt records, for example, noted an expansion of the range of the northern pike to stream sections of the river close to lake Opukasjärvi, an observation science records had not yet detected, but could help interpret in relation to the warming waters. They also recorded ‘lost’ salmon-spawning areas on maps. These sites had been lost due to state-sponsored land management actions, mainly for forestry experiments in the 1960s and 1970s as well as establishment of new boating routes. The documentation of sites of erosion on lake and river banks, a sign of potential climate change impact, were crucial for informing ecological restoration activities.

For the Skolt Sámi, seeing their language and culture valued led to an increase in self-esteem and sense of power over their resources. The process has resulted in Sámi knowledge revitalisation through establishing a community-based traditional knowledge archive to serve both the community and future research. Further, monitoring using IK has led to new joint management options and actions for the watershed. For example, the range expansion of the pike has led to decisions to adapt cultural harvests. While co-management has not yet been formalised, national institutions such as Metsähallitus,² the local Centre for Economic Development, Transport and the Environment, and municipalities are interested in learning about new management options through a Skolt research agreement. The aim over the next few years is to build a formal co-management and ecological restoration programme.

The Näätämö case demonstrates that when communities are the main driving force in co-construction, science-relevant local observations can stimulate indigenous culture, land use and practices, and can lead to ecological restoration. In turn, this can support efforts to build resilience to threats such as climate change. The experience argues for

starting with local concerns, ensuring they remain central, and enabling local leadership. Importantly, as the initiative was under Sámi control, fishermen and women and reindeer herders could implement their monitoring through continuing to engage with cyclical nature and continuing to reproduce their IK.

In this case, the historically undefined role of IK in the Finnish context, and non-interference of state agencies in the co-construction experiment meant that a safe space could be created by a bridging activist–research organisation that had established relationships of trust. In this space, the Sámi could conceptualise and demonstrate their needs, interests and depth of their IK as it relates to being embedded on the land and connected to the universe. So while the immediate goal for the use of IK was to instrumentally help build understanding by bridging it with science, the process, starting with a community need and Sámi leadership, meant that their self-determination was never at risk. This first experience of co-construction within a framing of co-management in Finland has created a powerful baseline for future discussions of Sámi knowledge of aquatic ecosystems and ecological restoration.

The Näättämö case opened up an opportunity to challenge the false narratives of 'wilderness' which state agencies hold of Skolt space as a 'pristine' undisturbed nature to reframe engagement as restoration. However, the case remains a relatively isolated success story within Finland. Ironically, the timing of this work has coincided with legislative reforms that have further eroded opportunities for sharing power. The 2013 strategy for the Arctic region (Prime Minister's Office 2013) focuses on building infrastructure, extraction of natural resources and use of science-based monitoring targets, ignoring the presence of Sámi knowledge and lifeworlds. Simultaneously, the contested question of Sámi rights remains unresolved. In this hostile political environment, the Sámi must necessarily engage cautiously with formal co-management processes to ensure that they protect their non-assimilationist IK.

Rescuing agro-ecological and forest restoration knowledge in Paraguay

The Community Conservation Resilience Initiative (CCRI) is an international initiative that began in 2015 and is led jointly by the Global Forest Coalition (GFC) and a broad coalition of indigenous peoples' organisations and non-governmental organisations (NGOs) working on socially just forest policies. It builds on the now well-recognised role that IK and community governance processes play in supporting forest conservation in many parts of the world (Agrawal 2007; Robinson, Holland and Naughton-Treves 2014). The initiative aims to promote respect and support for community conservation and contribute to building resilience through implementation of community-driven participatory assessments of community conservation. Through co-constructed understanding of the strengths and opportunities for building resilience, results from 22 countries, involving over 60 different communities, will provide IK-informed policy recommendations for forest policies nationally and

globally. In each site the process is facilitated by bridging organisations (either NGOs or social movements) with established relationships with communities, and a team of local and external academics and practitioners support the process. Here we share our learning from one of the early assessment processes in Eastern Paraguay.

The Paraguayan territory is highly biodiverse (Cartes and Yanosky 2003) and is located in one of the centres of origin of cultivated plants in Latin America (Lovera 1991). Its rich agrobiodiversity has been nurtured historically through traditional agricultural practices. Paraguayan farmers today supply up to 60 per cent of the national food demand yet occupy only up to 8 per cent of the agricultural land (Lovera 2014). This is possible due to their agro-ecological and traditional farming practices which are based on working with crops that are adapted to local soil conditions, water availability, and conditions of competition with other living beings. Their agro-ecological practices are themselves a form of knowledge co-construction as they blend IK with new agricultural tools. Soil management, water and competition between living beings are seen as contributing factors in an agro-ecological production system. This is in contrast to 'conventional' agriculture, which transforms the conditions of the soil, uses pesticides, manipulates seeds and animal breeds, introduces transgenic crops and eliminates plants and animals not considered useful (Lovera 1998). Such 'conventional' agricultural models are today causing widespread deforestation in Paraguay due to industrial scale export-oriented agricultural production of genetically modified soybeans and beef. While there is a broad policy framework in place to protect biodiversity, guarantee and promote access to land for smallholder farmers, and restrict the abuses associated with industrial-scale production, corruption and corporate interests ensure that it is largely unimplemented (Fogel and Riquelme 2005).

In Eastern Paraguay (39 per cent of the total area of the country), much of the forest cover has now been replaced by cattle farming and industrial scale agriculture. The CCRI assessment was conducted in two traditional peasant communities that are trying to maintain their agro-ecological practices in this challenging context of expanding conventional agriculture linked to national corporate interests. The community of San Miguel Lote 8, in the district of Minga Pora, Department of Alto Paraná and the community of Maracanã in the district of Curuguaty, Department of Canindeyú, share the experience of being forced to leave their original homelands and have resettled in their current locations. San Miguel was founded in 1989 by 250 families and currently occupies 500ha, with half taken up by the community of 700 people, and the rest having been converted to monoculture soy plantations. Maracanã is much larger and 2,000 people occupy 23,000ha, which has been divided equally between all settlers. Some families have obtained a formal land title, but a large part remains the property of the Paraguayan Land Reform agency. Both communities have historically made claims and had to fight for their right to land.

Their knowledge and experience with conservation of agrobiodiversity has not previously been documented or analysed in a way that could support lobbying policymakers using 'evidence' produced through a co-constructed research process.

The assessment was implemented by both communities in 2015 and facilitated by CEIDRA in collaboration with the social movement Namoseke Monsanto.³ CEIDRA has, over many years of work with peasant communities in Paraguay, shifted away from disciplinary research that engaged minimally with IK, to using approaches with peasant communities that build on their knowledge through co-ownership of the research process and the resulting outputs. Researchers at CEIDRA shifted their approach through their ongoing dialogue with communities over decades, realising together that co-constructed knowledge is better able to meet the needs and support the wellbeing of the most marginalised communities in Paraguay. Nonetheless, at the outset of the CCRI assessment process, some community members expected that the facilitation team would deliver solutions to what they understood as 'new problems' generated through shifting agricultural patterns. The facilitation team worked with community members to adapt the CCRI assessment methodology⁴ following its five guiding principles: (i) respect for the rights of indigenous peoples and local communities, including their right to free, prior and informed consent; (ii) community ownership; (iii) adaptive facilitation; (iv) participation and representation, and (v) effective participation of women and the incorporation of a gender analysis in each of the assessments. Further, the partnership with Namoseke Monsanto, an activist organisation whose goals align with community concerns around 'conventional' agriculture, created the conditions for the assessment to be led by their IK.

The assessment enabled communities to produce evidence of the diversity of species that are maintained in the forests and the conservation and restoration initiatives under way locally through use of their agro-ecological practices. The process also produced evidence of the agrobiodiversity which is conserved through farming of crops and animal raising. The nutritional status of the community was reported as good, providing some local evidence of the importance of agrobiodiversity through seed conservation and traditional exchange systems for sustaining their own food production and food sovereignty.

The results also highlighted, from the perspective of the communities, that a major external threat to their farming practices is the low market prices for their products. The lack of prospects for sustainable income from farming is leading to young people leaving the village in search of poorly remunerated labour in urban centres. Migration of youth was therefore identified as one of the main internal threats to their resilience. Other external threats identified include the use of herbicides and other agrottoxins in the expanding soy plantations fuelling deforestation. In Maracanã, pressure on people to sell or rent their land to large

neighbouring landholders farming soy was a related threat. Further, analysis of community resilience in light of broader policy change pointed to the national agricultural policy, which favours the expansion of soy monocultures, as a central threat to conservation of biodiversity.

While the results of the CCRI assessment process by peasant communities in Paraguay may not seem surprising, they fill a critical gap in evidence of the role that IK, embedded within co-constructed agro-ecological practices, plays in supporting food production and biodiversity conservation. Further, they show that the resilience of conservation practices and their associated knowledge is severely undermined by the expansion of agro-industrial practices that are primarily triggered by increased meat consumption and production, including in intensive livestock production systems that use significant amounts of soy as feedstock. This finding sheds light on the false assumptions of ‘co-existence’ between agro-ecology and forest conservation practices and large-scale agro-industrial practices used to frame national agricultural policy. The resulting empirical evidence strengthens campaigns of social movements and researcher activities within them, arguing for community forest governance and land reform policies that grant peasant communities the right to secure land tenure as necessary to support conservation of Paraguay’s biodiversity.

4 Lessons for researcher–practitioners

The two case studies provide three lessons for researchers engaged in the practice of co-construction with marginalised communities. First, they provide evidence that understanding and engaging with IK as embedded within social, cultural and institutional practices related to territory, indigenous worldviews and identity, enables instrumental problem-solving approaches to be embedded within normative approaches seeking social and environmental justice. In both cases, communities perceived co-construction as an opportunity to tackle the complex challenges they face relating to environmental degradation, *as well as* an opportunity to build on political struggles for their rights. By bringing seemingly contradictory approaches to working with IK together, marginalised communities may be able to build confidence in their ability to find viable solutions to their own challenges as central to their self-determination and build a platform from which they may contribute to addressing ‘grand challenges’. In both cases the most important outcome for the communities came as a result of their knowledge being valued in its own right. Co-construction, therefore, was a means to achieving a community-defined end.

Second, both cases illustrate that contextualised methods for co-construction need to be cognisant of local dynamics and adapted accordingly. The Näätämo watershed case in Finland was a new co-management project in the Finnish context, building on other experiences in the Arctic and aiming to avoid the risk of co-option of IK into a rigid and externally defined model. Sophisticated bridging of epistemologies at the local level led to methodological innovation

(visual-optic histories) which emerged through creatively finding new mediums to translate and link ancient wisdom to scientific data and understanding. This is an example of eclectic methodological pluralism (see Chambers 2015) emerging through practice. Yet, it was possible to avoid assimilation, in part, because in this context, indigenous worldviews operate in undefined spaces which are difficult to co-opt (Mustonen and Mustonen 2016). Land-based economies such as fisheries and reindeer herding, some of which are unbroken nomadic systems, are part of non-conforming cultural continuums dating back to the post-Ice Age era. The lack of recognition of the Skolt Sámi knowledge system meant they could work safely from their ontological reality. In this case, the lack of formal recognition of Sámi knowledge was an advantage.

In contrast, for Paraguayan peasants, a lack of formal recognition of rights to land undermines the contribution of IK to the conservation of agrobiodiversity, and as a result puts their livelihoods and wellbeing at risk. In the context of national policies supporting large companies to expand their conventional agriculture, the lack of recognition of land rights means peasant movements do not have a seat at the table and their knowledge about genetic resources for food and agriculture and agro-ecological practices is being overlooked in both formal agricultural science and related policy processes. In this context, recognition of IK was the first step in their process of building local resilience and required a more instrumental approach to working with IK. The aim was to first build evidence to support campaigns for inclusion in national and international policy processes – arguing that IK is playing a central role in biodiversity conservation.

The third lesson concerns the role that bridging organisations and researchers often play in working with instrumental and normative approaches to co-construction, and their ability to bring them together to support meaningful change. Knowledge production is a social process embedded in power dynamics, and the epistemological differences between types of knowledge mean co-construction is inherently full of contestation. This is not to argue that researchers are bridging across binary knowledges, but rather, it is about meaningfully navigating the interactions between fluid, embedded and intimate knowledges. Through the case studies, we have shared our experience as engaged researchers playing a facilitating role in the messy processes of co-construction. In Finland, Snowchange has a history of playing the researcher–activist–implementer role successfully, and could therefore forge partnerships with researchers who were willing and able to engage ethically. Likewise, in Paraguay, the coalition of organisations involved, spanning engaged researcher and activist realms meant that strong links to communities existed and trust could be built. In both cases, part of our role was also to build networks across localities and strengthen evidence across sites (a cornerstone of both CCRI and Snowchange), to feed in to national and international policy processes. While working locally helps to co-construct understanding for addressing manifestations of change locally and building resilience, in isolation, it cannot support the systemic

shifts required in policy and practice that can continue to undermine local resilience. In Finland, government policies to exploit the ‘wild’ Arctic region of the country can undermine the progress made, and in Paraguay, government policies that facilitate deforestation through monoculture plantations continue to threaten the resilience of local communities. The bridging and facilitating role across scales, therefore, enables engagement with broader political and social processes required to support local self-determination of marginalised communities.

We do not wish to suggest that playing an engaged facilitation role is simple, or indeed comfortable for all researchers at all times. In Paraguay, facilitators had to manage expectations of communities and purposefully build their confidence in the leading role that IK could play in the assessment process, while in Finland, understanding of internal community dynamics through years of interaction helped to mediate any tensions that emerged. In both cases, we found ourselves acting as guardians of various forms of knowledge and were simultaneously gatekeepers and brokers. We took our central guidance from community mechanisms that mediate our engagement, and which exist to address potential negative impacts of the ‘gatekeeper’ at its worst. We suggest, that when the starting point is rooted in local needs, and the supporting partnerships are cognisant of their facilitating and mediating role, then tensions can be negotiated, and co-construction can indeed become a means to support self-determination.

5 Recommendations

Enthusiasm for more interactive and participatory approaches to research that co-construct understanding through bridging different knowledge systems creates opportunity for greater inclusion of the marginalised in analysing and addressing complex development challenges, particularly those affecting them directly. We have shown that from the perspective of the communities, the promise becomes a reality when their knowledge systems are understood through their own worldviews and lifeways. We recommend an approach of ‘mediated relativity’ in line with Purcell and Onjoro’s (2002: 171) view of ‘accepting the intensified process of cultural hybridisation as a given, but at the same time, underscore the right of indigenous peoples to the highest level of self-determination consistent with community viability under global conditions at any time’. What is centrally important, therefore, is that the territories, knowledge and rights of indigenous and local communities and the restoration of past ecological damages be explicitly acknowledged when mediating co-construction processes.

For researchers using co-construction methodologies in research that aim to have development impact, this constitutes both an opportunity and a challenge. The opportunity lies in bringing to life the nuanced and contested understanding of knowledge and the power dynamics that they are inherently part of, to facilitate the questioning of underlying assumptions on how research is constructed. This is not to suggest that all researchers should necessarily become political activists but, rather,

that when engaging in messy real-life challenges with communities whose livelihoods are threatened, being blind to politics and power is not sufficient and is unethical. Indeed, at times external agents aiming to support the wellbeing of marginalised communities must let go of their own intentions and respect that communities themselves should determine the levels and ways of engagement in co-construction. At times, this may mean respecting that non-engagement is the chosen path. We argue that the progressive international policies that protect the rights of the marginalised, with associated codes of conduct, such as free, prior and informed consent, should be an explicit part of reflexive, ethical research practice if co-construction is to support the self-determination of marginalised peoples.

Notes

- 1 For example, the United Nations Declaration on the Rights of Indigenous Peoples and the FAO Voluntary Guidelines on the Responsible Tenure of Land, Fisheries and Forests in the Context of National Food Security, among others.
- 2 Metsähallitus is the forest state enterprise of Finland, which manages and 'owns' all public and conserved lands in Finland. It is the primary land manager in the Skolt Sámi area.
- 3 A network of peasant movements, research centres, indigenous peoples' movements, NGOs and other civil society organisations that have mobilised against what they call the 'sojasation' of the countryside by companies such as Monsanto.
- 4 See http://globalforestcoalition.org/wp-content/uploads/2014/06/New-Last-CCR-Initiative-methodology_May-2014.pdf for the methodology.

References

- Agrawal, A. (2007) 'Forests, Governance, and Sustainability: Common Property Theory and its Contributions', *International Journal of the Commons* 1.1: 111–36. DOI: <http://doi.org/10.18352/ijc.10> (accessed 16 November 2016)
- Agrawal, A. (2002) 'Indigenous Knowledge and the Politics of Classification', *International Social Science Journal* 54.173: 287–97
- Agrawal, A. (1995) 'Dismantling the Divide between Indigenous and Scientific Knowledge', *Development and Change* 26: 413–39, <http://dx.doi.org/10.1111/j.1467-7660.1995.tb00560.x> (accessed 16 November 2016)
- Altamirano-Jiménez, I. (2013) *Indigenous Encounters with Neoliberalism: Place, Women, and the Environment in Canada and Mexico*, Vancouver: UBC Press
- Altieri, M.A. and Toledo, V.M. (2011) 'The Agroecological Revolution in Latin America: Rescuing Nature, Ensuring Food Sovereignty and Empowering Peasants', *Journal of Peasant Studies* 38: 587–612
- Apgar, J.M. (2010) 'Adaptive Capacity for Endogenous Development of Kuna Yala, an Indigenous Biocultural System', doctoral dissertation, Lincoln University
- Apgar, J.M.; Argumedo, A. and Allen, W. (2009) 'Building Transdisciplinarity for Managing Complexity: Lessons from

- Indigenous Practice', *International Journal of Interdisciplinary Social Sciences* 4.5: 255–70
- Arctic Council (2005) *Arctic Climate Impact Assessment*, New York NY: Cambridge University Press, www.amap.no/documents/doc/arctic-arctic-climate-impact-assessment/796 (accessed 19 January 2017)
- Armitage, D.R.; Plummer, R.; Berkes, F.; Arthur, R.; Charles, A.T. and Davidson-Hunt, I.J. (2008) 'Adaptive Co-Management for Social-Ecological Complexity', *Frontiers in Ecology and the Environment* 7.2: 95–102
- Béné, C. and Neiland, A.E. (2004) 'Empowerment Reform, Yes... But Empowerment of Whom? Fisheries Decentralization Reforms in Developing Countries: A Critical Assessment with Specific Reference to Poverty Reduction', *Aquatic Resources, Culture and Development* 1.1: 35–49
- Bergmann, M.; Jahn, T.; Knobloch, T.; Krohn, W.; Pohl, C.; Schramm, E. and Klein, J.T. (2012) *Methods for Transdisciplinary Research: A Primer for Practice*, Frankfurt: Campus Verlag
- Berkes, F. (2012) 'Implementing Ecosystem-Based Management: Evolution or Revolution?', *Fish and Fisheries* 13: 465–76
- Berkes, F. (2009) 'Evolution of Co-Management: Role of Knowledge Generation, Bridging Organizations and Social Learning', *Journal of Environmental Management* 90.5: 1692–702
- Bohensky, E.L. and Maru, Y. (2011) 'Indigenous Knowledge, Science, and Resilience: What Have We Learned from a Decade of International Literature on "Integration"?', *Ecology and Society* 16.4: 6
- Bowen, K.J.; Miller, F.P.; Dany, V. and Graham, S. (2015) 'The Relevance of a Coproductive Capacity Framework to Climate Change Adaptation: Investigating the Health and Water Sectors in Cambodia', *Ecology and Society* 20.1: 13
- Bryan, J. (2009) 'Where Would We Be Without Them? Knowledge, Space and Power in Indigenous Politics', *Futures* 41.1: 24–32
- Cartes, J.L. and Yanosky, A. (2003) 'Dynamics of Biodiversity Loss in the Paraguayan Atlantic Forest: An Introduction', in Carlos Galindo Leal and Ibsen de Gusmão Câmara, *The Atlantic Forest of South America: Biodiversity Status, Threats, and Outlook*, Washington DC: CABS and Island Press: 267–68
- Chambers, R. (2015) 'Inclusive Rigour for Complexity', *Journal of Development Effectiveness* 7.3: 327–35
- Choudry, Aziz and Kapoor, Dip (2010) 'Learning from the Ground Up: Global Perspectives on Social Movements and Knowledge Production', in Dip Kapoor and Aziz Choudry (eds), *Learning from the Ground Up*, Basingstoke: Palgrave Macmillan
- Cinner, J.E.; McClanahan, T.R.; MacNeil, M.A.; Graham, N.A.J.; Daw, T.M.; Mukminin, A.; Feary, D.A.; Rabearisoa, A.L.; Wamukota, A.; Jiddawi, N.; Campbell, S.J.; Baird, A.H.; Januchowski-Hartley, F.A.; Hamed, S.; Lahari, R.; Morove, T. and Kuange, J. (2012) 'Comanagement of Coral Reef Social–Ecological Systems', *Proceedings of the National Academy of Sciences of the United States of America* 109: 5219–22
- Coates, K. (2003) *A Global History of Indigenous Peoples*, Basingstoke: Palgrave Macmillan

- Feodoroff, Pauliina and Mustonen, Tero (2013) *Näätämä and Ponoj River Collaborative Management Plan*, Kontiolahti: Snowchange Cooperative
- Fogel, R. and Riquelme, M. (2005) *Enclave sojero: merma de soberanía y pobreza*, compiladores, CERI, Asunción, <http://biblioteca.clacso.edu.ar/ar/libros/paraguay/ceri/fogel2.pdf> (accessed 18 November 2016)
- Funtowicz, S.O. and Ravetz, J.R. (1995) 'Science for the Post Normal Age', *Perspectives on Ecological Integrity*, Dordrecht: Springer Netherlands: 146–61
- Gaski, Harald (2003) 'The Son of the Sun is Dead – A Commemoration of Nils-Aslak Valkeapää', in Kathleen Osgood Dana, *Áillohaš the Shaman-Poet and his Govadas-Image Drum*, Oulu: University of Oulu Press
- Gibbons, M. (2000) 'Mode 2 Society and the Emergence of Context-Sensitive Science', *Science and Public Policy* 27.3: 159–63
- Godemann, J. (2008) 'Knowledge Integration: A Key Challenge for Transdisciplinary Cooperation', *Environmental Education Research* 14.6: 625–41
- Hage, M.; Leroy, P. and Petersen, A.C. (2010) 'Stakeholder Participation in Environmental Knowledge Production', *Futures* 42.3: 254–64
- Huntington, H. (2011) 'The Local Perspective', *Nature* 478: 182–3
- Huntington, H.P. (2000) 'Using Traditional Ecological Knowledge in Science: Methods and Applications', *Ecological Applications* 10: 1270–4, [http://dx.doi.org/10.1890/1051-0761\(2000\)010\[1270:UTEKIS\]2.0.CO;2](http://dx.doi.org/10.1890/1051-0761(2000)010[1270:UTEKIS]2.0.CO;2) (accessed 16 November 2016)
- IAASTD (International Assessment of Agricultural Knowledge, Science and Technology for Development) (2009) *Agriculture at a Crossroads: A Global Summary for Decision Makers*, Washington DC: Island Press
- Johannes, R.E. (1993) 'Integrating Traditional Ecological Knowledge and Management with Environmental Impact Assessment', in Julian T. Inglis (ed.), *Traditional Ecological Knowledge: Concepts and Cases*, Ottawa: International Program on Traditional Ecological Knowledge and International Development Research Centre
- Kooiman, J.; Bavinck, M.; Chuenpagdee, R.; Mahon, R. and Pullin, R. (2008) 'Interactive Governance and Governability: An Introduction', *Journal of Transdisciplinary Environmental Science* 7.1: 1–11, <http://dare.uva.nl/document/2/59200> (accessed 16 November 2016)
- Lebel, L.; Wattana, S. and Talerngsri, P. (2015) 'Assessments of Ecosystem Services and Human Well-Being in Thailand Build and Create Demand for Coproductive Capacity', *Ecology and Society* 20.1: 12. <http://dx.doi.org/10.5751/ES-06527-200112> (accessed 16 November 2016)
- Lehtinen, Ari and Mustonen, Tero (2013) 'Arctic Earthviews: Cyclic Passing of Knowledge Among the Indigenous Communities of the Eurasian North', *Sibirica* 12.1: 39–55, <http://dx.doi.org/10.3167/sib.2013.120102> (accessed 18 November)
- Lovera, M. (2014) *The Impacts of Unsustainable Livestock Farming and Soybean Production in Paraguay: A Case Study*, Asunción: Centro de Estudios e Investigacion de Derecho Rural y Reforma Agrara de la Universidad Catolica de Asunción

- Lovera, M. (1998) *Agrobiodiversity: A Recent Evaluation of the Paraguayan Situation*, Asunción: Sobrevivencia/Friends Of the Earth
- Lovera, M. (1991) *Sistemas Agroforestales del Paraguay*, Asunción: Universidad Nacional de Asunción
- Maffi, L. (2005) 'Linguistic, Cultural, and Biological Diversity', *Annual Review of Anthropology* 34: 599–617
- Maffi, L. and Woodley, E. (2012) *Biocultural Diversity Conservation: A Global Sourcebook*, Abingdon: Routledge
- Mausser, W.; Klepper, G.; Rice, M.; Schmalzbauer, B.S.; Hackmann, H.; Leemans, R. and Moore, H. (2013) 'Transdisciplinary Global Change Research: The Co-Creation of Knowledge for Sustainability', *Current Opinion in Environmental Sustainability* 5.3: 420–31
- Mustonen, Tero (2015) 'Communal Visual Histories to Detect Environmental Change in Northern Areas: Examples of Emerging North American and Eurasian Practices', *Ambio* 44.8: 766–77, DOI: 10.1007/s13280-015-0671-7 (accessed 16 November 2016)
- Mustonen, Tero and Mustonen, Kaisu (2016) *Life in the Cyclic World: A Compendium of Traditional Knowledge from the Eurasian North*, Kontiolahti: Snowchange Cooperative, Finland
- Mustonen, Tero and Mustonen, Kaisu (2011) *Eastern Sámi Atlas*, Kontiolahti: Snowchange Cooperative, Finland
- Nadasdy, P (2003) *Hunters and Bureaucrats: Power, Knowledge and Aboriginal-State Relations in the Southwest Yukon*, Vancouver: UBC Press
- Niemelä, Eero; Erkinaro, Jaakko; Kylmäaho, Matti; Julkunen, Markku and Moen, Kjell (2001) 'Näätämojojen lohen poikastiheys ja kasvu', *Kalaturkimuksia* 176: 1–36
- Polk, M. (2015) 'Transdisciplinary Co-Production: Designing and Testing a Transdisciplinary Research Framework for Societal Problem Solving', *Futures* 65: 110–22
- Posey, D. (2002) 'Upsetting the Sacred Balance', in Paul Sillitoe, Alan Bicker and Johan Pottier (eds), *Participating in Development: Approaches to Indigenous Knowledge*, London and New York NY: Routledge
- Prime Minister's Office (2013) *Finland's Strategy for the Arctic Region 2013*, Prime Minister's Office Publications 16/2013, <http://vnk.fi/documents/10616/334509/Arktinen+strategia+2013+en.pdf/6b6fb723-40ec-4c17-b286-5b5910fbecf4> (accessed 24 November 2016)
- Purcell, T. and Onjoro, E.A. (2002) 'Indigenous Knowledge, Power and Parity', in Paul Sillitoe, Alan Bicker and Johan Pottier (eds), *Participating in Development: Approaches to Indigenous Knowledge*, London and New York NY: Routledge
- Raffles, H. (2003) *Intimate Knowledge*, Santa Cruz CA: Center for Global, International and Regional Studies
- Reason, P. and Bradbury, H. (eds) (2008) *The Sage Handbook of Action Research: Participative Inquiry and Practice*, 2nd ed., Thousand Oaks CA: Sage Publications
- Robinson, B.; Holland, M. and Naughton-Treves, L. (2014) 'Does Secure Land Tenure Save Forests? A Meta-Analysis of the Relationship Between Land Tenure and Tropical Deforestation', *Global Environmental Change* 29: 281–93

- Skolt Sámi Nation and Snowchange Cooperative (2011) *Sevettijärvi Declaration*, www.snowchange.org/pages/wp-content/uploads/2011/10/SEVETTIJARVI_DECLARATION.pdf (accessed 22 November 2016)
- Smith, Linda Tuhiwai (1999) *Decolonizing Methodologies: Research and Indigenous Peoples*, London: Zed Books
- Spangenberg, J.H. (2011) 'Sustainability Science: A Review, An Analysis and Some Empirical Lessons', *Environmental Conservation* 38.03: 275–87
- Turnbull, D. (2009) 'Futures for Indigenous Knowledges', *Futures* 41.1: 1–5
- van Kerkhoff, L.E. and Lebel, L. (2015) 'Coproductive Capacities: Rethinking Science–Governance Relations in a Diverse World', Guest Editorial, Ecology and Society, *Science and Governance in a Diverse World: Coproduction and Coproductive Capacities for Environmental Management*, Special Issue, www.ecologyandsociety.org/issues/view.php/feature/92 (accessed 16 November 2016)
- Wilson, D.C.; Ahmed, M.; Siar, S.V. and Kanagaratnam, U. (2006) 'Cross-Scale Linkages and Adaptive Management: Fisheries Co-Management in Asia', *Marine Policy* 30.5: 523–33
- Wohling, Marc (2009) 'The Problem of Scale in Indigenous Knowledge: A Perspective from Northern Australia', *Ecology and Society* 14.1: Article-1