The Past and Future of the Columbia River

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Introduction

This volume uses uncertainty in environmental management as an organizing principle. We address this theme and several others, including the interconnection between natural systems and social systems, the centrality of historical context in shaping river management regimes and international agreements, the importance of humility in environmental management, and the value of balancing efficiency with equity in resource allocations. We unpack all of these themes in a historical survey of the changing human relationship with the Columbia River over the past century. Our analysis reveals trends in policy development, engineering, ethics, and international relations. Our own organizing principle is, simply, that studying the past illuminates the present and helps us chart an informed course into the future. *History is instructive.*

At any given time in any given place, uncertainty is a prevailing factor. Nature presents itself as patterned disorder, whether it is climate fluctuations affecting biological production or salmon appearing in numbers higher or lower than anticipated or rivers overtopping their streams' banks and spreading across the floodplain (Orsi 2004, 165–83; Botkin 1990). But if natural systems are unpredictable, so too are human systems—perhaps to an even greater extent. Political systems are constantly evolving with policies adapting to address changing environmental conditions, failures in technocratic systems, or newly articulated social goals. Economies are uncertain based on shifting supply and demand, unpredictable prices, and interaction with other socio-political factors such as elections or income inequalities. Social values and behavior are often unpredictable, because they are pinned directly to people who are autonomous and act independently. Even more, these ecological and human systems interact interdependently, compounding the uncertainty in myriad ways. Nature, politics, economics, and society are all independently and interdependently uncertain (Langston 1995; McEvoy 1986).

And yet, amid the unpredictability of natural and human systems historical patterns often prevail, and so historians can help chart the changing contexts in which this uncertainty interacts and is constrained. Today, the complex interaction of nature and nations shapes everything significant that happens on the river, from headwaters to estuary. We like to think that the good things we derive from

the Columbia River are a product of order: a benign nature and technological competence. On the other hand, problems such as floods, fluctuating salmon runs, and pollution we often blame on serendipity and chaos: freak storms, human error, unanticipated consequences. But order and chaos are simultaneously present at all times, just as natural systems and social systems are inextricably intertwined at all times in this modern age. We can take no more credit for full reservoirs than we can blame nature for drought. To credit ourselves for the water in Lake Roosevelt is hubris, while to blame nature when our water supplies run low is naïve. It distorts both the interconnectedness of nature and culture and the historical contingency of events like floods or droughts (Orsi 2004, 173). As historian Ted Steinberg vividly elucidates in *Acts of God*, most of what we call "natural disasters" are emphatically unnatural events; they are as much a product of human design as environmental irregularities. The disaster associated with hurricane Katrina is only one of myriad examples of this (Steinberg 2000). Just as the flooding of New Orleans was a combined result of a "natural" event, a design flaw, and a policy failure, so too the great challenges facing Americans and Canadians in joint management of the Columbia River reflect the interdependent relationship between nature's uncertain course and humankind's shifting intentions, technologies, and policies. Our effort to wrest order from disorder falls in the realm of governance.

The Columbia River Treaty (CRT) is an instrument of governance constructed at a particular place and time. It has weathered well, according to its administrators, but it is nevertheless also a dated document shaped by a generation now passing. The treaty culminated an era of profound technological optimism in humankind's ability to control nature. Corporate and government-sponsored schemes for comprehensive river development transformed the region's natural resources and political economy during the first half of the twentieth century setting the framework for the treaty. The CRT coordinated the two nations' efforts in a manner reflecting the prevailing political calculus of the times: to maximize hydropower and minimize floods on the Columbia River. Those goals, in hindsight, now appear surprisingly narrow—although few people were surprised or concerned about it in the 1950s and '60s. Historical context shaped the treaty half a century ago and contemporary historical context will shape its re-negotiation a few years hence.

The first part of this essay describes early twentieth-century social, political, and economic conditions and values in North America that led up to and influenced the CRT. We then profile critical changes since the treaty was ratified. Following that, we offer a brief critique of the narrowly framed aims of the treaty and suggest more realistic, sustainable, and equitable principles for managing transboundary rivers. Finally, we end with some reflections on the forces and concerns that will likely influence treaty renegotiation in the coming years.

Governing Institutions and Ideals

North Americans have largely been enamored with science and its offshoot technology as ways to understand and then control natural systems. In the nineteenth century, explorer-scientists traveled the continent seeking to describe scientifically the land and watercourses they encountered with an eye toward economic development (Sachs 2006). Agricultural reformers in antebellum America and after developed new technologies and farming methods and eventually applied chemicals to boost yields (Stoll 2002). Engineers sought to remodel harbors or river systems to control or conquer them and make them more efficient for agricultural and commercial purposes (Worster 1985). In each case, science became an instrument to advance economic agendas, and government's support ensured state power undergirded scientists' work (Robbins 2004; Nelles 2005).

To be sure, scientists believed their work to be in the public interest. A century ago, as concerns about the costs of modernization mounted, they offered palliatives to the often harsh environmental effects of emerging industrialization. In the Pacific Northwest, for instance, industrial fishing combined with drastic habitat changes caused by logging and agriculture decimated salmon runs throughout the Columbia River Basin. Scientific managers promised to ameliorate the salmon population declines through artificial propagation. Rather than approaching the problem holistically, managers identified one problem—too few fish—and moved to solve that by creating more fish through state-sponsored hatcheries without addressing the fundamental linkages between ecosystems or confronting the human systems that were damaging the fishery. The results failed to stem the decline of salmon, although hatcheries were a politically popular "solution," because they did not require fundamental reform of the causes of salmon decline: human behavior and "perverse" economic incentives (Taylor 1999; Myers and Kent 2001; Lichatowich 2001). This piecemeal technological approach to problem solving prevailed often but resolved little.

This management paradigm resulted from specific ways of viewing nature and its relationship to the public. Policymakers who funded scientific research and formulated resource development agendas, especially in the North American West, saw the region's forests, rangelands, and rivers as potential wealth. Public resources were to be exploited with government assistance to create private wealth. An exemplary statement of this approach toward water in the United States written at the height of the Progressive era is John L. Mathews' *The Conservation of Water* (1910), a sprawling, confident statement of the promise of water development. In chapter after chapter on water conservation topics—flood control, swamp drainage, irrigation, waterpower, and so on—Mathews offered sweeping surveys of current or potential projects nationwide. Never does Mathews express doubt. Seldom are

people mentioned, other than as masses benefiting from the new plenty engineered for them from nature. Without greater efforts to reclaim water from waste—that is, disuse—the nation's wealth would suffer. Developing the Columbia River Basin, including tributary streams, would yield power, irrigation, and navigation. With the correct storage and irrigation system, managers could ensure water was "applied at *exactly* the *right* time in the *right* amount and under *perfect control*." Done right, power development would benefit "manufacturing that will support an enormous population in the picturesque valley of that [Columbia] river," a prospect that would enhance the nation's trade to Asia. In Mathews' final chapter, "The Results of the Conservation of Water," he takes an imaginative journey upstream: "We enter it at the sea gate, at the mouth of a great river, where we find a port bustling with commercial activity." Continuing up the engineered river, the reader finds booming cities without pollution since power comes from the dams. Further on, public buildings (paid for by water conservation) line the banks that are themselves protected by soil stabilization measures beside which are endless irrigation villages. In short, nature's "dilapidation has given way to perfection." Further upstream, a dam blocks the river but locks move ships and a power plant generates power. The engineers have perfected nature and society. We must, Mathews implores, bring this utopian vision to life by developing the Columbia River.[1]

This was the emerging professional conservation vision in the early twentieth century. In his concluding paragraph, Mathews acknowledged it would not be easy or quick: "We will not see it done, nor our children. But our grandchildren will come to it by birth and education and sweep it on rapidly to complete perfection. And the trip up the river which I have described, which you who read this may never make, your grandson will make while still a young man, and he will make it with that new pride and delight in his own land which he cannot have until he has taken care of it, saved and protected it and made it a beautiful and lovely place" (Mathews 1910, 281). To make this vision a reality, Mathews assumed it would take time, commitment, and, most of all, government leadership.[2]

The U.S. federal government obliged, because it, too, caught the fever of river development. From the 1902 Reclamation (or Newlands) Act that sponsored federal reclamation projects to the 1920 Federal Water Power Act that coordinated and regulated hydroelectric development on the nation's navigable rivers, the national government took on a key role in controlling and developing rivers. Meanwhile in Canada, national and provincial governments supported their own reclamation programs to develop water resources throughout the western provinces. For instance, the British Columbia government in 1897 enacted a consolidated Water Law confirming provincial authority over all rivers with the intent to rationalize and coordinate river development for maximum efficiency and social utility. B.C. expanded its authority and oversight with the B.C. Water Act of 1909, which

established a water commission to grant licenses and a Board of Investigation to adjudicate conflicts among water claimants. Both at the national and provincial level, Canadian governing institutions sought control over rivers for multipurpose economic development (White and Vick 1919, 70–3; Denis 1911, 303–8). B.C. Premier Richard McBride in 1914 succinctly articulated this philosophy: "If it be for the purpose of irrigation, let every inch of water do its duty, and, if it be for the purpose of power, let us see that the works are so carried out as to get from the investment and from the water conservation, the very best and most profitable results" (White and Vick 1919, 15). On either side of the forty-ninth parallel, then, the dream of an ordered nature developed with government oversight for private wealth, and social progress dominated the vision of water and land resources in the early decades of the twentieth century (Worster 1985; Worster 2002; Evenden 2006; Lee 1966; Mitcher 1980; Murton 2008).

With a relatively unified vision favoring development and with legislative structures in place, governments and bureaucracies pursued increasingly large projects to transform rivers into engines of economic growth. As erstwhile engineer and then-current U.S. Secretary of Commerce Herbert Hoover put it in 1926, each river system should be developed to its "maximum utilization" (R. White 1995, 54). Eventually, the Great Depression of the 1930s provided a further impetus in the U.S. as federal and state governments used the exigency to put masses of unemployed on public works projects, such as building Bonneville and Grand Coulee dams on the Columbia River. To partisans of this vision, the Columbia River and the larger Columbia Basin stood as a vast and relatively untapped resource awaiting technological control. To be sure, various interests vied for competing development plans, including various local political maneuverings (Ficken 1995; Pitzer 1994). An Oregon journalist-turned-politician, Richard L. Neuberger, captured the enthusiasm of these days and this project of basin transformation in his classic book, *Our Promised Land* (1938), a celebration of the history and future of the Pacific Northwest. In his chapter "Hydroelectric!," Neuberger explained that the region contained forty-one percent of the nation's available hydropower passively awaiting human use. Neuberger could wax poetic: "The river rumbles and roars. It thrashes against granite walls and gnaws ominously at basalt cliffs. Around jagged rocks it booms like the surf. . . . Wild and defiant, the river tumbles unharnessed to the Pacific." But ultimately, the "hours of this freedom are numbered," because a greater good—electricity—could serve the public and reform society. Representing the confidence of the age and ideal of development, Neuberger knew this project would succeed, would be "an event of national significance," and would help rural residents and urban industries. There could be no doubt. The *efficient* development of the Columbia Basin would produce great and wide-ranging benefits (Neuberger 1989, 86–122; Robbins 2004, 215–47; R. White 1995, 64–74).

Not all issues could be met so confidently, though. Following "Hydroelectric!" came "No More Salmon," a decidedly more ambivalent (and significantly shorter) chapter. Here Neuberger targeted salmon and Indians. He explained the fish ladder system being constructed at the Bonneville Dam at a cost of seven million dollars, but noted that Grand Coulee Dam would be the end of the anadromous line, a thousand miles of upstream spawning habitat in Canada forever closed to salmon. Lurking in the background of Neuberger's prose were tribal members, gazing mournfully at the construction and declaring, "White man's dams . . . mean no more Indians' salmon." Even Neuberger's technological fervor could not assuage such a diminishment of cultural and economic tradition. Despite the elegiac tone and Neuberger's recognition of the concern of government scientists over the declining salmon runs, he saw the loss as a necessary, if regrettable, sacrifice. In other words, the efficient development of the Columbia River excused the inequitable results; in this respect, Neuberger represented the broad consensus of policy makers, developers and conservationists (Neuberger 1989, 123–39; also Barber 2005).

Developing the Basin

Neuberger wrote at a time of growing technological optimism. Indeed, the mid-twentieth century, from the 1930s to the 1960s, was perhaps the zenith of this scientific-technological faith. Besides the vision and desire, the Depression of the 1930s furnished the opportunity for unprecedented development with the rise of Franklin D. Roosevelt's New Deal policies. To rescue capitalism, the New Deal initiated broad-scale planning for economic and natural resource development because of perceived needs and a temporary willingness on the part of the American people to accept massive government intervention in the economy. One result was comprehensive river basin planning, the most famous example being the Tennessee Valley Authority. Armed with a faith that applied science could control nature for maximum profit and welfare for regional residents, along with the idea that public power would provide greater benefits than private power had achieved, federal planners and engineers sought to put the Columbia River to work (Blumm 1999; R. White 1995).

It was an ambitious and evolving project that took many forms and several decades. One centerpiece of the river planning effort was the Bonneville Power Administration (BPA), which marketed power generated from Bonneville Dam and other subsequent federal hydroelectric dams. From the late 1930s to the early 1950s, electricity for residential use alone quadrupled and could be met only through the important integration of these federal hydroelectric projects. A second centerpiece was the Columbia Basin Project (CBP), which would provide supplemental irrigation water and attract new basin farmers. Designed to support family farms, the CBP was often dominated by absentee corporate owners benefiting from irrigation

water at highly subsidized rates. Such results demonstrate that federal investment in the Columbia River did generate economic growth although not always for the intended target, suggesting that efficiency tended to be easier to realize than equity. Underpinning these efforts was an instrumental view and use of nature. Both the BPA and the CBP extracted from the Columbia River its economic benefits for a greater Pacific Northwest (Blumm 1999, 268–72; Pitzer 1994; R. White 1995, 74).

Engineers sought to create a systematized and controlled Columbia River, maximally beneficial for regional residents. For instance, the growth of manufacturing in the region played a significant role during World War II, and rural electrification transformed much of the Northwest in powerful ways. River basin planning was producing a controlled environment for the greater good. Then, in 1948, the Columbia River flooded, hitting the former wartime boomtown of Vanport, Oregon. After more than $100 million in property damage and thirty-eight deaths, the flood showed that control over the river was elusive or at least incomplete (R. White 1995, 74; Brooks 2006, 60).

It also encouraged greater efforts at control. With the Vanport disaster fresh in their minds, policymakers and resource managers launched an aggressive campaign to do more. More dams would mean no more floods, they claimed. More dams would also forestall the looming threat of power shortages that BPA routinely predicted were just a few years away. Public power partisans proposed a Hells Canyon High Dam to help solve these problems. Meanwhile, fishery policy, supposedly "planning for permanent control," in historian Karl Boyd Brooks' terms, sacrificed salmon in the Columbia Basin. Grand Coulee Dam had ended anadromous fish runs upstream of the dam. In a nod toward compensation, federal planners simply sought to remove the fish from one part of the river system (upriver) to another (downriver) through investments in hatcheries, a process that rearranged salmon's geography, failed to conserve fish as promised, and entailed significant social inequities for Columbia Basin tribes. In short, salmon were sacrificed. And tribal members who depended on those fish for cultural and economic purposes were largely shut out of the decision process as they lost their access and rights (Barber 2005; Brooks 2006, 81–92 and passim; Taylor 1999, 235–36 and passim; R. White 1995, 89–113).

By the 1960s, dozens of large dams held back the waters of the Columbia and its tributaries. Despite treaty assurances, tribal fishers had been removed from much of the fishery. Despite millions of dollars invested in conservation, salmon had declined. How had this occurred? Several interlocking reasons contributed. An instrumental view of nature certainly set the intellectual stage. A faith that technology could mitigate any environmental problems similarly guided managers. Asymmetries in power among government agencies played a significant role, as well. Federal agencies with an interest in economic development, such as the dam-building Bureau of Reclamation and the U.S. Army Corps of Engineers, always

wielded more power than fisheries agencies (e.g., Brooks 2006; Goble 1999, 247–49; Taylor 1999; R. White 1995). Bureaucratic self-interest led to "institutionalized conquest," in the words of water scholar Ellen E. Wohl, and "seeing like a state," in the memorable phrase from political anthropologist James C. Scott (Wohl 2004, 176–221; Scott 1998). That is, bureaucratic initiatives to generate wealth guided by narrowly framed principles of utility trumped both ecosystem values and equity concerns.

Some government biologists, tribal fishers, and other observers recognized the ecological problems this controlled river system was creating and exacerbating. But when they protested, they were excluded from meetings and decisions, such as frequently occurred in the 1940s as the Columbia Basin Inter-Agency Committee (CBIAC) helped decide the future of the Basin's development (Brooks 2006, 93–117). At other times, agencies simply did not care. For instance, the head of the Army Corps of Engineers reportedly stated, "We do not intend to play nursemaid to the fish" (Goble 1999, 248). Functioning ecosystems and healthy fisheries were not the goals of mid-twentieth-century basin development.

Ecological and economic uncertainty had been unsettling to people in the Columbia Basin, especially policymakers and resource managers. Governments' efforts over these decades had been dedicated to minimizing uncertainty in natural and human systems by asserting greater control and rationalizing the river system into what historian Richard White (1995) referred to as an "organic machine." Bureaucrats sought to produce more salmon in mass-production hatcheries to account for shortfalls based on habitat destruction, climatic changes, and over harvesting. They sought to regulate access to water and related resources through treaties with American Indian tribes and foreign nations, as well as state laws and regulations. Most visibly and powerfully, they dammed the Columbia River and its many tributaries to minimize the unpredictable damage of floods, to furnish water for irrigation to minimize the uncertainty of rainfall, and to generate hydroelectric benefits by storing the spring floods for controlled release in the summer and fall. These collective efforts largely were designed to control nature for maximum human benefit, usually defined strictly in economic terms.

A third of the Columbia River, though, rested in British Columbia, and that portion of the river remained largely undeveloped in the 1940s. It became clear to technological utopians and advocates of maximum control for greater wealth in the U.S. that removing uncertainty and developing the river resource fully depended on coordinating with Canada.

The Binational Relationship

The Columbia River Treaty structured a relationship between two nations that continues to evolve. The transnational trends are interesting. Formal cooperation

in the management of shared waters along the U.S.-Canada border is, historically speaking, a rather modern phenomenon. In the nineteenth century, relations between the two nations were competitive rather than cooperative. Each nation remained largely insular and somewhat distrustful following the parting of ways during the American Revolution and due to contentious boundary disputes (e.g., the division of the Oregon Country in 1846). In the nineteenth century, Canadians jealously guarded their lands and resources, and viewed their southern neighbors as aggressively expansionist—with good reason (Reimer 2002; Coates 2002).

Yet even in the midst of the United States' rush of imperial adventures in Latin America and the Pacific in the 1890s, that distrustful relationship began to change (LaFeber 1998). Americans and Canadians increasingly recognized their common interests and sought opportunities for enhanced trade and cooperation. The ratification of the U.S.-Canada Boundary Waters Treaty of 1909 was one important step in this direction. It established the International Joint Commission (IJC), which just celebrated its centennial in 2009. The treaty and the IJC marked a passage of sorts, reflecting the contentious past while ushering in a new era of cooperation. Established by the two nations primarily to adjudicate conflicts over shared boundary waters, the commission evolved during the twentieth century to also promote cooperative development, as in the case of the Columbia River. At the request of the two nations, the IJC investigated opportunities for U.S.-Canadian cooperation in developing the Columbia River from 1944 to 1959, leading up to the drafting of the Columbia River Treaty (Bloomfield and FitzGerald 1958; Mouat this volume).

Old habits died hard, though. Many business and opinion leaders in the U.S. continued to covetously eye Canada's water, power, timber, and fish during the twentieth century, while Canada continued to zealously guard them. International relations remained an uneasy mix of cooperation, complaint, and dispute resolution. The International Pacific Salmon Fisheries Commission (IPSFC), established in 1937 by the U.S. and Canada, exemplified this. While the IPSFC sought to resolve conflicts over the Fraser River sockeye fishery and equitably divide the catch between U.S. and Canadian fishers, it also sought opportunities for cooperation in regulating the fishery, restoring habitat and depleted runs on the Fraser, and conducting biological research (Evenden 2004; Taylor 2002).

Relations over the Columbia River fit this pattern of emerging cooperation from the 1930s to the 1950s. Prior to this period, Canadians developed their electric power grids in an east-west orientation rather than north-south, keeping Canadian resources in Canadian hands (Stadfeld 2003). They passed laws discouraging or prohibiting both water and power exports to the U.S.[3] To the south, Americans developed the Columbia River Basin paying little heed to how it might affect Canadians, as, for example, when Grand Coulee Dam blocked all salmon migration

upstream into Canada. Still, there were notable efforts to get beyond mere conflict resolution and cooperate for mutual benefit in the management of natural resources. The United States was especially enthusiastic about comprehensive river basin planning and even produced a series of weighty government tomes under the series title "Our Rivers: Total Use for Greater Wealth." The volume on the Columbia River, prepared by the U.S. Bureau of Reclamation, appeared in 1947 and acknowledged "a broad mutuality of interest" between Canada and the U.S. and the desire for "appropriate coordination of plans for resource development through international agreement" (U.S. Department of Interior, Bureau of Reclamation 1947, 47).[4]

In the 1940s, through the IJC, the United States began pressuring Canada to cooperate on the joint development of the Columbia River. The U.S. was less interested in joint benefits than in enhancing flood control and hydropower system performance on its reach of the Columbia, but to achieve its goals required cooperation and the negotiation of shared costs and benefits. So the two set out to cut a deal that would benefit both nations. Treaty negotiations set a precedent for a much freer and more coordinated north-south flow of water and power and for shared responsibilities and joint development, but it was all framed in what Tina Loo, following James Scott, calls a "high modernist" intellectual milieu (Loo 2004; Scott 1998). Considerations of equity and efficiency profoundly influenced the negotiations, but the U.S. and Canadian calculus for measuring efficiency and equity remained very narrowly defined, reflecting the culture of "total use for greater wealth" in an age of technological enthusiasm.

In this period, the IJC produced several reports associated with the treaty negotiations that reveal these perspectives well. Consider a representative report prepared by the International Columbia River Engineering Board in 1959 for the IJC. This report catalogued the Basin's ecology and resources, and it discussed various development options. Great details explained flood damages, hydroelectric development, and economic resources. A few pages, at most, discussed issues related to tribal fishing rights or local communities threatened with removal because of the damage to the fishery and proposed dams. Indicative of this approach was the comment: "No specific fish and wildlife studies were made for this report. However, responsible agencies have the problems under study. Indications are that ways and means may be devised to satisfy the requirements of the water resource development programs, and those of the fish and wildlife resource as well. Research programs to be carried on by these agencies should lead the way towards solving conflicts of interest." Such faith that some "responsible" parties would solve problems necessarily led to disconnected development programs that neglected one or more central aspects of the river and social systems. The conclusion to the *Water Resources of the Columbia River Basin* report included eighteen specific recommendations.

They all boiled down to cooperative development of the river for greater power generation. They identified no obstacles to successful implementation, no problem with engineering the river into a better power generator, no equity concerns, no significant environmental constraints (International Columbia River Engineering Board 1959, 60, 109–10).

The treaty itself, signed in the very last days of President Dwight D. Eisenhower's administration, also incorporated a narrow range of values. Indeed, it is difficult to even recognize a river in the treaty language. A pulsing, vibrant, life-giving force became reduced to acre-feet of storage, kilowatt hours, and dollars. Phrases in the treaty's preamble reinforced its ultimate—and arguably only—purpose:

> *Recognizing that the Columbia River basin . . . contains water resources that are capable of contributing greatly to the economic growth and strength and to the general welfare of the two nations, and*
> *Being desirous of achieving the development of those resources in a manner that will make the largest contribution to the economic progress of both countries and to the welfare of their peoples of which those resources are capable, and*
> *Recognizing that the greatest benefit to each country can be secured by cooperative measures for hydroelectric power generation and flood control, which will make possible other benefits as well* (U.S. Department of the Interior 1971, 2).

Instrumentalist language reflected the narrowly conceived utilitarian purposes of the Columbia River Treaty. There was no disguising its primary purposes and the consensus between nations.

When negotiating the treaty, the fundamental goal for both sides was to build dams to enhance river control and hydropower output to generate economic benefits for the binational region. The mid-century consensus regarding comprehensive river basin development, the primary focus of the treaty negotiators on costs and benefits, and the view of the Columbia River as a controllable natural resource greatly simplified the issues in ways that environmental managers today can only regard wistfully. The Columbia River Treaty seems a natural outcome of its historical milieu in which B.C.'s Social Credit government, the U.S. government, and the Northwest states all dreamed the same dream of total use for greater wealth (Fisher and Mitchell 1996; Belshaw and Mitchell 1996).

The Columbia River Treaty in a Transitional Context

Just as negotiators were no doubt congratulating themselves on a job well done, larger contexts shifted. The Columbia River Treaty was indeed a product of its time. Had it been negotiated a decade earlier or later the outcome would likely have been different. Much changed in the legislative landscape after the United States and Canada ratified the treaty. In the United States changes were afoot that challenged

the total use for greater wealth consensus. In the same year the treaty was ratified, the U.S. Congress approved the Wilderness Act (1964), establishing a national land preservation policy endorsed by a growing number of Americans skeptical that development was always and everywhere a good thing. In the next dozen years, a remarkable reformation of environmental law permanently changed the landscape of natural resource policy and development. The U.S. Congress enacted the Wild and Scenic Rivers Act (1968), the National Environmental Policy Act (1969), the Clean Air Act (1970), Clean Water Act (1972), the Endangered Species Act (1973), the Renewable Resources Planning Act (1974), the Eastern Wilderness Areas Act (1975), and a veritable flood of laws in 1976, including the National Forest Management Act, Federal Land Policy and Management Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. Environmental management was transformed (Andrews 1999, ch. 14).

Collectively, these laws reflected changing environmental and political values. Further, they helped drive sentiment in favor of a more cautious and complex view of natural resource management. The laws also significantly democratized the decision-making arena, requiring greater federal agency openness, assessments and disclosure of social and environmental impacts of proposed developments, and extensive public participation through hearings and public comment periods. More information flowed, more people got involved, and more voices came to the table. The new environmental governance placed limits on agencies responsible for resource development and required multidisciplinary planning that significantly weakened the hegemony of economists and engineers. In addition, it empowered environmentalists, biologists, and affected communities to object to plans and demand accommodation and mitigation. In essence, decision making slowed down and became more complex but also better reflected the pluralist values of society and ecological complexities (Hoberg 1992). A similar reformation of environmental and natural resources policy occurred in Canada though not so quickly as in the U.S. (Hessing et al. 2005, ch. 2, 3, and 5; Boyd 2003, ch. 2–5).

This precedent-setting reformation of laws and values between 1964 and 1976 impacted river development all over North America, including the Pacific Northwest. While voices have long risen in opposition to damming rivers, those who advocated structural river control enjoyed essentially free rein in management regimes from the Progressive era until the 1960s.[5] But the tide was already turning during the Columbia River Treaty negotiations. In fact, the treaty might be seen as the culmination of the era of mega-river development schemes—at least south of the forty-ninth parallel. In the decade before the treaty was ratified, engineers completed six mega-dams on the Columbia River main stem: Rock Island Dam (1953), McNary Dam (1954), Chief Joseph Dam (1955), The Dalles Dam (1960),

Rocky Reach Dam (1961), and Priest Rapids Dam (1961). Only two dams had been built on the main stem earlier (Bonneville in 1937 and Grand Coulee in 1942) and only two dams have been built on the main stem since (Wells in 1967 and John Day in 1971). The river development elite in the U.S. turned to Canada once they had built out all the good dam sites in the U.S. portion of the river. British Columbia's Big Dam era (e.g., the Columbia and Peace River projects) ended later than in the U.S., in part because it started later. All of the main stem Columbia River dams in B.C. were built after and resulted from the 1964 Columbia River Treaty.

South of the border, where the impetus to develop the Canadian portion of the Columbia River originated, the big dam era was winding down as opposition to dams ramped up. The first shot across the bow came in 1955 when environmentalists successfully blocked a federal government proposal to build a large dam and storage reservoir at Echo Park in northern Utah at the confluence of the Green and Yampa rivers. More ominously, the Colorado River Storage Project Act of 1956 forbade the construction of any Colorado River project dams in any national park or monument (Harvey 1994). Closer to home in the Columbia Basin, the federal government's Hells Canyon High Dam proposed for Idaho's Snake River Canyon went down to defeat, mostly due to opposition from Idaho Power Company, which wanted to build three smaller dams in Hells Canyon, and a later U.S. Supreme Court decision that asserted the public interest of free-flowing rivers might be greater than any potential hydroelectricity generated from another dam (Brooks 2006, Sowards 2009, 120–22). Northwest environmentalists successfully resisted proposals to dam Idaho's Salmon River, today a designated Wild and Scenic River. The lesson of these defeats was not lost on the federal dam-building agencies. Instead of pushing for more American dams, they pushed for Canadian development from which they could import the benefits while exporting the social and environmental impacts. Consistent with their governing priorities, the Social Credit government in B.C. willingly obliged after extracting fairly generous payments and terms (Belshaw and Mitchell 1996, 328).

However, British Columbia was not without its dam opponents. They were just more concentrated on the west side of the Cascades and focused primarily on salmon-bearing streams, especially the Fraser River. In fact, historian Matthew Evenden makes a convincing case that fish advocates in B.C. were better organized, more politically influential, and more effective in fighting dams than fish advocates in the U.S. Northwest. Commercial, tribal, and provincial fishing organizations in B.C, supported by U.S. commercial fishers and state and federal fish agencies south of the border, succeeded in taking all proposals for main-stem dams on the Fraser River off the table by 1958. The B.C. government's growing interest in Columbia and Peace river development coupled with pressure and incentives from the U.S. for

cooperative development of the Columbia Basin, convinced B.C. Premier W.A.C. Bennett to abandon the Fraser and focus on the Columbia (Evenden 2004). That maneuver provided substantial impetus to the Columbia River Treaty.

B.C. eventually built three dams on the Canadian portion of the Columbia River: Keenleyside Dam (1968), Mica Dam (1973), and Revelstoke Dam (1984). At the same time, the province built two large dams on the Peace River in northeast B.C.: W.A.C. Bennett Dam (1967), one of the largest earthen dams in the world, and the nearby Peace Canyon Dam (1980). By the 1980s, the Big Dam era in both B.C. and the United States seemed over. No new large dams have been built in the U.S. since 1980. British Columbia took a hiatus from mega-projects for a couple of decades but is now resurrecting plans for a third dam on the Peace River known as "Site C."[6] In tune with the contemporary milieu of environmental values, equity concerns, and public participation in decision making, opposition to the Site C proposal is building in parallel with the efforts of the proponents to generate support.[7] Its future at this point remains uncertain.

The controversy over Site C is a microcosm of the complex forces at play in river development schemes in this new century—the same forces that will shape Columbia River Treaty renegotiations a few years hence. Renegotiating the Columbia River Treaty will be much messier than the initial negotiations. Governing agencies must consult more broadly than in 1960, involve the public in analysis and planning, assess and disclose environmental and social impacts, subject any claims regarding project costs and benefits to public scrutiny, address more than economic efficiency in negotiations, accommodate values pluralism, and see rivers as ecosystems rather than as plumbing. In short, decision makers will have to embrace complexity and uncertainty, and settle for more humble objectives in their desire to "control" nature for human benefit. These changes are products of decades of historical developments since 1964.

Efficiency and Equity

Most of our institutions are designed to achieve social objectives—to establish rights and responsibilities, to allocate costs and benefits, and to identify and solve problems. The Columbia River Treaty exemplifies this, as multiple authors in this volume demonstrate. The treaty confirmed rights to water and power, established bi-national responsibilities for developing the river, sought to equitably distribute the flow of dollars and electrons from joint development, and hoped to alleviate the costs and hardships of damaging floods on the lower Columbia.

If we are optimists, we might rightly be proud that the treaty achieved most of its purposes. The dams were built, storage achieved, downstream power and flood control enhanced, and benefits shared between the U.S. and Canada. But this rationalist view of the treaty and of our laws and institutions in general can

be easily challenged. By tilting our view a little we can see the other side of the coin: inefficiencies, inequities, and worsening environmental problems. How we evaluate the treaty and the institutions it generated depends on our point of view—specifically, what we consider important and what factors go into our evaluation calculus. Not surprisingly, these criteria change over time and place according to historical context.

For example, in 1967 Resources for the Future economist and Columbia River Treaty analyst John Krutilla, an American, argued that the treaty negotiations resulted in compromises that made the choice and design of projects inefficient. From a purely economic calculus, he argued, the two nations would have been better off developing their own reaches of the river separately (Krutilla 1967, 10–11, and chs. 4 and 5). In contrast, Neil Swainson, a Canadian writing about a decade later, argued that the treaty drafters eschewed narrow national interests and strict efficiency considerations in order to optimize a *joint and equitable* distribution of development costs and benefits on this transboundary river (Swainson 1979, 5–11).[8] Using economic efficiency as the prime consideration, Krutilla judged the treaty unfavorably based on how much bang the U.S. got for its buck. With international cooperation in river development as the goal, Swainson judged the treaty favorably based on how equitably the countries shared costs and benefits.

The above example introduces the tension between managing for efficiency and managing for equity. Krutilla complained that the treaty was inefficient because it obligated the U.S. to build a dam on an inferior site (Libby Dam) while it did not obligate Canada to build the much more efficient High Arrow Lakes Dam. Instead, the treaty endorsed a lower dam at Arrow Lakes in part due to public opposition to the high dam in Canada. J. W. Wilson, in his 1973 book *People in the Way*, painted a sympathetic portrait of the communities displaced by the Arrow Lakes dam, lamenting how the "progress" promised by the efficiency experts really meant gains for some and losses for others. BC Hydro had hired Wilson to coordinate the relocation efforts at Arrow Lakes, but his work there left him ambivalent about Columbia Basin development. Extending Wilson's critique, historian Tina Loo has recently argued that the narrow "modernist" lens of the treaty negotiators led to regional and class-based inequities in which rural communities in B.C.'s Columbia Basin were sacrificed to benefit urban power consumers and U.S. economic interests, a story increasingly common in post–World War II North America. Loo not only questioned the value and need for *any* dam at Arrow Lakes, but she challenged the whole comprehensive river development scheme envisioned in the Columbia River Treaty (Wilson 1973; Loo 2004, 161–96).

When viewed from an efficiency perspective, sacrificing the lives and livelihoods of a few for the benefit of the many appears rational. When viewed from an equity perspective, consistently advantaging one group over another appears unfair.

Drawing from the work of political scientist Helen Ingram, we suggest that good public policy seeks both efficiency and equity, and when the two are at odds a balance must be struck between them (Whitely et al. 2008). An efficient allocation of resources is of little use if it so violates principles of fairness that it generates social unrest and resistance. On the other hand, resource allocations that pay too little attention to economic efficiency are often fiscally unsustainable. We need a good measure of both.

The other principle suggested by these examples is that the calculus for assessing efficiency and equity in the management of the Columbia River ought to be as broad as possible—and it has not been. Maximizing upstream storage for the least cost is too narrow a criterion for "efficiency." Likewise, sharing the downstream power benefits of upstream storage is too narrow a principle for equity. There are more interests at stake than just the two nations, and the river is more than just a giant power stream. Without aligning diverse economic, political, and social agendas within ecological limits, any planning is doomed in the long run.

Admittedly, this can muddy the waters. Presumptions are questioned, conflicts highlighted, the decision process slowed. But caution and tempered ambitions can be an antidote to the hubris that has marred many of the river development schemes of the twentieth-century world. Although nature and society have always been complex and uncertain, our natural resource managing policies and institutions have been routinely and naively reductionist. Simplifying the factors we evaluate has made decisions easier, but it has not usually made them better. Just as we must accept complexity and uncertainty in nature, we must also embrace those characteristics in our societies.

To the Future from the Past

The past produces the present and influences the future. Historians cannot predict the future, and so we cannot predict with certainty how renegotiations will proceed. But we can be certain that historical context will inevitably shape those renegotiations. The century of changes we have analyzed allows us some perspective to contextualize the upcoming renegotiations, recognizing continuity and change, evolution and disjunction.

What likely will be the issues and pressures that drive renegotiation of the treaty in the next few years? How will our contemporary historical context shape U.S.-Canada relations in the next decade? Just like fifty years ago, energy supply is likely to be front and center in the negotiations. In 1960, the U.S. pushed for the Columbia River Treaty mainly to enhance power generation at American dams along the Columbia River. It needed more electricity and was running out of good dam sites. B.C. had plenty of good, large, undeveloped dam sites left, so the two nations cut a deal. Today, increases in energy consumption, especially electricity, are

very likely to continue unabated for the foreseeable future, particularly with the trend toward plug-in hybrid and electric cars (replacing petroleum-based energy with electrical energy) and the increasing role of the Internet in modern life.[9] (Internet server farms are among the region's biggest consumers of electricity.)[10] Concern for global climate change and the imposition of carbon emission caps will discourage coal- and natural gas-fired power plants in favor of hydropower, nuclear, wind, and solar. The combination of those two trends will likely renew pressure for the development of more hydropower dams in the basin. However, unlike the early 1960s, there are few sensible places left for major dams in the basin, and public and professional opposition to new dams is much stronger on both sides of the border than fifty years ago. New dams are highly likely to be on the agenda, but much less likely to be an approved centerpiece of any future treaty negotiation. Not just because of organized opposition, environmental impacts, and poor cost-benefit ratios, but also because alternative clean energy technologies (wind, geothermal, and solar) are for the first time economically competitive with conventional energy sources and growing worldwide at a record pace, faster than other competing forms of electrical production.[11]

Joint management of the river and "downstream benefits" are likely to play a key role again in future negotiations. But what are the U.S. and Canada jointly managing? As in 1960, hydropower system performance certainly will be front and center, with Canada again bargaining for a fair share of the downstream benefits to U.S. hydropower production attributable to its storage reservoirs. Flood control played a critical role in the original treaty negotiations, but with few options for large new storage dams in the Columbia Basin, it is doubtful that flood control will play a significant role in treaty renegotiation unless it involves payments to Canada for downstream flood control benefits from its *existing* storage reservoirs.

Unlike 1960, it is very likely that salmon will play a bigger role in renegotiation. While salmon were hardly even mentioned in the context of the original treaty (Grand Coulee Dam had already blocked all upstream salmon migrations), salmon restoration in the lower river is now a billion dollar business prompted by the Endangered Species Act, and water releases for fish passage are likely to be on the agenda. Although in B.C. concerns for fisheries have been fairly well-integrated with power planning since at least the 1940s, it was not until 1980 that the Northwest Power Act married power planning with fish and wildlife planning through the aegis of the Northwest Power Planning Council (Evenden 2004, ch. 6; Lichatowich 2001, ch. 8). The close coupling of fish and power will remain with us for the foreseeable future.

Similarly, when the original treaty was forged, Native claims to fish and to water were scarcely mentioned, and Native nations were not involved in the negotiations. Since then, indigenous peoples have experienced cultural and political revitalization

in both the U.S. and Canada, rooted significantly in issues related to natural resource management and sovereignty (Glavin 1998). In the U.S., long ignored nineteenth-century treaty rights are now being enforced, new laws have strengthened tribal authority and autonomy, and tribal governing institutions play significant roles in natural resource management in the region. Meanwhile in British Columbia, the B.C. Treaty Commission is negotiating treaties with Canadian First Nations since they never relinquished their land claims (www.bctreaty.net). As a result, issues of sovereignty and rights to the resources that are central to the Columbia River remain unresolved and fluid. Undoubtedly, any future negotiations will involve tribes as full partners.

While the past's painful inequities will echo through indigenous peoples' roles in the renegotiation process, it remains to be seen whether the historically suspicious and adversarial relationship that periodically recurred over the past century between Canada and the United States will hamper the process. National self-interest, of course, will play a large role, but for the past two decades, the bi-national Pacific Northwest has worked hard to integrate their economies for future development. The North American Free Trade Agreement (NAFTA) is but the most obvious example. In the 1990s, regional planners and other political and economic theorists envisioned a future in which British Columbia and the American Northwest would be well-integrated into a larger region to be known as Cascadia, the hallmarks of which would be a clean, vibrant, globally oriented and environmentally friendly economy (Coates 2002; Kaplan 1999, pt. VI). Such an economy will depend in part on power from the Columbia.

Whether such a joint vision can carry the day against global economic and ecological uncertainty remains to be seen. A successful treaty renegotiation will join equity to efficiency in planning for the Columbia Basin's future, and craft new institutions that are flexible, adaptive, and responsive to changing and uncertain economic needs, social values, and environmental priorities.[12] Whether the biologists, engineers, economists, lawyers, and policymakers can approach the Columbia River with humility—instead of hubris—and a sense of its past complexity—instead of its future certainty—and think like a river—instead of a state or a market—are perhaps the most critical issues for the renegotiation agenda.[13]

Notes

1. Mathews 1910, 63–64, 139, 267–81, and passim, quotations from 64, 124, 267, 270. Emphasis added.

2. Terms like "saved," "beautiful," or "lovely" have transformed in the last century, revealing the ubiquity of changing values. A century ago, reformers and visionaries who cared about nature and society sought to control rivers to make them regularized, dependable, and peaceful components of a bucolic pastoral human landscape. Then, like the proverbial machine in the garden, the engineered river presented a contradictory reality:

a large measure of control but also a large measure of loss and disappointment. Society wanted technology to furnish security, modernization, and wealth, but it was unprepared for tradeoffs. In other words, the realities of river development failed to match Mathews' and others' dreams. The utopian dreams of the technocrats eventually lost luster and fell out of favor. Those who benefited from the redistributed wealth embodied in these development projects continued to drive them along despite objection. But by the 1960s and 1970s, the tide had turned. All the sensible projects had been built, along with many unsensible ones. Those who cared about nature and society defined "save," "protect," and "beautiful" quite differently.

3. Prior to 1963, Canadian law forbade the export of electric power to the U.S. (Krutilla 1967, 12).

4. The report with additional comments from the affected states and federal agencies was reprinted in House Document 473, 81st Congress, 2nd Session (February 1950).

5. Protest against dams has a long history in America. U.S. state and federal laws throughout the nineteenth century sought to regulate activities that harmed the public interest in rivers, including harm to fisheries, water quality, and navigation. Indicatively, the 1849 state constitution of Oregon forbade any obstruction blocking any stream or river in which salmon spawned. Opposition to damming rivers was widespread and common in the nineteenth century, though increasingly drowned out by the prophets of progress by the early twentieth century. For a two-century view of this subject profiling Maine and Washington State, see Jeffrey Crane, *Finding the River,* 2011).

6. The main proponent of the Site C Peace River Dam is the provincially owned power company BC Hydro. Its public information on the Site C proposal is available at: http://www.bchydro.com/planning_regulatory/site_c.html

7. For one view of the organized opposition, see: http://www.ecobc.org/peace_valley_no_site/

8. Swainson asserts that "Canadian decision makers were genuinely concerned with the best interests of all the parties involved" and that there was a "genuine perception of mutual responsibility" (10–11).

9. The U.S. Energy Information Agency forecasts that energy consumption will continue to rise through 2030, even though it now predicts that per capita consumption will decrease due to higher prices and efficiency upgrades promoted by statutes and incentives. See: http://www.eia.doe.gov/oiaf/aeo/overview.html section titled "Energy Intensity."

10. See http://seattletimes.nwsource.com/html/localnews/2003114987_microsoft09.html and the National Public Radio story available at: http://www.npr.org/templates/story/story.php?storyId=5545145

11. The U.S. Energy Information Agency projections for energy production/consumption by source to 2030 indicate no increase in hydropower and large increases in non-hydro renewable energy. In fact, the EIA predicts that renewables will increase faster than any other source of electricity and will supply almost the same amount of power as nuclear energy by 2030.

12. Pragmatic adaptive management is one perspective that incorporates change and uncertainty into natural resource management regimes. See Langston 2003, ch. 6.

13. Thinking like a river plays off Aldo Leopold's famous essay, "Thinking Like a Mountain," from *A Sand County Almanac* and has been used in Worster 1993, and Scott 1998.

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