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**Institutional Thickening and Innovation:
Reflections on the Remapping of the Great Bear Rainforest**

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Abstract

As a response to forest conflict, contemporary remapping refers to re-evaluations of resource values, new and diverse forms of governance among stakeholders, and compromises within patterns of land use that give greater emphasis to environmental and cultural priorities. This paper elaborates the processes of remapping by examining the role of institutional innovation in conflict resolution, with particular reference to the iconic Great Bear Rainforest of British Columbia. After years of conflict and protest, peace in the Great Bear Rainforest was heralded by an interim agreement in 2006, with final ratification likely in 2016. Conceptually, a four-legged stakeholder model identifies the main institutional interests and their interactions through learning and bargaining. New forms of governance were created to bring the stakeholders together in constructive dialogue and then to reach and implement acceptable bargains. Analytically, the paper examines how this agreement has worked in practice by reflecting on the emergence of novel institutions that integrate the interests of key stakeholders. The discussion identifies six bilateral negotiations between: industrial and environmental interests; federal and provincial governments and aboriginal peoples; government and environmental interests; government and industry; industry and aboriginal peoples; and environmental groups and local communities. The remapping process has produced a thickening architecture of institutions that remain experimental even as they seek to promote sustainability, resilience and legitimacy.

Key words: boundary organization, ecosystem based management, Great Bear Rainforest, institutional thickness, remapping, stakeholder model

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1. Introduction

If forest conflicts have a long history (Widick 2009), they have become a widespread feature of contemporary globalization. Broadly defined as disagreements and disputes regarding access and management of resources, incompatible activities that seek to restrict one another, and as clashes among diverse institutional interests over the control and use of resources (Gritten et al 2012; Hayter et al 2003), forest conflicts feature a wide-ranging mix of actors and motivations. ‘Wars in the woods’, a metaphor with sometimes literal connotations, are typically intense, long-lasting and locally contingent. Yet a significant impulse driving forest conflicts around the world is opposition by diverse environmental, aboriginal, and related communities to the vested interests of forest commodification in favour of the non-industrial, sustainable values of forests, and the emergence of these stakeholders forces the remapping of the forest and its human relationships.

As an umbrella term, remapping refers to two closely related processes in support of new forms of sustainable and equitable resource governance: the revaluations of resources from a commodity base to incorporate environmental and non-consumptive uses, and specific changes to land use designations that derive from these revaluations (Affolderbach et al 2012; see also Brogden and Greenberg (2003) on re-territorialization). Remapping serves as both normative metaphor for the conflicts and prescription for new regional plans and forms of governance that generate new institutions to address stakeholder interests in ways that replace conflict with cooperation. The contested creation of the Great Bear Rainforest on the central coast of British Columbia, Canada, provides an iconic case.

The Great Bear Rainforest (GBR) stretches from Bute Inlet to the Alaskan border and is 6.4 million hectares in extent, comprising about one-quarter of the world’s remaining old growth coastal temperate rainforest, and a rich range of flora and fauna (Figure 1; McAllister et al 1997). This large, remote, sparsely populated territory contains just over 22,000 people, half aboriginal belonging to 27 nations. With roots in BC’s ‘wars in the woods’ that flared in the early 1980s, the region became the focus of intense conflict that culminated in a 2004 stakeholder agreement (CCLRMP 2004) in which one-third of the region was protected, logging companies committed themselves to ecosystem-based management in the working forest, and commitments made to the development aspirations of indigenous peoples. This agreement was ratified in 2006 by government and aboriginal peoples (called ‘First Nations’ in Canada), and painstakingly elaborated during subsequent years; the final legislated agreement was announced on 1 Feb. 2016.

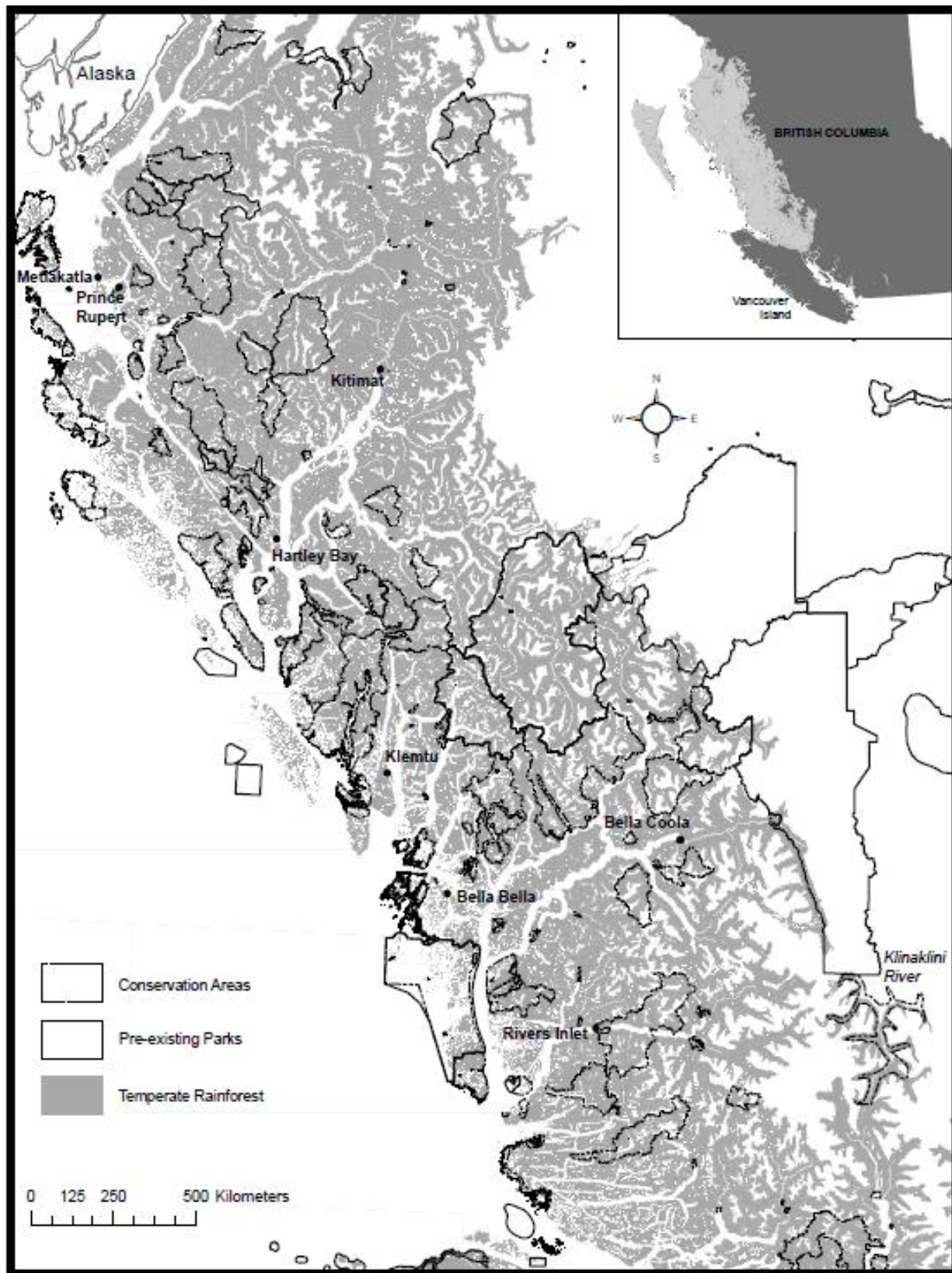


Figure 1: The Great Bear Rainforest

Although not without its critics, the GBR (2006) agreement has been widely applauded in the media and academic literature (Armstrong 2009; Dempsey 2011; Howlett et al 2009). Several studies scrutinizing the agreement have emphasized the *innovativeness* of remapping processes and outcomes. Thus McGee et al (2010) explain the agreement's shift towards 'innovative collaborative planning', including the Joint Solutions Project between business and environmental non-government organizations (ENGOS); Affolderbach (2011) focuses on the role of ENGOS in brokering the agreement; Price et al (2009) discuss the novel elements of the ecosystem-based management governing future logging; Low and Shaw (2011/12) highlight the new features of the agreement involving aboriginal peoples, notably government-to-government negotiations and the Coast Opportunity Funds; while Affolderbach et al (2012) draw attention to the creation of a scientific boundary organization, the Coast Information Team. The agreement featured fundamentally changed relations between environmental politics and science (Dempsey 2011), and is broadly influential, serving as model for the Boreal Forest Agreement of 2010 that covers 76 million hectares across Canada (Boychuk 2011).

This paper examines innovation, highlighted if not problematized in the studies cited above. Our study begins from Weiss's (2011) observation that institutional innovations are especially important in forestry. Weiss (2011, 11) broadly classifies institutional innovations as new cooperative organizations, laws, policies, and procedures. In forest conflicts, such process innovations are designed to facilitate dialogue among stakeholders. If successful, they create and maintain durable 'products', organizations and routines that implement the goals of remapping and embody the compromises among stakeholders. These institutions vary in their functions, mandates, degrees of formality and permanence, and the scales at which they operate.

The GBR agreement comprises a set of related institutional innovations that collectively represent institutional thickening. Institutional thickness is a somewhat ambiguous, elusive concept, scarcely refined since North (1990) and Amin and Thrift (1994) identified institutional thickness as a key contributor to virtuous cycles of innovation observed in some specialized industries. The term evokes the new forms of governance and power topographies that underlie contemporary forestry, but it is not inevitable that remaps generate desirable local development. Rather, institutional innovation, thickening and remapping entail uncertainties that are both political and epistemological, rooted in the co-evolution of bargaining and learning among new and old stakeholders. Such processes are hard to predict, and institutional innovation is inevitably

experimental, especially in peripheral regions re-inventing themselves. The engagement of more stakeholders in turn implies more diverse views and hopes for the future, with the future itself an ambiguous planning period. For the GBR, institutional thickening in support of forestry remapping is highly politicized, contesting definitions of resource values and development, while invoking experimental forms of governance that raise expectations about stakeholder behaviour and trust.

The specific goal of this paper is to better understand how the remapping of the GBR is working out in practice since the 2006 agreement. That agreement proposed a transition period, involving several land use orders for its implementation, and culminating in final legislation in February 2016 that now governs forest and environmental management in the region. More generally, this paper highlights the relationships between remapping, institutional innovation and thickening, not addressed by Weiss et al. (2011), which focus on European situations with well-established property rights. Indeed, institutional innovation in the GBR is a direct consequence of conflict, created as conflict resolution measures. Although there are examples of forest conflict worldwide (Gritten et al 2014), including forestry disputes in Finland involving the Sami peoples (Lawrence and Raitio 2015) and Chipko resistance in the Himalaya (Guha 2000), the closest parallels to the GBR are in ‘Western settler societies’ such as Australia and New Zealand (Moorhead and Adam 2014, 486; see also Roche 1990; Russell and Jambrecina 2002). These countries experienced the establishment of colonial rule and remapping over large areas where aboriginal peoples survive, population densities are low, and public ownership of forests predominates. The contemporary remapping of the GBR is unique, and part of wider trends.

An elaboration of a stakeholder model provides the integrating framework for this analysis. The paper first defines key contemporary stakeholders, showing how the emergence of new stakeholders is responsible for the institutional thickening in the Great Bear Rainforest. This remapping is contextualized within previous remappings that have occurred over the last 200 years in North American forestry. We suggest that these periodic remappings of forestry practices are integral components of broader paradigmatic, Schumpeterian creative-destructive transformations in capitalist economies associated with the green techno-economic paradigm, sustainability transitions, and related models (Coenen et al 2012). Empirically, the second part of the paper draws on wide-ranging information sources including interviews during 2015, and categorizes stakeholder interactions on a bilateral basis as institutional innovations and assesses their implementation in the 2006–2015 transition period.

2. Stakeholders, remapping and innovation

Stakeholders are interest groups or institutions that influence or are affected by decision situations. In any particular situation, stakeholder interests in decision outcomes may not be matched by their influence. Indeed, a basic motivation for remapping forests is to empower stakeholders formerly marginalized in decision-making. Such empowerment, which simultaneously imposes constraints on vested interests, can itself be seen as an institutional innovation that democratizes decision situations. In general, stakeholder models are analytically useful by revealing the basis for defining stakeholders and their relative powers, interests, and motivations, and how stakeholders interact in conflict, cooperation and governance. The identification of stakeholders is not straightforward: in practical situations the inclusion of too many interested parties – a situation that arose in the first phase of the GBR negotiations (McGee et al 2010, 751) – can render decision-making ineffective. Parsimony is required in stakeholder designation, practically as well as conceptually, and stakeholder models necessarily will vary across the diversity of resource peripheries and conflicts.

A four-legged-plus stakeholder model, based on government, business, community and ENGO designations for the BC context, provides the conceptual framework for this analysis (Figure 2). The ‘plus’ refers to the courts as an entity within but distinct from government, and to First Nations as distinct communities within forest peripheries. This model also recognizes that stakeholders at multiple scales are connected by learning and bargaining processes. These stakeholder categories are not homogenous or monolithic, and alternative categories are possible. Labour as an institution is noted but not highlighted, reflecting its diminishing power to shape remapping, and placed in the business category because of overlapping economic goals. In BC, prior to 1980 and the onset of contemporary remapping processes, the dominant stakeholder interests were the provincial government and big business, with support from union labour. First Nations, ENGOs and the courts were not influential, and forestry science was dedicated to the industrial values of wood (Rajala 1998). With remapping, however, this simple, hierarchical model has become more messy and democratic.

First, national and regional governments (in federal jurisdictions) have pre-eminent roles in establishing the rules of the game – that is, the institutions, policies and regulations that shape resource valuation and exploitation (Howlett et al 2009). In Canada, provincial governments have

enjoyed pre-eminent responsibilities for resource policies and have generally retained resources in public ownership while licensing private sector development rights. Indeed, around the world, forests were valued as industrial inputs with governments favouring economic development based on large-scale export-driven investments, stimulated by guaranteeing forestry corporations access to timber supplies, providing roads, railways, energy and even new towns, encouraging forestry science to meet industrial needs, and through the establishment of favourable regulations (Westoby 1989). BC’s forest policy provides a paradigmatic example (Prudham 2007).

However, in recent decades governments have been challenged to give more priority to the non-industrial benefits of forests (Westoby 1989), notably in relation to conservation values and aboriginal rights. Indeed, the courts, with the power to compel government action, have been vital to the empowerment of Aboriginal Peoples in Australia (Moorhead and Adams 2013) and Canada (Low and Shaw 2011/12) in ways that redefine resource property rights. In a series of decisions since 1997, however, the Supreme Court of Canada has “revolutionized the jurisprudence of aboriginal rights and title” (Flanagan 2015, iii) – itself labelled a ‘remapping’ by one legal authority (op cit, 1) – by rejecting the claim that aboriginal title had been extinguished, and by

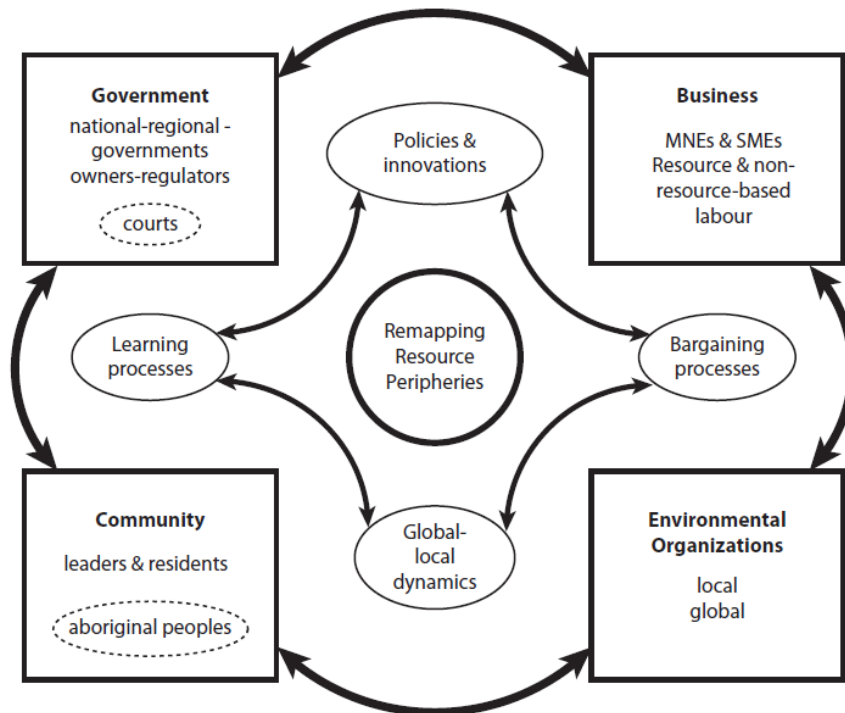


Figure 2: A four-legged plus stakeholder model

establishing the government's 'duty to consult' wherever claims of aboriginal rights or title are pending. In other provinces, treaties governing aboriginal rights and title were signed with many indigenous groups, but in BC few treaties were signed and more than 200 First Nations assert claims of aboriginal title, often overlapping, and covering most of the province. These court decisions established the basis for much stronger involvement by indigenous peoples in resource development (Borrows 2002), while potentially raising transaction costs for business decision-making.

Second, resource firms, especially large vertically and horizontally integrated corporations, have traditionally been the most significant vested interest exploiting forest peripheries. Even where pioneering small-scale enterprises have been historically important, the forest sector has witnessed significant integration tendencies. Moreover, the strategies of forest product corporations have been conservative and path-dependent, constrained by the need to modernize capital-intensive stages of production to remain competitive with rival oligopolists and by the specialized nature of managerial expertise and workforces (Edenhoffer and Hayter 2013a). For forest product corporations committed to commodity production, remapping has profound implications regarding resource access. In peripheries in the late stages of the resource cycle, these implications add to the uncertainties of corporate restructuring driven by technological change, increasing costs, declining competitiveness, recessionary conditions and even climate change. In BC's case, job losses, plant closures and divestments by foreign corporations in commodity production have been partly offset by an expanding population of smaller firms involved in secondary ('value-added') processing, along with a Canadianization of the sector (Edenhoffer and Hayter 2013b). The value-added firms, however, have mainly located in metropolitan BC. Elsewhere, if surviving commodity mills remain important to local employment, remote forest communities have experienced decline.

Third, small, specialized forest resource communities typically evolved in close tandem with the needs and fortune of industry and dominant employers, ties especially evident in company (and union) towns that proliferate in many resource peripheries, such as BC or western Australia (Argent 2013; Markey et al 2012). In more prosperous times, resource communities and dominant resource firms expressed little interest in diversification, but such attitudes are threatened by corporate restructuring and remapping. Indeed, when resource industries have downsized, especially if new residents immigrate for economic or lifestyle reasons, communities have become

both more independent and interested in diversification (Brown 1995). In general, resource restructuring at least softens, if not fractures, community and worker support for vested industrial interests, often in association with more sympathy for environmental sustainability.

Moreover, aboriginal empowerment is in turn challenging traditional interpretations of the roles and composition of resource communities. In the Canadian literature on resource towns, stimulated by Lucas (1971), aboriginal populations, whether on reserves or in the towns themselves, are presented as marginalized, dis-empowered populations with no influence in local planning and economy. Recently, however, aboriginal peoples have generated their own community plans for development on long established and newly acquired lands. First Nations have become increasingly involved in BC's forest industries, and by 2010 controlled more than 10% of the provincial harvest volume (BC 2010), up from 5% in 2006. Many of the new community forests in BC are controlled by aboriginal peoples, or they have formal roles in governance (McIlveen and Bradshaw 2009).

NGOs comprise our *fourth* stakeholder group. Stimulating and responding to broad public concerns, the environmental movement has provided powerful advocacy of the non-industrial values of forests (and other resources) since the 1960s and especially since 1980. Significantly, the environmental movement has been important to reinforcing a strong social sense that 'nature' is a public inheritance that provides multiple benefits and associated public responsibilities to ensure their sustainability. In the USA, for example, the recently (2014) deceased Joseph L. Sax led arguments to vindicate the legal claim that vital natural resources such as oceans, shorelines, air and some land, were a 'public trust' and needed to be conserved. Since 1970 this public trust doctrine, first adopted in Michigan, has spread throughout the US, and many countries beyond, and helped fuel a rapidly growing environmental movement opposed to large-scale resource commodification. For resources that remain under public control, the right to protest is particularly profound, and readily legitimized.

NGOs have been a powerful presence in forest conflicts around the world as they seek to modify or stop environmentally damaging logging and preserve the ecological values of old growth forests. Some NGOs, such as Greenpeace which originated in BC, are international in scope. However, NGO activities are not about 'asset building' or 'market share' but through advocacy and communication seek to influence public opinion and ultimately public resource

policies. ENGOs are media savvy and employ tactics ranging from political and consumer lobbying, logging blockades, shaming perceived environmental culprits, participation in committees at every scale of decision-making, coalition building, and promoting ecological science. ENGOs vary in motives and tactics, but collectively they push governments to introduce policies that sustain environmental values. In BC, ENGOs have been a leading force in protesting forest commodity production, especially in relation to old growth temperate forests in coastal regions. After a decade of protest, they helped engineer an important agreement in 1993 promoting conservation of forests in Clayoquot Sound on Vancouver Island, which subsequently became a UNESCO biosphere reserve and world heritage site in 2000. ENGOs then shifted their attention north to the Great Bear Rainforest, an evocative and provocative name suggested by environmentalists (McAllister et al 1997).

The shift towards a more democratic stakeholder model with new actors in forest conflicts implies more complex local-global dynamics. Sometimes in tandem and sometimes not, both ENGOs and indigenous peoples have sought to build alliances locally and globally, as they seek to influence public opinion, consumers, and governments within BC and elsewhere. In Canada both ENGO and aboriginal opposition to vested forest interests have been reinforced by the ongoing trade dispute between Canada and the US over lumber exports (Edenhofer and Hayter 2013a). Thus US interests represented by the Coalition of Fair Canadian Lumber Imports (CFCLI) have argued that Canadian (especially BC) lumber exports are unfairly subsidized and have sought to restrict those exports since the 1980s. The CFCLI has become a watchdog or shadow stakeholder over BC forest policy, vigilant to any perceived Canadian violation. Over 30 years, the CFCLI, ENGOs and First Nations have often found common cause. Forest resource management, once considered a matter of provincial autonomy, has increasingly come under global scrutiny.

Forest conflicts are deep-seated and difficult to resolve for various reasons. The conflicts are normative, reflecting different beliefs about natural resource values. While industrial uses have dominated forest management, the ecosystem services, biocentric values and cultural significance of the forest are given priority by ENGOs and aboriginal peoples. Further, many non-wood benefits are intangible or non-economic and cannot be incorporated in quantitative trade-offs that underlie cost-benefit or multiple-use approaches. Remapping proponents have become skilled in opposing vested industrial interests, and organizing effective, powerful alliances. Moreover, if

remapping proponents have shared interests in opposing industry, they do not necessarily share the same aims, priorities or solutions (Hayter 2003).

2.1 Forestry remapping and paradigm change

Forestry remappings have occurred before as part of broader ‘paradigmatic’ restructurings of economy and society driven by technological and institutional innovations (Freeman and Louça 2001). The link to techno-economic paradigms helps illuminate the path-dependent challenge of contemporary remapping, the role of innovation and the stimulus of crisis. Drawing from western settler and especially North American experience, three broad forestry remappings can be identified in relation to broader paradigm shifts (Franklin et al 1997; Hayes and Glendenning 2005). First, an era of deforestation (1850-1910) was part of large-scale 19th century industrialization. A second remapping promoted a regulated ‘scientific’ forestry (1915-1970), a quintessential example of the Fordist paradigm. Since 1970, in a period variously referred to as post-Fordism, the era of flexibility, or globalization, forestry is being transformed by the principles of ecosystem management, with the hope that forestry will become part of a sustainable transition or green paradigm. These three periods of remapping respectively involved: colonization, dispossession and deforestation; sustained yield and silvicultural forest management over large estates, privately owned or leased from the state; and adaptive forest management with multiple goals, with stronger commitments to conservation and community ownership. In broad terms, modern forestry evolved as a handmaiden to industry that became formalized as top-down, technocratically regulated ‘scientific’ practices that are now being challenged by concerns for more diverse values. If this scenario is found in North American and western settler societies, it resonates elsewhere, such as in the Himalaya (Guha 2000).

A key part of the present paradigm shift, deeply implicated in forest conflicts, is the debate over scientific wisdom in forestry practices (Langston 2005; Rajala 1998). Thus modern forestry science and practices were developed in Europe, mainly Germany, and became similarly institutionalized in the North American forestry profession whose ‘rational’ advice “imposed a rational, uniform and simplistic order on the complexities of localized ecological systems” (Lee and Field 2005, 3). For Langston, this advice became an intellectually authoritarian framework that defined sustained yield and silviculture according to industry’s needs. This thinking, for example, equated old growth forests, that is forests in which productivity gains and losses offset

each other, with decadent timber, increasingly worthless to industry. Indeed, as recently as 1986 a leading forest economist labelled BC's remaining old growth forests in exactly this way (Percy 1986). In this view, old growth forests should be logged as fast as possible and replaced by newer, more productive forests, commonly in single-species single-aged stands. Community benefits and healthy forests were consequences assumed to flow from this rational management system.

However, as Langston (2005) shows, conventional forest science orthodoxy often failed in its own terms. Changing the species mix led to more damage by disease and insects, and increased vulnerability to fire; even-aged clear-cutting led to similar problems and conflicted with other users; and mills were promised optimistic timber allocations, making mill closures inevitable. Meanwhile the ecological values of old-growth forests were ignored. For proponents of remapping, however, these values are central, and were underlined by alternative research and forms of knowledge not mandated to grow trees solely for wood production. For Langston (2005, 72) forest conflicts in Oregon stimulated the various stakeholders to engage in understanding each other's perspectives: "What mattered most about litigation was that it forces a variety of stakeholders, with multiple voices, multiple stories, and multiple perspectives to communicate with each other".

Co-evolution of bargaining and learning is not straightforward. Thus the critics of conventional forestry practices not only point to alternative scientific evidence but emphasize local variations in ecological processes and that the scientific understanding of dynamic ecosystems is constantly changing, never complete. Drawing on Firey's (2005, originally 1963) insights, this debate is rooted in future expectations that are judgmental, varied and constrained: remapping requires agreement over the stable institutionalization of future-referring values that are "space and time-bound: they are tied to particular social orders whose eventual demise they are destined to share" (idem, 27). Within these bounds, remapping depends on stakeholders establishing mutual trust over recognizing multiple values, a shared willingness to sacrifice some present for future values, and shared sense of obligation to local territory. There are no mechanical formulas to achieve such cooperative behaviour.

Stakeholder-driven remapping stresses the need to make policy choices based on a diversity of scientific arguments and knowledge; in Weiss' (2011) terms, innovations that change the political-institutional framework of forestry are required. Innovation is conventionally divided in a business context into product, process, marketing, and organizational innovations, varying

from incremental to radical. However, Weiss argues that institutional innovations that are hard or impossible for market actors to initiate are important in forestry and relate to changes in procedures, regulations or incentives or joint actions by public or semi-public organizations. Further, in stakeholder models, innovation implies inter-organizational cooperation that may be horizontal or vertical and “may be seen both as an innovation itself (a new organizational model) and as a supporting factor for innovations (e.g. information exchange in sector meetings or maintaining cross-sectoral relations)” (Weiss 2011, 15).

Such supporting process innovations are particularly significant in forest conflict situations as a condition for achieving cooperation over integrating disparate knowledge bases and epistemologies among stakeholders prior to negotiated agreement(s). As we note below, a scientific *boundary organization* illustrates such an innovation that has been key to the GBR negotiations. The hope is to create durable institutions to organize resource governance. Admittedly, the distinction between facilitative (supporting or process) and outcome (product) institutional innovations can be blurred, especially in light of their experimental nature. However, this messiness underlines the need to analyze related innovations that comprise institutional thickening.

3. Stakeholder collaboration and institutional innovation in the Great Bear Rainforest

The second half of this paper explores to what extent the institutional thickening produced by the GBR remapping can generate a virtuous circle of innovation. The four legged-plus stakeholder model generates six possible bilateral avenues for conflict resolution and the development of co-operation (Figure 3). This schema represents the initiatives, practices and organizations that have unfolded since 2006. While these interactions are represented as bilateral because they were generated initially to solve bilateral conflicts, they occur within a multi-stakeholder dynamic and an environmental governance model in which collaboration, or at least acquiescence, of all parties is necessary to validate and implement agreements. These new institutions include a firm, a foundation, an alliance, a protocol, and a set of management practices. They also include changes to existing institutions, such as those regulating forest tenure and logging practices, significant financial investment in conservation and development projects and aboriginal capacities to monitor, conserve and develop resources in their traditional territories. Collectively they reflect significant institutional thickening.

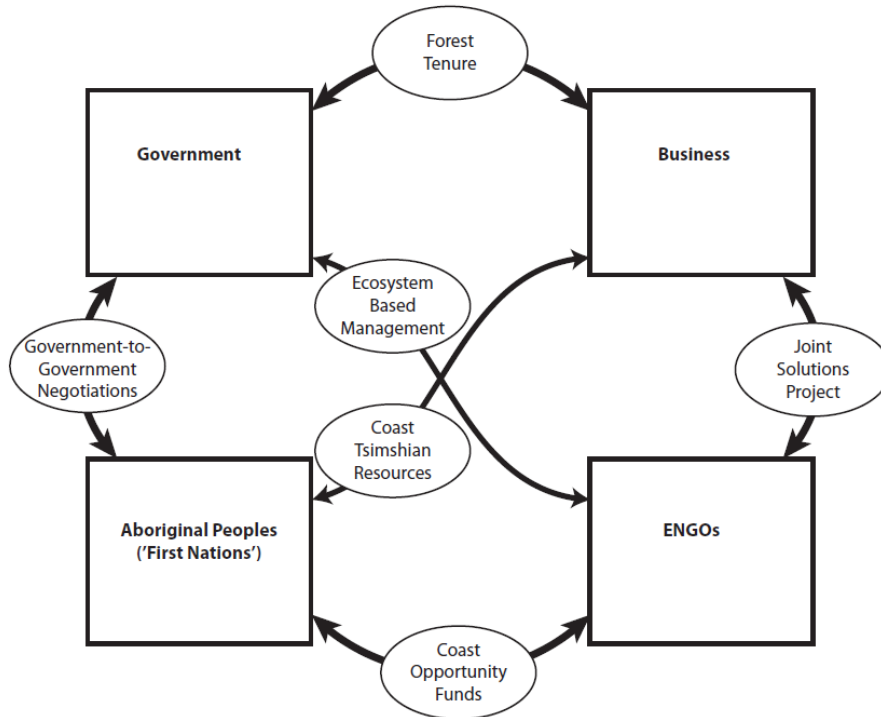


Figure 3: Institutional thickening in the Great Bear Rainforest

The empirical analysis draws on research conducted over the past 15 years on the GBR, including interviews, participant observation, literature review and geospatial analysis. Earlier research focused on understanding the origins of the conflict, the nature of bargaining, and hopes for remapping. This paper shifts attention to outcomes, and derives from new research, featuring ten interviews conducted in the summer of 2015 with ENGO representatives, civil servants, forest industry consultants and aboriginal representatives with long experience in GBR negotiations, and who remain directly involved in outcomes. Our questions were open-ended but focused on how aspects of GBR plans and agreement are working out in practice. Indeed, the collective understanding and interactions of our 2015 respondents are a significant part of the social capital and institutional thickness on which regional development will depend going forward. As prelude to the six bilateral relationships, the key facilitative or supportive innovation is briefly referenced.

3.1 Facilitating the GBR agreement: the Coast Information Team

A scientific boundary organization, the Coast Information Team (CIT), was a key facilitative development for the GBR agreement, established to separate disputes over science from interest-based negotiations (Clapp and Mortenson 2011). The CIT's mandate was to establish a

common knowledge base on which all stakeholders agreed, to answer questions posed by negotiators, and to support the bargaining process (Affolderbach et al 2012). The shared knowledge base generated through this process was a GIS of the region that mapped multiple cultural, economic and ecological characteristics. The CIT itself emerged as a compromise in 2001 after lengthy and often heated interactions among the stakeholders during the regional planning process initiated by the provincial government in the 1990s. That is, institutional thickening occurred as a precondition to agreement.

In turn the CIT provided the foundation for the GBR agreement of 2006 that identified extensive new protected areas, established land use zoning at multiple scales, and committed to ecosystem based management throughout the forest matrix. The CIT has since been disbanded, but its work outputs, notably the ecological spatial analysis, have been essential for the development of ecosystem based management discussed below in section 3.4. The same negotiations also generated more permanent institutions, notably an agreement establishing the Coast Opportunity Funds (section 3.5) with public and philanthropic capital to support conservation-based development. In general terms, this agreement illustrates the paradigmatic changes from government to governance as they occur in forestry decision-making, and its shift from a top-down model to a more democratic model in which state and big business powers are diluted and new social forces are recognized as stakeholders. This example illustrates the role of conflict in stimulating the innovations underlying paradigm change. We argue that without the intense forestry conflicts that exploded in BC in the 1980s and 1990s, such a remapping agreement could not have happened. Vested interests would have had no incentive to change behaviour, and public consciousness located in distant metropolises would scarcely have noticed. Such a view echoes the claim by Lee (1984) that sustained yield principles were developed in Germany in the 19th century, not out of extant cooperative behaviour as commonly supposed, but to resolve highly problematic, unstable situations.

However, the relationships between institutional innovation, institutional thickness and conflict are problematical. Conflict and protest may stiffen the opposition from vested interests, place-based targeting by interest groups may lead to unintended consequences elsewhere, antagonism may delay compromise, business may prefer to invest elsewhere, and the energies used in protest and conflict resolution may be exhausted, no longer available for constructive engagement. Moreover, remapping agreements are plans that need to be implemented; plans may

or may not be executed. Indeed, a key question for remapping agreements that are derived from high levels of mistrust and conflict is whether they have actually become institutionalized, that is become the basis for durable, stable behaviour. The construction and maintenance of social capital is not a guaranteed consequence of institutional thickening.

3.2 Business and ENGOs: the Joint Solutions Project

Collaboration between industrial and environmental interests has erected a new framework of institutions to implement ‘socially responsible’ ideas of self-regulation without direct government intervention. Among these institutions are at least three types of firms: value-added processors, third-party verifiers, and multi-national retailers who market and demand certified wood products (e.g., IKEA, Home Depot and others). More important for the Great Bear Rainforest agreement, however, was a bilateral collaboration that emerged during multilateral negotiations in the summer of 2000.

To break the impasse created by continued logging and the market campaigns, four forest companies (Interfor, NorskeCanada, Western Forest Products and Weyerhaeuser) began negotiations with four ENGOs (Forest Ethics, Greenpeace, Rainforest Action Network, and the Sierra Club), leading to a suspension of market campaigns against the companies in return for a moratorium on logging in 30 watersheds critical for conservation. The resulting alliance was dubbed the Joint Solutions Project (JSP), and its proposals broke a logjam in negotiations in 2001 (Mortenson 2005). The bilateral agreement restarted the multi-sector negotiations that would result in an interim land use map, the establishment of the Coast Information Team, and commitments to apply ecosystem-based management in the coastal forest matrix. The JSP negotiated internal agreements over logging practices, protection areas, and development time frames based on compromises acceptable to both parties, and eventually other stakeholders as well.

The JSP continued to play an essential role beyond the initial compromise. The best evidence of its influence has been to reach agreement that under ecosystem-based management, protection would be set at a precautionary 70% of the range of natural variation within the operating land base. This increased forest protection in the Great Bear Rainforest from 50% agreed upon in 2009 (Price et al 2009), already a significant increase over the complicated compromise

of 2004, which set a 30%-50%-70% sliding scale for protection, depending on the scarcity of the ecosystem.

Interviews with ENGO and industry representatives confirmed that this bilateral collaboration continued to facilitate communication and to negotiate compromises reflected in memoranda of understanding. The JSP by itself, however, does not demonstrate institutional thickening because it was created for negotiations that have been concluded with the formal 2015 agreement. In the words of an industry consultant, the “JSP has run its course” (Interview 1). Institutional thickness that promotes regional development is described in the literature as existing in ongoing practices. The JSP helped establish the groundwork for broader collaboration, but like the Coast Information Team, may itself cease to exist.

3.3 British Columbia and First Nations: government-to-government negotiations

Cooperation and convergence between business and ENGOs reflect voluntary commitment and self-regulation within civil society, a phenomenon also evinced by eco-certification bodies like the Forest Stewardship Council. Other aspects of institutional thickening are directly related to process innovation in formal government, contrasted with broader and more diffuse processes of governance. Political and cultural interests have reserved final assent to stakeholder-negotiated agreements to the province and First Nations in a subsequent and higher level of government-to-government (G2G) negotiations.

G2G negotiations emerged from the initial 2001 stakeholder consensus recommendations to government. The notion of a subsequent and higher level of review was important to First Nations because it recognized at least the possibility of aboriginal title and shared sovereignty over natural resources. G2G negotiation was predicated on an agreement, the Turning Point Initiative, that brought the 27 different aboriginal groups with traditional territories in the region to develop common conservation, cultural and economic goals and to participate in both provincial and federal negotiations with one voice as Coastal First Nations (coastalfirstnations.ca; Davis 2009).

First Nations’ new influence, including veto power over stakeholder recommendations, arose from a series of decisions by the Supreme Court of Canada establishing the existence, parameters and obligations of aboriginal title, beginning in 1997 with *Delgamuukw v. British Columbia*. The decision confirmed that aboriginal title had not been extinguished in BC, and that

the Crown was obliged to consult and accommodate First Nations. While G2G had been mooted in the early 1990s, the *Delgamuukw* decision and Great Bear Rainforest negotiations marked the shift of G2G negotiations from an ill-defined concept to a functioning institutional structure, as well as the “shift in the role of First Nations: from a particular kind of ‘stakeholder’ to a long-term government partner.” (Barry 2012, 217)

G2G negotiations represent both an advance and a complication of aboriginal relations within BC. It is a victory for First Nations because it formally recognizes their right to be consulted not merely as stakeholders but as potentially a quasi-sovereign government with unextinguished aboriginal title. For the province, it constitutes a rapprochement in a long and largely fruitless process of treaty negotiations. First Nations now exert control over where and how much logging can take place, but the limitations of G2G negotiations are keenly felt: the protocol allows for First Nations review of and consent to logging operations, but not pipelines, fish farms or grizzly bear hunting (Interview 2; Interview 8). Several respondents independently characterized the province’s approach to G2G as one of ‘containment’, resisting attempts to extend the model elsewhere in the province.

3.4 Government and ENGOs: ecosystem-based management

Government and ENGOs have found productive, if conflictual, engagement in defining ecosystem-based management (EBM) for the GBR. EBM emerged as a vital component of the compromises that began in the Joint Solutions Project. EBM was essential to the 2001 interim agreement because it assured ENGOs that ecosystem function would be better maintained than in conventional forestry by extending ecological priorities beyond protected areas to the entire forest matrix. EBM was approved by the province and First Nations in G2G negotiations, and now guide the management of the forest matrix outside the new protected areas. Nevertheless, reaching agreement on the definition and implementation of EBM has taken more than a decade of painstaking analysis and negotiation (Interview 4).

EBM sets goals and objectives at multiple scales: at the sub-region or territory (500,000–5,000,000 hectares), the landscape (30,000–100,000 ha), the watershed (1000–50,000 ha) and the site (under 250 ha). To measure these objectives for different ecosystem types under varying scenarios of logging pattern and intensity, EBM is constructed using an Ecosystem Spatial

Analysis generated to inform the stakeholders at the negotiation table. The spatial analysis is a shared-source database in which all stakeholders' technical specialists agreed to the co-ordinate system. It provided a detailed mapping of ecosystems and enabled their characterization by regional rarity as well as their economic accessibility and timber volumes (Clapp and Mortenson 2011).

Setting protection targets depends on a body of science sufficient to determine for each constituent ecosystem within the region a 'range of natural variability', defined as the range of dynamic change in natural systems over historic time periods (Allen 2005). The Ecological Spatial Analysis was essential to the GBR agreement: it allowed delicate compromises to be worked out with confidence that they could ultimately be implemented. For example, in the 2003 agreement, the stakeholders agreed on a target for old-growth forest retention at the landscape level of "50 percent of the natural proportion, provided the average across all landscapes is 70 percent (the sub-regional target); and at the watershed level 30 percent, provided the average across all watersheds is 50 percent (the landscape level target)." (Allen 2005, 11).

The final protection level proposed by the JSP in 2014 and legislated by the province in February 2016 was a more straightforward 70% of the range of natural variability. The JSP commissioned a literature review and meta-analysis of 20 cases of ecosystem resilience or collapse (Price et al 2007). Ecological risk was theorized as the area of habitat loss relative to a range of natural variation. More than 60% remaining intact of the natural benchmark projected low risk to biodiversity, while below 30% of the benchmark risk the onset of rapid decline with effects cascading through multiple species and the food chain generally (Interview 2). The science was enough for a negotiated outcome: the JSP ultimately agreed that ecosystem-based management should mean protecting a precautionary 70% of the matrix, which one industry consultant characterized as leaving only 15% of the productive area available for harvesting (Interview 1).

Although EBM is an ongoing government function, its key parameters have largely been set by business and ENGOS. The province is wary of establishing EBM as a precedent for other regions, regarding it as research-intensive (Interview 2), expensive (Interview 3) and impinging on provincial sovereignty (Interview 4). Several respondents characterized government policy on both EBM and G2G negotiations as 'containment' –concessions necessary to achieve peace in the Great Bear Rainforest, but not models for the rest of the province. Stakeholder processes begin

government delegating some of its powers, and First Nations and ENGOs have gained substantial influence at the cost of governmental discretion and autonomy. The province seems determined to avoid extending a GBR model of G2G negotiations and ecosystem-based management.

3.5 First Nations and ENGOs: the Coast Opportunity Funds

Community and environmental collaborations are reflected in informal, occasionally uneasy, alliances during the land-use zoning negotiations. Informal alliances may not lead to permanent institutions but nevertheless affect negotiations at critical junctures, and are key elements of social capital. Whether those informal collaborations continue in the absence of a formal institution charged with promoting them is an important question, but empirically difficult to answer. At least one aspect of those collaborations has been formalized in the Coast Opportunity Funds.

One of the key compromises in the GBR agreement was the contribution of capital to fund conservation-based development proposals. A frequent challenge from communities and First Nations to ENGOs during the negotiations was to “put their money where their mouths are”, calling on environmentalists to find resources to make up for the logging jobs that would be lost in any reduction to sustainable levels (Mortenson 2005). The Coast Opportunity Funds were established in partnership between BC, Canada and private donors, notably the international foundations that were instrumental in funding the ENGO market campaigns, among them the Rockefeller Brothers Fund, the Hewlett Foundation, the Packard Foundation, and the Pew Charitable Trusts (Tedesco 2015). Of the Funds’ CAD 120 million in initial funding, half came from the foundations, and the other half from the provincial and federal governments (Davis 2009). The Great Bear Rainforest is widely agreed to be of global conservation significance; the Coast Opportunity Funds muster global resources to fund its conservation. An industry observer commented that it was nice to see the foundations supporting local capacity instead of market campaigns (Interview 1).

The Coast Opportunity Funds comprise two separate funds: the Conservation Fund supports participating First Nations by funding projects to ensure the ecological integrity of the GBR, such as ecological research; habitat protection, restoration and enhancement; and capacity-building for resource planning, management and monitoring. The Conservation Fund is a

permanent endowment of CAD 56 million, with annual expenditures of approximately CAD 2 million (Coast Opportunity Funds 2015). Perhaps the most significant achievements of the Conservation Fund have been the establishment of integrated stewardship offices for many participating First Nations (Interview 7), enabling them to decide which and what kind of development proposals they wish to allow. Prior to 2007, some First Nations had fisheries departments. Five years later most had broadened their focus to include forestry and ecotourism proposals consistent with the conservation aims of the GBR agreement. Some First Nations resource management offices now review companies' logging plans before they are submitted to the province, achieving the objectives of both business and community more efficiently.

Equally significant are the newly created Guardian Watchmen programs. Based on the model of the Haida Watchmen Program, formed in 1993 to monitor fisheries and cultural heritage sites in the islands of Haida Gwaii, Coastal First Nations have promoted a network of similar organizations for the central and north coasts. Monitoring is an ongoing cost of environmental planning, one that is often de-funded when government cut costs. Support from the Coast Opportunity Funds has enabled First Nations to establish their own monitoring programs, and helped to leverage additional funding from other philanthropic foundations (Interview 7).

In contrast to the permanent endowment of the Conservation Fund, the Economic Development Fund of CAD 58 million is to be spent in its entirety by 2017 to support sustainable businesses and community-based jobs in the region (Coast Opportunity Funds 2015). The economic development funds are allocated (in confidential discussions) to First Nations in varying proportions, with larger shares of the funding allocated to First Nations whose traditional territories contained larger shares of the newly established conservancies (Interview 7). The Coast Opportunity Funds have been instrumental in establishing new institutions and capacity within the First Nations, building up institutional thickness at the regional and territorial level, with ongoing support that promises to survive beyond the conclusion of the negotiations.

3.6 First Nations and Business: Coast Tsimshian Resources

Some further evidence of institutional thickening is seen in the growing connections between industrial and aboriginal interests. At least ten First Nations in the GBR have signed revenue-sharing agreements with forest companies operating in their traditional territories

(Hoekstra and Pynn 2015), although the amount and proportion of revenue shared remains confidential. Perhaps more significant is the emergence of First Nations-owned companies. The most prominent example is Coast Tsimshian Resources, which acquired the forest tenures of the bankrupt Skeena Cellulose in 2007, with long-term annual harvesting rights of 564,314 cubic meters (Hoekstra and Pynn 2015). Coast Tsimshian Resources employs 110 workers, maintains a marketing office in Shanghai and has pioneered the export of hemlock logs from the north and central coasts to China, Japan and Korea.

Aboriginal ownership or consent is requisite to eco-certification by the Forest Stewardship Council, which includes assurance of indigenous peoples' consultation, accommodation and participation. This innovation is important for expanding use of coastal western hemlock (*Tsuga heterophylla*, also known as green hemlock), a lower-quality but still abundant resource that has lacked markets, evincing the expanding participation of First Nations in the forest industry.

3.7 Government and Business: forest tenure, community forests and conservancies

Reform of the longstanding political-industrial alliance between big business and the provincial government can be seen in the retrenchment of forest tenure arrangements, including the expansion of log auctions, the clawback of forest tenures and the creation of new community forests. These are not necessarily institutional innovations: they may better be described as new priorities expressed through existing institutions, such as when the Chief Forester reduced the Annual Allowable Cut for the Mid Coast Timber Supply Area to 767,000 cubic meters in 2011 to reflect the withdrawal of new conservancies from the working forest (Ministry of Forests, Lands and Natural Resource Operations 2011). Nevertheless, the GBR has seen the expansion of the community forest model pioneered in developing countries (Porter-Bolland et al 2014) and adopted elsewhere in BC (McIlveen and Bradshaw 2009). The Nuxalk Forestry Partnership, an aboriginally owned firm, and the Bella Coola Community Forest, established in the township of Bella Coola, operated independently for over five years, but have recently come together to increase the scale of their operations (Thompson 2014).

A final institutional innovation reflecting ongoing collaboration between government and business can be seen in the conservancies, a new category of protected areas created in the Great Bear Rainforest (Stronghill et al 2015). Conservancies limit logging, hydro-electric development

and other large-scale industrial developments, but allow exceptions for aboriginal commercial activities, as well as subsistence and ceremonial activities. While logging is restricted, fishing, aquaculture, guiding, filming, log salvage and the harvest of non-timber forest products are included in various conservancy management plans (Stronghill et al 2015). To keep a campaign promise made to the mining industry, the provincial government insisted that new protected areas should not place geologically prospective areas off limits to mineral exploration and development. The conservancies are to be co-managed by First Nations and the province.

4. Conclusion: institutional innovation and paradigm change

The GBR has moved from government to governance, in which the role of the state is diffused and dispersed among multiple stakeholders. The most significant change in the new power topography is the provincial state, which has obtained peace in the woods at the cost of significant autonomy over resource allocation, conservation and management. Stakeholder negotiation tables generated the agreements for the province's ratification. Under the terms of G2G negotiations, ratification was shared with First Nations.

Of the six bilateral interactions in the four-legged-plus stakeholder model, most resulted in rapprochement or compromise, the removal of obstacles to industrial operations, and the expansion of community control. Each had elements of novelty and local adaptation, while drawing on precedents and models from other resource peripheries. If aboriginally owned firms, bilateral alliances, community forests, conservation foundations, ecosystem-based management and G2G negotiations have precedents elsewhere, they collectively represent institutional thickening in many dimensions on an unprecedented scale in this thinly populated region. Changes to forest tenure in the context of remapping environmental and cultural values also represent a significant shift of stakeholder power, supporting the characterization of a new paradigm in forestry. The outcome of this remapping process is neither a free market solution, nor public control, but an increasingly complex architecture of institutions, based in both civil society and the state, that promote sustainability, resilience and legitimacy.

This paper has argued that regional development is structured by institutions constructed and thickened during conflict resolution. New or modified institutions are needed to implement stakeholder compromises. Process innovation facilitates bargaining, drives learning and secures the social license to operate. Despite the emergence of a new paradigm, the development of shared

norms, values and behaviors is not an automatic consequence of new maps and formal agreements: the efficacy and the survival of each of these institutions remain uncertain and contingent on follow-through, goodwill and the transfer to productive engagement of the social network constructed during negotiations. Government-to-government negotiations are a process innovation in the BC context, but how or even whether they will continue in the GBR or elsewhere in the province remains unclear.

Furthermore, process innovation in remapping is as much associated with satisfying gatekeeping conditions and securing the social license to produce, as with increasing productivity or profitability. Innovation in the context of a new paradigm in contested resource peripheries is far removed from the notion of science as handmaiden to industry. Many of the new collaborations and alliances have been generated by the need to seek public legitimacy because survival rather than increased efficiency was at stake. This poses a challenge to the teleological spirit of regional development theory: how can we tell if institutional thickening constitutes a positive development, especially where process innovation is concerned? This case study has demonstrated substantial institutional thickening, but not necessarily a virtuous circle of innovation along the lines theorized by North (1990), Amin and Thrift (1994) and others. Whether these new institutions reflect the formation of enduring social capital that promotes regional development, or a sclerotic hyper-regulation that hinders it, requires further research.

5. References

Affolderbach J 2011 Environmental bargains: power struggles and decision making over British Columbia's and Tasmania's old-growth forests *Economic Geography* 87 181-206

Affolderbach J, Clapp A and Hayter R 2012 Environmental bargaining and boundary organizations: Remapping British Columbia's Great Bear Rainforest *Annals of the Association of American Geographers* 102(6), 1391-1408

Allen R 2005 Coast Information Team: Review report. <http://www.citbc.org/c-citreview-jan05.pdf> (last accessed 5 March 2010)

Amin A and Thrift N 1994 Globalisation, institutional thickness and the local economy in **P. Healey P, Cameron S, Davoudi S, Graham S and Madinpour A** eds *The New Urban Context* Wiley, Chichester 91-108

Argent N 2013 Reinterpreting core and periphery in Australia's mineral and energy resources boom: An Innisian perspective on the Pilbara *Australian Geographer* 44 323-40

- Armstrong P** 2009 Conflict resolution and British Columbia's Great Bear Rainforest www.coastforestconservationinitiative.com/pdf7/GBR_PDF.pdf (accessed October 1, 2015)
- Barry J** 2012 Indigenous state planning as inter-institutional capacity development: The evolution of "government-to-government" relations in coastal British Columbia, Canada *Planning Theory & Practice* 13(2) 213-231
- British Columbia (BC)** 2010 *The State of British Columbia's Forests* Ministry of Forests, Mines and Lands, Victoria
- Borrows J** 2002 *Recovering Canada: The Resurgence of Indigenous Law* University of Toronto Press, Toronto
- Boychuk R** 2011 Boreal handshake *Canadian Geographic* January-February 30-42
- Brogden M and Greenberg J** 2003 The fight for the west: A political ecology of land use conflicts in Arizona *Human Organization* 62(3) 289-98
- Brown B** 1995 *In Timber Country: Working People's Stories of Environmental Conflict and Urban Flight* Temple University Press, Philadelphia
- Central Coast Land and Resource Management Plan (CCLRMP)** 2004 Report of consensus recommendations to the provincial government and First Nations http://ilmbwww.gov.bc.ca/slrp/lrmp/nanaimo/cencoast/docs/table_rec/final_report_may20_04.pdf (Last accessed March 5, 2010)
- Clapp A** 2004 Wilderness ethics and political ecology: Remapping the Great Bear Rainforest *Political Geography* 23 839-62
- Clapp A and Mortenson C** 2011 Adversarial science: Conflict resolution and scientific review in British Columbia's central coast *Society & Natural Resources* 24(9) 1-15
- Coast Opportunity Funds** 2015 Weaving together the threads of conservation and community well-being <http://www.coastfunds.ca/> (Last accessed October 5, 2015)
- Coenen L, Benneworth P and Truffer B** 2012 Toward a spatial perspective on sustainability transitions *Research Policy* 41(6) 968-979
- Davis L** 2009 The high stakes of protecting indigenous homelands: Coastal First Nations' Turning Point Initiative and environmental groups on the B.C. west coast *International Journal of Canadian Studies* 39-40 137-59
- Dempsey J** 2011 The politics of nature in British Columbia's Great Bear Rainforest *Geoforum* 42 211-221
- Edenhoffer K, and Hayter R** 2013a Organizational restructuring in British Columbia's forest industries 1980-2010: The survival of a dinosaur *Applied Geography* 40 222-31
- Edenhoffer K, and Hayter R** 2013b Restructuring on a vertiginous plateau: The evolutionary trajectories of British Columbia's forest industries *Geoforum* 44 139-151
- Firey W** 2005 Conditions for the realization of values remote in time **Lee R and Field D** eds *Communities and Forests* Oregon State University, Corvallis 18-30

- Flanagan T** 2015 *Clarity and Confusion? The New Jurisprudence of Aboriginal Rights* Fraser Institute Centre for Aboriginal Studies, Vancouver
- Freeman C and Louça F** 2001 *As Time Goes By* Oxford University Press, Oxford
- Franklin J, Berg D, Thornburgh D, and Tappeiner J** 1997 Alternative silvicultural approaches to timber harvesting: Variable retention harvest systems. In **Kohm K and Franklin J eds** *Creating a Forestry for the 21st Century* Island Press, Washington 111–139
- Gritten D, Mola-Yudego B, Delgado-Matas C and Kortelainen J** 2012 A quantitative review of the representation of forest conflicts across the world: Resource periphery and emerging patterns *Forest Policy and Economics* 33 11-20
- Guha R** 2000 *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya* University of California Press, Berkeley
- Hayes S and Glendenning G** 2005 Values and forests: Changes in the Great Lakes wildlands in **Lee R and Field D eds** *Communities and Forests* Oregon State University, Corvallis 77-95
- Hayter R** 2003 The war in the woods: Post-fordist restructuring, globalization and the contested remapping of British Columbia's forest economy *Annals of the Association of American Geographers* 93(3) 706-729
- Hayter R and Barnes T** 2012 Neoliberalism and its geographical limits: Comparative reflections from forest peripheries in the global north *Economic Geography* 88(2) 197-221
- Hayter R, Barnes T and Bradshaw M** 2003 Relocating resource peripheries to the core of economic geography's theorizing: Rationale and agenda *Area* 35 15-23
- Hoekstra G and Pynn L** 2015 Staking claims in the B. C. economy *Vancouver Sun* May 30, C1-5.
- Howlett M, Rayner J Tollefson C** 2009 From government to governance in forest planning: Lessons from the case of the British Columbia Great Bear Rainforest Initiative *Forest Planning and Economics* 11 383-91
- Langston N** 2005 Resource management as a democratic process; Adaptive management on federal lands. In **Lee R and Field D eds** *Communities and Forests* Oregon State University, Corvallis 52-76.
- Lawrence R and Raitio K** 2015 Forestry conflicts in Finnish Sapmi: Local, national and global links. http://www.iwgia.org/iwgia_files_publications_files/IA_4-06_Finland.pdf (August 1 2015)
- Lee R** 1984 Sustained yield and social order. In **Steen H ed** *History of Sustained Yield: A Symposium* Forest History Society, Portland 90-100
- Lee R and Field D** 2005 Introduction: From scientific forestry to community forestry. In **Lee R and Field D eds** *Communities and Forests* Oregon State University, Corvallis, 1-14.
- Low M and Shaw K** 2011/12 First Nations rights and environmental governance: Lessons from the Great Bear Rainforest *BC Studies* 172 9-33
- Lucas R** 1971 *Minetown, Milltown, Railtown* University of Toronto Press, Toronto

- Markey S, Halseth G and Manson D** 2012 *Investing in Place: Economic Renewal in Northern British Columbia* UBC Press, Vancouver
- McIlveen K and Bradshaw B** 2009. Community forestry in British Columbia, Canada: the role of local community support and participation. *Local Environment* 14(2) 193-205
- McAllister I, McAllister K, and Young C** 1997 *The Great Bear Rainforest*. Harbour Publishing, Madeira Park, BC
- McGee G, Cullen A and Gunton T** 2010 A new model for sustainable development: A case study of the Great Bear Rainforest Regional Plan *Environment Development and Sustainability* 12 745-762
- Ministry of Forests** 2011 Lower cut set for mid coast timber supply area <https://www.for.gov.bc.ca/hts/tsa/tsa19/#news> (accessed October 5, 2015).
- Moorcroft H and Adams M** 2014 Emerging geographies of conservation and indigenous land in Australia *Australian Geographer* 45 485-504
- Mortenson C** 2005 Adversaries and science. MA thesis, Department of Geography, Simon Fraser University
- North R** 1990 *Institutions, Institutional Change and Economic Performance* Cambridge University Press, Cambridge
- Percy M** 1986 *Forest Management and Economic Growth in British Columbia* Economic Council of Canada, Ottawa
- Porter-Bolland, L, Ellis E, Guariguata M, Ruiz-Mallén I, Negrete-Yankelevich S, and Reyes-García V** 2012 Community managed forests and forest protected areas: an assessment of their conservation effectiveness across the tropics *Forest Ecology and Management* 268 6–17
- Price K, Holt R and Kremsater L** 2007 Representative forest targets: Informing threshold refinement with science. Review paper written for RSP and CFCI, 1-55
- Price K, Roburn A, and MacKinnon A** 2009 Ecosystem-based management in the Great Bear Rainforest. *Forest Ecology and Management* 258 495–503.
- Prudham S** 2007 Sustaining sustained yield: Class, politics and post-war forest regulation in British Columbia *Environment and Planning D: Society and Space* 25 258-83
- Rajala R** 1998 *Clearcutting the Pacific rain forest: production, science and regulation* UBC Press, Vancouver
- Roche M** 1990 Perspectives on the post-1984 restructuring of state forestry in New Zealand *Environment and Planning A* 22 941-99
- Russell J and Jambrecina M** 2002 Wilderness and cultural landscapes: Shifting management emphases in the Tasmanian Wilderness Heritage Area *Australia Geographer* 33 125-39
- Sierra Club** 2014 Unlikely allies deliver new conservation proposal for Great Bear Rainforest. <http://www.sierraclub.bc.ca/our-work/gbr/spotlights/unlikely-allies-deliver-new-conservation-proposal-for-great-bear-rainforest> (last accessed September 20, 2014)

Stronghill J, Rutherford M and Haider W 2015 Conservancies in coastal British Columbia: A new approach to protected areas in the traditional territories of First Nations *Conservation and Society* 13(1) 39-50

Tedesco D 2015 American foundations in the Great Bear Rainforest: Philanthrocapitalism, governmentality, and democracy *Geoforum* 65 12–24

Thompson C 2014 Nuxalk, Bella Coola Community Forests collaborate to increase economic opportunities. *Coast Mountain News* <http://www.coastmountainnews.com/news/247189801.html> (last accessed June 4, 2014).

Weiss G, Pettenella D, Ollonqvist P, and Slee B 2011 *Innovation in Forestry: Territory and Value Chain Relationships* CABI, Wallingford

Weiss G 2011 The study of innovation in the forest sector: Relevance and research background. In G. **Weiss G, Pettenella D, Ollonqvist P, and Slee B** eds. *P. Innovation in Forestry: Territorial and Value Chain Relationships* CABI, Wallingford, 1-9

Westoby J 1989 *Introduction to World Forestry* Blackwell, Oxford

Widick R 2009 *Trouble in the Forest: California's Redwood Timber Wars* University of Minneapolis Press, Minneapolis