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Parcelling out the Watershed: The Recurring Consequences of Organising Columbia River Management within a Basin-Based Territory

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ABSTRACT: This article examines a 75-year history of North America's Columbia river to answer the question: what difference does a river basin territory actually make? Advocates reason that river basins and watersheds are natural and holistic water management spaces, and can avoid the fragmentations and conflicts endemic to water management within traditional political territories. However, on the Columbia, this reasoning has not played out in practice. Instead, basin management has been shaped by challenges from and negotiations with more traditional jurisdictional spaces and political districts. The recurring result has been 'parcelling out the watershed': coordinating river management to produce a few spreadable benefits, and distributing these benefits, as well as other responsibilities and policy-making influence, to jurisdictional parts and political districts. To provide generous spreadable benefits, river management has unevenly emphasised hydropower, resulting in considerable environmental losses. However, benefits have been widely spread and shared – and over time challengers have forced management to diversify. Thus a river basin territory over time produced patterns of both positive and negative environmental, social, economic, and democratic outcomes. To improve the outcomes of watershed-based water management, we need more interactive and longer-term models attentive to dynamic politics and geographies.

KEYWORDS: River basin management, watershed management, comprehensive river basin development, benefits distribution, water management history, Columbia river

INTRODUCTION: THINKING CRITICALLY ABOUT THE CONSEQUENCES OF RIVER BASINS AND WATERSHEDS AS GOVERNANCE TERRITORIES

Of all the possible geographic territories within which to manage or govern water resources, none have been advanced more often or with more enthusiasm than the river basin and the watershed. In the last quarter century, thousands of new river basin and watershed management institutions have been created across the world (see e.g. Kemper et al., 2005; FAO, 2006; WRc, UK, 2007; Kennedy et al., 2009; EPA, 2011a, 2011b). This global phenomenon is a response to a fundamental geographic challenge to protecting river resources and systems: rivers and water flow across political and other human boundaries (National Research Council, 1999; Millington et al., 2006a; Molle, 2006). Unfortunately, in the enthusiasm to embrace what seems a compelling solution, there has been limited critical thinking about exactly what results these geographies of river governance are likely to achieve. Do watershed and river basin territories shape management policy and practice in the ways they are intended? How does reorganising management in these spaces alter social, environmental, economic and democratic outcomes? We need to ask: what difference does a river basin territory actually make?

In this paper, I answer this question for one river basin, North America's Columbia river (figure 1). I begin by uncovering the logic that is sometimes explicit but often implicit in recent watershed and river basin efforts, a logic that justifies and explains what difference a watershed or river basin territory is

supposed to make. This provides a framework with which I then compare the Columbia's history. Looking across 75 years of history up to the present day, I analyze how working within a river basin territory has *actually* shaped Columbia river managers' practice, and thereby affected social, environmental, economic, and democratic outcomes.

My analysis reveals that the results of a river basin territory in the Columbia river have been markedly different from what advocates hope such territories can achieve. Advocates' logic suggests that river basin and watershed territories, because they are organised within natural boundaries and therefore mark holistic spaces, can overcome the fragmentations and conflicts of conventional government and politics. On the Columbia, even after three quarters of a century, this hope remains unmet. Conventional governmental territories – and yes, their politics, fragmentations and conflicts – continue to be formidable political forces. Not only are they still powerful, the very practice of river basin management on the Columbia has been constituted in part by these traditional spaces and their politics. Management has been shaped and reshaped specifically by the interaction between managers and constituencies operating within a river basin territory on the one hand, and managers, citizen groups, political leaders and business groups operating within more traditional jurisdictional spaces and political districts on the other.[1]

Across 75 years of Columbia river basin management, this interaction has produced a recurring pattern that is distinct from the holistic, efficient management for which many hope. I call this pattern 'parcelling out the watershed'. In this phrase I intentionally juxtapose the word 'watershed', which carries a holistic sense of unity and togetherness, even harmony, with the notion of dividing up resources, or spoils, among a group of claimants. It is a dual pattern, in other words, of both unity and division. By 'parcelling out the watershed' I mean coordinating some aspects of river and basin management while distributing other responsibilities, management benefits, and policy-making influence to the basin's component jurisdictions and political districts. The more conventional political jurisdictions whose territories lie within, or overlap with, the river basin – not only countries,[2] states, and provinces, but also Native American tribes, various local governments, and political representatives' districts – have retained their own set of sometimes complementary, sometimes rival responsibilities. But they have also become spatially organised participants, constituents, and pork-barrel beneficiaries of river basin management. On the Columbia, parcelling out the watershed has repeatedly been the political price of survival for coordinated river basin management.

The implications for the outcomes of Columbia river management have been significant. To have benefits to parcel out, the unified or coordinated aspect of river management has had to be pushed and reworked to produce the maximum amount of valuable, spreadable benefits. While efficient in its way, this one-sided transformation has wreaked havoc on the river's ecosystem and its emblematic salmon – and has dramatically reduced access to these river resources by people who once depended on them, such as inland Native American tribes and coastal commercial fishermen. However, the process of parcelling out to many divided parts has meant that the benefits that *have* been produced from dams have been widely spread and shared. Also, because of claims from the basin's divided parts, over time, managers have been forced to diversify the river benefits they produce or protect, and to allow broader and more active participation in and influence over river management. While inclusive, this parcelling-out process has been expensive. Prioritising *where* to invest parcelled-out benefits has often proved politically very difficult, if not impossible. As a result, costs have risen almost without limit. 'Parcelling

[1] For some, there is an important distinction between watersheds, generally considered smaller catchments, and river basins, regarded as larger. My case study focuses on a large-scale river basin and so may be more relevant to management at this spatial scale – especially since so much of my analysis concerns the interaction between a river basin territory and smaller or overlapping political spaces. However, in my study, even small-scale political spaces such as local political districts and local governments emerge as important. These often constitute spatial divisions within smaller catchments; this suggests there may be parallel patterns at various spatial scales.

[2] To avoid confusion with US states, which play a significant role in the analysis to come, I have chosen to use the word 'country' in this article for national-level states.

out the watershed' thus has produced changing but discernible patterns of both positive and negative environmental, social, economic, and democratic outcomes.

For those who have deep knowledge of political-geographic study, water management history, or the politics of policymaking, several pieces of this analysis may come as little surprise. Scholars writing on conflict and cooperation in transboundary waters, for example, in contrast to the sometimes rosy-eyed visionaries of river basin and watershed management, never lose sight of the fact that basin management depends on the behaviour of a basin's sovereign political parts (e.g. Wolf et al., 1999; Turton and Wolf, 2000; Sadoff and Grey, 2005; Lindemann, 2008; Priscoli and Wolf, 2009; Gizelis and Wooden, 2011). Recently there has also been lively interest in the idea that benefit-sharing between countries in transboundary basins can help sustain collaboration (e.g. Litfin 1997; Turton, 2008; Yu, 2008; Alam et al., 2009).[3]

Other schools of scholars, such as environmental historians and political ecologists, have examined not only the dynamic ways sovereign political territories interact across shared environmental spaces, but the very character, politics and consequences of all kinds of environmental governance territories. They have shown that in myriad times and places, powerful people have attempted to spatially reorganise various kinds of water and other environmental management systems. Almost always, others have challenged these efforts, and the ensuing conflicts have usually left mixed and overlapping legacies on water, land, people, and societies, and on the institutions that govern and regulate them (e.g. McEvoy, 1986; White, 1995; Zimmerer, 2000; Mansfield, 2001; Cioc, 2005; Pisani, 2002; Swyngedouw, 2004; Brown and Purcell 2005; Zimmerer, 2006). Such back-and-forth, dynamic processes can be seen as environmental examples within a much larger set of efforts, contests, and results in what some call the re-scaling of governance[4] (for just a few examples from several different fields examining different places and times, see e.g. Horwitz, 1977; Skowronek, 1982; Brenner, 2004; Fall, 2010; also Reed and Bruyneel, 2010 on rescaling environmental governance in context of other fields).

A welcome few have begun to reveal the political complications and negotiations inherent to the imposition, character and consequences of river basin and watershed governance territories in particular. Blomquist and Schlager (2005) and Cohen and Davidson (2011) point to the many challenges when people try to institutionalise some kind of governance or management within watershed units. Molle (2006, 2008, 2009a, 2009b) and others (e.g. Warner et al., 2008) have historicised and thereby politicised the very promotion of river basin and watershed management, showing that the idea of organising water management within watershed or river basin geographies has come in repeated waves over the last century and a half or so, each wave associated with profound political-economic and ideological change.[5] A few scholars have begun to look critically at how new hydrologically based geographies of management have interacted with traditional jurisdictional spaces and administrations. Svendsen et al. (2005), for example, suggest that when river basin governance is imposed, it is usually a hybrid of basin and existing governance structures, while Moss (2006) and Molle and Hoanh (2011) provide rich case studies showing this interaction produces varied results.

Finally, those who have worked in policy-making know from experience that policymakers working across large and even small governance spaces must negotiate with, and find ways to provide benefits for, constituent jurisdictions, districts, and administrations within their territory. They know, too, that

[3] A planned future article will offer a more sustained engagement with this literature.

[4] I do not use the word 'scale' to describe such processes, because in the case of river basins and watersheds I find it much clearer to define this word in its narrow technical sense of relative size or area. As the multi-jurisdictional-level, regional-scale, basin-centred territory of Columbia river management shows, the scale, level, and territory of governance are not necessarily congruent, nor are their hierarchies the same (see also Vogel 2007a). Hence my use of the word 'territory' to name the spatial area within which Columbia River management is analysed and practiced.

[5] Friedmann and Weaver (1979) and Weaver (1984) also offered incisive analyses of the waves of river basin management and related 'regional' development, and their links to changing political economies. They wrote as the last major wave of river basin management came to a close, and their insights seem mainly to lie forgotten by the promoters of river basin and watershed management today. See also Teclaff, 1967; Wengert, 1980; White, 1998.

for this reason policy often works to provide for local economic development according to the desires of local political and business leaders.

My work builds from all these insights. It offers a synthesis and historically built case study analysis that together add three crucial elements. First, I offer a direct point-counterpoint analysis to show quite specifically where and how the logic that underlies people's hopes for the transformative potential river basin and watershed territories broke down on the Columbia river – and where it was sustained. Second, I reveal recurring patterns in the ways that management within a Columbia basin-based territory has had to compromise and hybridise in order to meet challenges and demands from more traditional political jurisdictions, districts and administrations. Finally, I investigate these questions over a long time horizon of three quarters of a century. This allows me to show that within these recurring patterns of negotiation and compromise, there has also been potential for change – in some ways moving closer, after decades of time, to the ideals of river basin and watershed management.

This study has potentially profound implications. Though my analysis is on one river basin, the alternative logic it reveals may be present elsewhere. It suggests that to predict the practices and outcomes of organising water management within river basin and watershed territories, we need a more interactive and longer-term model, based on recurring negotiations and ongoing deals between basin-organised institutions and constituencies and those organised in more traditional jurisdictional spaces and political districts. Without such a model, these interactions may produce results that defy our expectations of river basin and watershed management, leading to repeating partial successes and frustrating failures. With such a model, however, policymakers and analysts may be able to enhance positive practices and outcomes of river basin and watershed management while mitigating inevitable negatives. Deeper understandings of politics and history, and more critical thinking about the consequences of river basin and watershed territories, in other words, can do more than temper the sometimes overly enthusiastic effort to reorganise water management wholesale. They can also help improve the institutions, practices and outcomes of river basin and watershed management.

WHAT DIFFERENCE IS A WATERSHED OR RIVER BASIN TERRITORY *SUPPOSED* TO MAKE? RIVER BASINS AND WATERSHEDS AS NATURAL AND HOLISTIC

> *[I]t is essential to take a holistic approach to integrated water resources management (IWRM). Decisions must be… within a framework at the catchment, basin, and aquifer level, which are the natural units by which nature manages water (World Water Commission, 2000).*
>
> *The best model for a single system of water management is management by river basin – the natural geographical and hydrological unit – instead of according to administrative or political boundaries (European Commission, 2011).*
>
> *To help address the problems created by multiple and often conflicting jurisdictions, authorities, and program objectives, we should organise or integrate water planning, programs, agencies, funding, and decision making around natural systems – the watersheds and river basins (Western Water Policy Review Advisory Commission, 1998).*

What difference is a watershed or river basin territory *supposed* to make? In this section I tap documents from development banks, non-governmental organisations, government agencies, and scientists, to outline the asserted or assumed logic that links hydrologically defined spaces to positive social, environmental, economic, and democratic outcomes. Whether explicit or implicit, the causal

sequence leads from a) natural boundaries to b) holistic spaces to c) holistic management to d) positive social, environmental, economic and democratic outcomes.[6]

A key that emerges is a repeated contrast between hydrologically based governance territories on the one hand and politically based governance territories on the other. The claimed or assumed difference between these proves to be a central rationale that supports watershed and river basin management. At each logical step, the expected positive characteristics and outcomes of management within river basin or watershed territories are contrasted with perceived negative characteristics and outcomes of management within traditional government territories and administrations.

Natural boundaries

The starting premise that justifies reorganisation of water management within river basins and watersheds is that river basins and watersheds have natural boundaries. 'Natural' often means related to physical and biological processes that influence water flow, aquatic, riparian and floodplain ecologies, and river and watershed form and evolution. In this sense, 'natural' is often contrasted with 'artificial', or to human interventions or practices that interrupt, distort or degrade water or aquatic systems.

But 'natural' also is used to mean something that makes sense to people, and resonates with their own sense of connections, identity, logic, and place. As suggested by the quote from the European Commission at the start of this section, in the context of water management, this kind of 'natural' is most often contrasted with 'political' (see also Blomquist and Schlager, 2005). The implication seems to be that river basin and watershed-delineated governance is a way to overcome or sidestep a host of complicated laws, procedures, administrations, rules, delineations, and bureaucracy endemic to conventional government.

Holistic spaces

The implication of natural boundaries is thought to be that river basins and watersheds are holistic spaces. 'Holistic' seems to mean not only integrated, but something deeper and more encompassing, more complete, in a way that transcends competitions and antagonisms. The holistic approach, says Barrow (1998), is often described by two slogans: 'everything is interconnected' and 'the whole is greater than the parts'.

In the literature promoting and describing their benefits, watersheds and river basins are seen as holistic in up to five ways. First, water runs downhill, so water quantity and quality depend on the entire basin upstream and upslope. Second, watersheds and river basins encompass the people and human practices that use and impact a watershed's or basin's water resources. A third, increasingly common way scientists see watersheds and river basins as holistic is biophysically. Aquatic and riparian ecosystems and populations are portrayed as interconnected within river basins and watersheds (Stanford and Ward, 1993; Hanski and Simberloff, 1997; Williams et al., 1997; Naiman and Bilby, 1998), while fluvial-geomorphological processes are seen to shape and reshape river systems across space and time into "a systematic physical whole" (Newson, 1997; see also Reeves et al., 1995; Reeves and Duncan, 2009).

For some, watersheds and river basins embody a fourth holism: human community. The hope seems to be that watersheds and river basins, more than traditional spaces, can bring different people together. "[W]atersheds integrate resources, environmental services, uses and users; watersheds

[6] In some ways what I produce here is an idealised and naïve vision of how river basin and watershed management are supposed to work. The two reviewers of this paper who have the deepest experience with river management policymaking suggested I was here constructing a false strawman that would be easy for me to refute. In some ways, I agree. Yet this idealised, naïve vision is reflected in documents from a host of powerful institutions and respected scientists. These kinds of romanticised notions remain powerful, and help justify a huge array of on-the-ground and in-the-water management efforts. For this reason it is worth sustained critical examination. A longer version of this section of the paper, with more quotes and descriptions showing the ways diverse institutions embrace this logic, is available at works.bepress.com/eve_vogel.

connect people who may never meet and may vary greatly in terms of wealth, livelihoods and culture" (Bernard and Young, 1997; and FAO 2003 Sassari Declaration, cited in FAO, 2007). Finally, watersheds and river basins seem sometimes to be holistic political spaces. Because they do not fit within conventional jurisdictional hierarchies and spaces, they are seen to bring different jurisdictions and agencies to cooperate, and different people to talk to one another (Doppelt et al., 1993; Kenney, 1997; Western Water Policy Review Advisory Commission, 1998).

In all these ways, the contrast is with the purportedly fragmented and conflicted spaces of traditional governments and administrations. National, state, provincial, and urban governments, and their territories and administrations are seen as divided, conflicted and difficult to coordinate. Organising governance within the seemingly holistic spaces of watersheds and river basins thus seems to offer far greater promise.

Expected result? Holistic management practices

Based on their natural-ness and holism, watershed and river basin territories are supposed to make management practice more holistic as well. Water management practice is expected to change in at least three ways. Once again, the presumed or stated contrast is with management within traditional government and administrative territories. This is summarised in table 1.

Holistic integration of goals and areas, instead of fragmented management of goals and areas.

Management practice within watershed and river basins is thought to integrate or coordinate different goals and sectors (e.g. agricultural development, hydropower, municipal water supply, protection of endangered species), as well as geographical areas (National Research Council, 1999; Millington, 2000; FAO, 2007). These are seen as separate within conventional government. Integration may not mean that the same agency or institution manages every single purpose or area. In many cases, different agencies and institutions simply coordinate with one another. But advocates suggest that by the time river basin and watershed managers are on the ground building irrigation diversions, in dam control centres controlling water flows for hydropower generation, or constructing weirs to catch migrating fish, they will have taken these sorts of interconnections into account.

Holistic benefits distribution, instead of fragmented and politically driven benefits distribution.

Secondly, the benefits of watershed and river basin management will be distributed and accessed widely and fairly. This contrasts starkly with common portrayals of business-as-usual within traditional government bureaucracies. Frequent accusations are that conventional administration and management distribute benefits mainly to elites, that patronage systems of distribution reward powerful political supporters, and that pork-barrel politics require that each governmental representative gets to claim some piece of the benefits to take home to his or her district, regardless of merit or value relative to other proposals and needs. Watershed and river basin management are asserted to protect systems shared by all, and to provide for a full range of social and environmental needs (Ingram and McCain, 1977; Barrow, 1998; Kenney, 1999; World Commission on Dams, 2000).

Holistic decision making that produces balanced management, instead of fragmented decision making that produces conflicting and one-sided management.

A key problem with jurisdictional, areal, and sectoral fragmentation in conventional water management is that different agencies do things in unconnected ways, often at cross-purposes (e.g. National Research Council, 1992, 1999; Kenney, 1999; European Commission, 2011). Politically powerful agencies can impose one-sided management, causing tremendous social dislocation and environmental damage (two US-based classics are Worster, 1985; Reisner, 1986; see also World Commission on Dams, 2000). In contrast, if management is within watersheds and river basins, the thought is that their

natural-ness and holism will lead managers and participants to consider the full range of human uses of water and water resources within the basin. As a result, they will balance out different priorities and practices (EPA, 1996; FAO, 2007; European Commission, 2011). When tradeoffs must be made, river basin and watershed managers will prioritise based on a full accounting of both market and non-market values of diverse water and aquatic functions and supplies (Rogers, 1992; Global Water Partnership, 2000; Millington et al., 2006b).

Table 1. Expected water management practices, within traditional governmental and administrative territories versus within watershed or river basin territories.

Expected within traditional governmental and administrative territories	Expected within watershed or river basin territories
Fragmented management of goals and areas. Managers focus on projects or goals in separate places, ignoring upstream-downstream and inter-sectoral connections.	*Holistic integration of goals and areas.* Managers integrate or coordinate different goals and areas within one watershed-wide institution, plan or programme.
Fragmented and politically driven benefits distribution. Managers distribute benefits based on elite dominance, patronage systems, and pork-barrel politics.	*Holistic benefits distribution.* Managers distribute water and water benefits widely and fairly, sustaining a full range of social and environmental needs.
Fragmented decision making that produces conflicting and one-sided management. Separate management agencies make isolated decisions; more powerful agencies can impose one-sided management.	*Holistic decision making that produces balanced management.* Managers consider the full range of human needs and uses of water and water resources, to build basin-wide priorities and balanced management.

Improved social, environmental and economic outcomes

If all these kinds of holistic management practice are put into place, then what kinds of outcomes are supposed to result? The expected social outcomes are that more people will be able access and use water and aquatic resources. Additionally, there will be greater social harmony and understanding, with reduced political and legal conflict. Environmentally, the effect is thought to be that many more physical and biological systems will be sustained – from basic stream recharge to protection of water quality, to better survival of juvenile fish through protection of minimum flows. The economic results expected are greater total value, with lowered costs (e.g. Doppelt et al., 1993; EPA, 1996; *Water Framework Directive*, 2000; McNally and Tognetti, 2002; Millington et al., 2006a; European Commission, 2011).

THE EARLIER WAVE OF RIVER BASIN DEVELOPMENT AS A SOURCE OF LONG-TERM STUDY

With this summary of the results that are *supposed* to derive from organising water management within river basins and watersheds, we now have a logical sequence against which to compare the *actual* consequences. In this and the next two sections, I explain and then analyze a long-term study of Columbia river basin management as a test of this logic.

My emphasis on the long term is fundamental to my approach. Why examine the consequences of river basin and watershed governance territories over the long term? Both recent and more distant history shows that these efforts often begin with considerable enthusiasm, political support and funds; and as new institutions they are relatively free to adapt procedures and administrations to varying demands. To understand their real effects, and how they compare with conventional governance

spaces and administrations, we need to investigate what happens when they, too, become hamstrung by political and legal conflict and bureaucratised; and how they evolve through changing political and economic pressures.

The problem is, the efforts which are the object of most current analyses are new – most were created in the early 1990s or later. Historical case studies like the Columbia offer neglected insight, for, as authors like Molle (2006, 2009a), Biswas (2008), Warner et al. (2008) and Barrow (1998) have shown, current watershed and river basin management share many characteristics with the previous generation of comprehensive river basin development that began with the Tennessee Valley Authority (TVA) in the 1930s and was spread around the world. Most significantly, this older generation of river basin development also elevated river basin territories as preferred management territories. As I will show in the case of the Columbia, some efforts within this wave also shared similar social, environmental, economic, and democratic goals, at least at the start. Thus examinations of older generations of river basin management are highly relevant to thinking about more recent efforts. Given this relevance, what makes these earlier case studies incredibly rich sources of insight is simply that many of them lasted for decades, and some still function today. Their longevity can provide crucial windows into the question of long-term and recurring effects of river basin territories.

However, many analysts conclude these prior efforts were failures, or at least poor models. Many were abandoned over the years. Others that have lasted, including the TVA itself, are now often accused of causing tremendous environmental damage and human dislocation (Chandler, 1984; Creese, 1990; Adams, 1993; Hargrove, 1994 Barrow, 1998; Adams, 2001; Ekbladh, 2002). In the face of these past failures, today's advocates, policymakers, and analysts of river basin and watershed management hold out the hope that this time, things can be different. They retain this hope because they locate the failures of this earlier generation of river basin management in intervening forces and factors other than the river basin or watershed itself – for example, the pressures of local interests invested in uneven social relationships (Selznick, 1949), the effort of large government bureaucracies to advance their own 'hydraulic societies' (Worster, 1985; Worster builds on Wittfogel (1957 and others)), the nationalist ambitions of newly independent states (e.g. Klingensmith, 2007), or the manipulation of 'third world' development efforts by the US during the Cold War (Adams, 2001; Ekbladh, 2002).

But what if river basin and watershed territories were part of the problem themselves? Some critics suggest that in historic efforts, organising water management and regional development within river basins contributed discursively and politically to an authoritarian and totalising control of rivers and regions that led to particularly profound dislocations and destruction (e.g. Adams, 1993; Bakker, 1999; Scott, 2006). One interpretation of this result, based on the logic uncovered in the previous section, is that these historical river basin administrations *were* able to overcome the politics of conventional jurisdictions, just as proponents of river basin and watershed governance hope. Only, instead of leading to holistic management and positive social, environmental, economic, and democratic outcomes, this ability became a terrible menace, overpowering democratic institutions and legitimate challenge.

To inform current policy efforts, we need a wider, deeper, and more sustained investigation of the role that river basin territories played in shaping politics, management, and outcomes in past efforts. The Columbia river offers a revealing case study for this kind of analysis. As I will elaborate, the institution that has been at the core of Columbia river basin management for 75 years is the closest thing to a second TVA that was ever created in the USA. This institution has faced nearly constant threat from other sources of political and legal power that are organised within more conventional governmental territories. An array of existing critical works reveals many negative social and environmental impacts of river management over the years. However, in recent years the Columbia has in many ways been at the vanguard of positive policy change like adaptive management and widely participatory planning – though it has also been subject to almost nonstop litigation for 20 years. This long and contested history makes the Columbia river a highly relevant and deeply revealing case study of the politics of a river basin-organised institution, and how these politics influence management practice and outcomes over the long term.

In the following I compare the Columbia's geographical organisation, management, and outcomes with the hoped-for consequences expected by advocates of river basin and watershed management. I show that in contrast to the logic outlined in the previous section, the characteristics and consequences of a river basin territory on Columbia river management were: a) natural *and* political boundaries led to b) a holistic *and* divided space, which shaped c) management into the recurring pattern I call parcelling out the watershed, resulting in d) deeply mixed social, environmental, economic, and democratic outcomes. These different-from-expected characteristics and consequences derive from the fact that at every step of its history, river basin management on the Columbia had to interact with, and survive, the continuing political and legal power wrought by institutions, representatives, and constituencies of conventional governmental spaces.

THE ORIGINS AND CHARACTER OF COLUMBIA RIVER BASIN MANAGEMENT

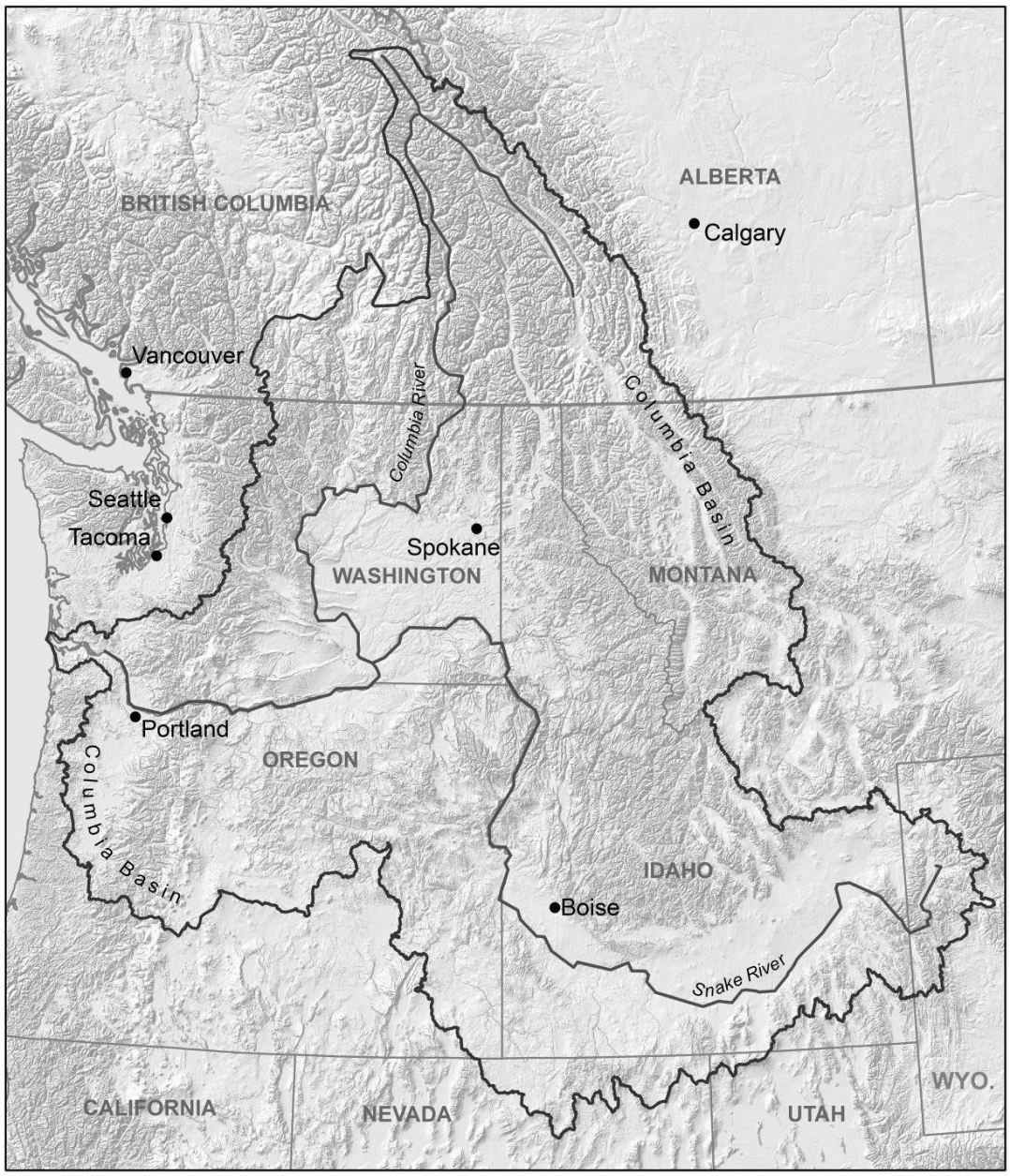
The Columbia Basin is a large basin in western North America, with about 85 percent of the basin in the US and 15 percent in Canada (figure 1). On the US side, the basin encompasses parts of seven US states, including large portions of Idaho, Washington, Oregon and Montana, while the Canadian portion of the basin lies entirely within the province of British Columbia. The river is marked by voluminous waters and a steep decline from the Rocky Mountains to the Pacific Ocean, characteristics which have supported prodigious production of the river's two most emblematic products, salmon and hydropower.

Columbia river basin management was launched in 1937 – or at least the agency that would become its institutional core, the Bonneville Power Administration, was established then. It was just a few years after the establishment of the Tennessee Valley Authority (TVA). The economic context was the Great Depression, and the political context the US New Deal, when President Franklin Roosevelt advanced federal government action as the key to returning productivity to society, economy, and environment.

These contexts were in some ways quite different from those of the current era, as were the presumed means to achieve river basin development and conservation ends. Few large dams had yet been built in the world. Major geopolitical conflicts dominated national policies and international development efforts. And, in the Great Depression, with millions out of work and leading banks and other businesses bankrupt from burst investment schemes, the emphasis was less on stakeholder leadership and market mechanisms, and more on government leadership to provide resources across wide spatial areas, to catalyze economic development (NRC, 1935; Friedmann and Weaver, 1979; Dick, 1989; Molle, 2006, 2009a).

Yet, the goals and visions were in many ways similar to those of today. The aim was to help bring people and regions out of poverty and away from misuse of resources, through balanced and inclusive development. Although there was less emphasis on ecosystems compared to today, and none on fluvial or geomorphological processes, there was considerable attention given to resource conservation. Dams were seen as vehicles for water conservation as they could retain water for use in drier seasons. Conserving forests and soils would sustain agriculture and forestry sectors over the long term, and would also protect reservoirs from silt build-up (NRC, 1936; Friedmann and Weaver, 1979; Bonneville Power Administration, 1980; Dick, 1989; Dorman, 1993; Vogel, 2007b). In the Columbia, fish also received considerable attention. River basin planners insisted that dams should have salmon passage, and they worked to designate particularly productive salmon streams within the basin that would be protected from development (Vogel, 2011).

Figure 1. The Columbia river basin (map by Lynn Songer, Eve Vogel and Richard Turk, adapted from Songer and Vogel map in Vogel, 2011).



Democratic visions were also like those promoted in current efforts. There was no emphasis on 'stakeholder' participation, but planners in the Columbia region assembled representative civic, political, business and intellectual leaders to think about social, economic, and environmental needs throughout their region (Vogel, 2011). Finally, although the preferred catchment management scale was not "the lowest appropriate level" (International Conference on Water and the Environment, 1992), the idealisation of river basins resembled that of watersheds today. River basins were seen by many advocates as natural 'regions', and regions were seen by leading intellectuals as naturally and holistically integrated areas that encompassed cities, rural areas, even wilderness. The notion of river basin-based regional development was that by fostering integrated development and conservation of a river basin, planners might help a diverse integrated region thrive and prosper by accounting for its

many parts and interconnections (Geddes, 1915; NRC, 1935; Friedmann and Weaver, 1979; Weaver, 1984; Dorman, 1993).

In the US Pacific Northwest, some clamoured for a Columbia Valley Authority to be modelled on the TVA. However, ambitions for comprehensive basin-wide governance had to be curtailed in the face of opposition from traditional jurisdictions and their constituencies. Idaho and Montana representatives feared that a basin-wide agency might make claims on their water.[7] Leaders of the basin's largest city, Portland, Oregon, wanted nothing to do with an agency that might share the benefits of nearby Bonneville dam, then under construction, with a huge multistate region. The President's Secretaries of War and Agriculture attacked the proposal, seeing it as usurping their departments' responsibilities (Leuchtenburg, 1952; McKinley, 1952; Richardson, 1973; Lang, 2001; Vogel, 2007b). In 1937 Congress created only a limited power agency, authorised to transmit and sell power from the new Bonneville dam. This would become the Bonneville Power Administration (BPA) (*Bonneville Project Act*, 1937; BPA, 1980).

Despite the agency's modest beginnings, its much-narrowed focus on electric power, and the political challenges it had already faced, leaders and associates of the new BPA retained a commitment to basin-centred regional planning for as long as they could. They led the charge to develop a coordinated river basin management system linked to a regional electric power system. The heart of river coordination became the Federal Columbia River Power System, which grew to include over two dozen federal dams whose hydropower is transmitted and marketed by the BPA within a river basin-based regional service area (BPA et al., 2001a).[8] (See figure 2c). The region's power system also became remarkably harmonised, trading power among Columbia river dams, dams on other rivers, and other generation sources, and delivering it cheaply and reliably throughout the region. In other words, what had initially seemed a very limited agency, the BPA – an agency outwardly unrecognizable as a river basin management agency – became the core of tightly coordinated river basin management linked to electric-powered economic development in the river's basin-centred region (BPA, 1980; Lee et al., 1980; BPA et al., 2001b; Vogel, 2007b). Thus was Columbia river basin management launched and initially shaped.

Detailing the rest of the history of Columbia basin management is beyond the scope of this paper, but three transformative changes deserve brief mention before the analysis that follows. All three reinforced basin-wide management and coordination, though in different ways. First, in 1964, the US and Canada ratified a Columbia River Treaty under which three large storage dams would be built in the Canadian portion of the basin, and one in the US whose reservoir would extend into Canadian territory. These dams allowed headwaters-to-mouth coordination of Columbia river flows, and this coordination was used to optimise hydropower production, within the flexible constraints of flood control requirements (Bankes, 1996; BPA et al., 2001b). Second, in 1980, Congress passed the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), which put the BPA under the advisement of a new inter-state agency, the Northwest Power and Conservation Council. The council produces a 20-year regional electric power plan every five years, prioritising energy efficiency, and also a Columbia River Basin Fish and Wildlife Program that works to protect, enhance, and mitigate fish and wildlife impacted by the Columbia river hydropower system. BPA must fund both energy conservation and fish and wildlife actions in a manner consistent with the Council's plans, and the BPA and the other federal river managers (the US Army Corps of Engineers, Bureau of Reclamation, and Federal Energy Regulatory Commission) also now have an obligation to provide 'equitable treatment' for fish and wildlife with other purposes of the hydropower system (*Northwest Power Act*, 1980; Hemmingway, 1983; Lee, 1995; Volkman, 1997). Third, in 1995 the province of British Columbia designated a portion

[7] Montanan leaders were particularly worried that a CVA might be a model for a Missouri Valley Authority, which was also under discussion. An MVA might threaten the water of eastern Montana, the location of most Montanan agriculture (McKinley, 1952).

[8] The dams are not owned by the BPA but rather the US Army Corps of Engineers and Bureau of Reclamation.

of the Canadian Columbia River Treaty benefits to be used for social, economic, and environmental wellbeing in the Canadian portion of the basin. This was a major change, for since the construction of the treaty dams this area had suffered losses of land, fish, wildlife, and recreational areas from reservoir flooding and annual drawdowns, while the rest of the province had gained most of the treaty's Canadian-designated benefit. Now a new Canadian Columbia basin agency, the Columbia Basin Trust, would invest Columbia river hydropower profits into these long-neglected communities and ecosystems. Both the 1980 and 1995 changes thus reinforced the basin organisation of management but also expanded its content to include and address many people, purposes and places that had been marginalised before.

Columbia river basin management thus achieved coordination in river flows, electric power management, and economic development. Later, even fish and wildlife and social, environmental, and economic wellbeing were added. It seems that at least in some ways, Columbia river history and management fits this logical sequence: a) natural basin boundaries brought together, even against political opposition b) a holistic hydrological, social-economic and eventually ecological space that could be c) managed in an integrated fashion. To the extent this is true, did it also produce d) better social, environmental, economic, and democratic outcomes?

A rich array of critical histories have argued that it did not produce such favorable outcomes. They show that Columbia river management offered wide economic benefits and enabled electric and economic development in many parts of the basin-based region. However, there were also significant costs. Environmental losses have garnered the most attention. Columbia river salmon numbers dropped dramatically (Dietrich, 1995; Petersen, 1995; White, 1995; Harden, 1996; Lang, 1999; Lichatowich, 1999; Blumm, 2002). Landscapes were drastically altered across the river basin, often with profound environmental harm (White, 1983; Quigley and Arbelbide, 1997). Environmental degradation was linked also to continued social inequalities. Native American fishers and non-native sportfishers who used to fish up and down the river system, as well as the commercial fishers who worked from the mouth of the river to Alaska, saw their catches decimated. Columbia river irrigation produced mainly industrial agricultural landscapes tended by poorly paid migrant and immigrant workers. Major industries like aluminium supported new and thriving small cities, but they functioned only while world markets were favourable, and in recent years most aluminium plants have shut down, leaving some former towns virtually without employment. Columbia river hydroelectricity was also used for what might be considered less noble industries and practices: sawmills for unsustainable timber operations, nuclear weapons development, military production, electricity-hungry aluminium smelting, and large-scale mines with toxic legacies (Worster, 1985; Cohen, 1986; Dietrich, 1995; White, 1995; Harden, 1996; Lang, 1999; Martin, 2005). Meanwhile, maintaining the river's dwindled salmon runs, along with other fish and wildlife, now costs well over $400 million per year,[9] and has mired the region in litigation for most of the last 20 years (Blumm, 2008; Hawley, 2011; NWPCC, 2011).

In short, critical histories have emphasized that environmental losses have been huge; social gains have been strong but the costs also large; and economic gains have come at the price of continued inequality, persistent, if diversified, dependence on outside capital and markets, and huge sums paid annually for mitigation for fish and wildlife harmed by the Columbia river hydropower system. Also, until 1980 at least, access to influence basin policy was limited largely to federal agencies, congressional representatives and the constituencies that could influence them, and BPA customers. Democratic openings were for decades if anything reduced by river basin organisation.

[9] This figure represents money actively spent by the BPA for fish and wildlife. This included $200 million on direct expenditures on projects and capital investments for fish and wildlife, $70 million reimbursing other federal agencies for their Columbia river fish and wildlife costs (much of this then parcelled out to state fish and wildlife agencies), and $124 million on interest, amortization and depreciation costs related to capital investments. The BPA reports that its total fish and wildlife costs for 2010, however, were over $800 million. The remainder is from lost income and increased power purchases when the river was operated to aid fish in ways that reduced power production (NWPCC, 2011; thanks to John Shurts for help interpreting these statistics).

It is the juxtaposition of the successes in achieving some aspects of holistic river basin management with the profoundly mixed results that have been highlighted by critical historians, that makes the Columbia case so interesting for those who want to think about the consequences of river basin management territories. In the following, I follow the logic I laid out previously about how and why river basin territories are supposed to produce positive outcomes, but this time I outline and analyze what actually happened on the Columbia river.

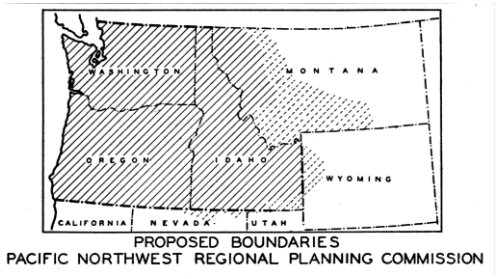
WHAT DIFFERENCE DID A RIVER BASIN TERRITORY *ACTUALLY* MAKE? PARCELLING OUT THE COLUMBIA RIVER

Natural and political boundaries

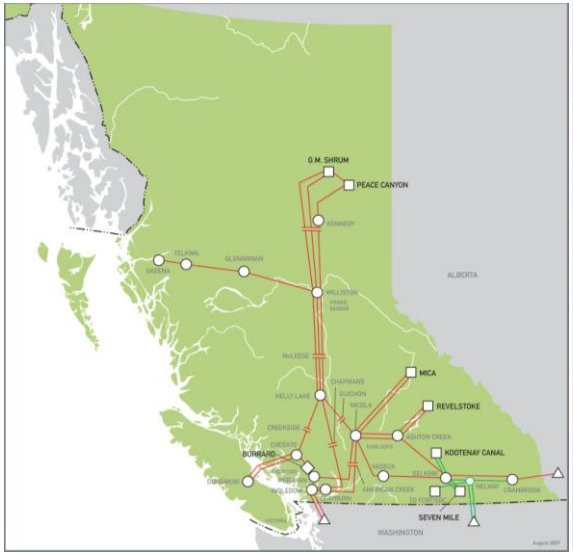
The Columbia river hydrological basin is a natural territory, defined by physical processes. However, building a Columbia river basin-defined management region was a politically motivated move, advanced by planners and policymakers from conventional government spaces. Development boosters from four states in the US Pacific Northwest came together in 1933 to conduct 'regional planning' because they were promised greater access to federal public works funds if they did so. Two years later, as the federal government moved toward planning Columbia river development, these state-based planners defined their region around the Columbia basin as a way to assert their right to shape Columbia river development, and to claim for their states privileged access to the future benefits (NRC, 1936; Vogel, 2011). Ever since that time, the reassertion of 'the region' has been a strategy for reclaiming one (or more) of three things that no state or subregional interest is as able to claim by itself: control over river management, privileged access to valuable river resources (especially hydropower),[10] and outside investment (Vogel, 2007b, 2008). A second historical insight also demonstrates that the supposedly natural geography of the Columbia river basin is a product of the politics of conventional jurisdictions and territories: the boundaries of the governance territory built around the Columbia basin have not actually conformed to the hydrological borders of the basin. In repeated instances the boundaries of the river's basin-centred 'region' have been extended or truncated to mesh with state, provincial, subregional and local borders. Three examples of extensions beyond hydrological boundaries are shown in figure 2, each adjusting to a different kind of jurisdictional territory. First, the original 1930s Columbia river-centred region included the full territories of the states of Washington and Oregon so industries and residents in and around Seattle, Tacoma and other coastal cities could access the soon-to-be-produced cheap federal Columbia river hydropower (Vogel, 2011) (figure 2a). In a later instance, when river basin management extended into Canadian territory with the Columbia River Treaty in 1964, it was not citizens from the Canadian portion of the basin that became co-managers of the river system, but rather the government of the province of British Columbia. Benefits were spread throughout the province (Swainson, 1979; BC Hydro Pioneers, 1998) (figure 2b). Lastly, when transmission lines were authorised to carry Columbia river hydropower to California and the American Southwest, politicians and industries from the Columbia basin region got the US Congress to pass a law providing regional preferential access to Columbia river power (*Pacific Northwest Consumer Power Preference Act*, 1964). At the edges of the basin, local cooperative utilities in Montana clamoured to be included in the designated region – and so the law extended the basin's region beyond its hydrological boundaries so these local jurisdictions could be part of the basin's region (Tollefson, 1987) (figure 2c).

[10] In other words, defining a management region has also been about defining a territory within which river benefits would be distributed, or that would be granted privileged access to river benefits. There is no necessary geographical congruence between a river's governance territory and the territory which receives benefits from the river. In the Columbia, however, the two have always been linked, even if not officially. The consistent regional borders across time and legislative change reflect the fact that dominant political influence over BPA and federal Columbia river policy has consistently come from within this territory. See discussion in text below.

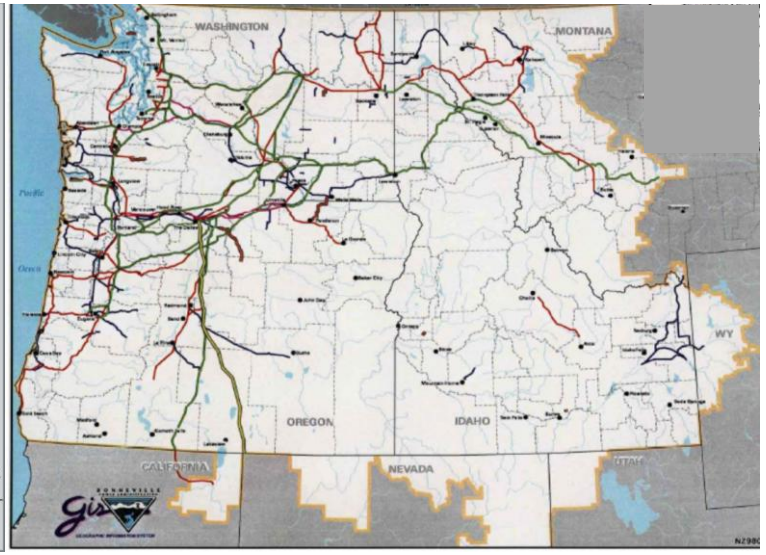
Figure 2. Three examples show the extension of the boundaries of the management region beyond the boundaries of the river basin, to meet the demands of three different kinds of jurisdictions. Compare each with the basin's geography shown in figure 1.



(a) The original vision of a Columbia basin-centred region extended the basin to include all of Washington and Oregon so coastal cities could access Columbia river power (NRC, 1936)



(b) After the 1964 Columbia River Treaty, BC Hydro transmitted Columbia river power throughout the province, with much of the benefit going toward Vancouver. Mica Dam, shown the southeastern part of the province, is one of the treaty dams and is near the northern edge of the Columbia basin) (map adapted from BC Hydro, 2007)



(c) BPA transmission lines and service region. The region was extended in the east and southeastern margins to include boundary-crossing rural electric cooperatives (adapted from BPA, 1998)

The Columbia river management region has also been truncated at times. Sometimes, it has been a matter of legal convenience: the large Canadian portion of the basin was left out of supposedly basin-wide management for the first 30 years, thanks to the complications of coordinating across an international border. The region has also been truncated when constituents in upriver jurisdictions feared losing their autonomy in managing their portion of the river. For example, Wyoming declined to participate in regional planning in the 1930s (despite its dotted presence in the proposed regional boundaries, figure 2a) (Vogel, 2007b). Wyoming's portion of the basin still remains, by choice, largely peripheral to any kind of Columbia basin management.

In short, while roughly shaped around 'natural' boundaries, the very geography of the Columbia river's management region embeds a host of political compromises and privileges built around the territories of conventional jurisdictions. It is fundamentally both a natural and a political space.

A holistic and a divided space

Previously, I outlined five ways that river basins and watersheds are thought of as holistic: hydrologically, ecologically, biophysically, as a human community, and politically. Hydrologically, the Columbia river basin is arguably holistic. Water transfers and withdrawals, as well as groundwater flow, remain largely within the basin (Volkman, 1997; National Research Council, 2004). Ecologically, in some ways the river basin is a holistic interconnected system. However, even the river basin's emblematic aquatic species, Pacific Salmon, could be thought of as more complete within the much larger North Pacific and its many drainage basins, which is the area that encompasses the full range of migration and occasional straying routes that interconnect Pacific Salmon populations across space and time (Lichatowich, 1999; Augerot and Foley, 2005). And, of course, there is a strong case to be made that the river is ecologically much less holistic than it used to be: the river has been broken up into fragments by huge dams and reservoirs, water withdrawals in several major tributaries, and other developments that block species from former habitats and migration routes (ISG, 2000; Williams, 2006).

It is even harder, though still partly justified, to argue that the Columbia basin is a unified community, or politically holistic. None of the social or political divisions within the basin, or the claims from political jurisdictions that extend beyond the basin, have gone away. However, once stretched to accommodate various jurisdictional claimants, the Columbia basin region has come to include most (though far from all) of the people, places and interests that most directly use and impact the river. After 75 years, the practice of shared river and electric management has built some real ties: long-term working relationships, strong basin-wide analyses, and a host of institutions that have grown up around the BPA, the Federal Columbia River Power System, and the Columbia River Treaty that are organised roughly around the basin and its region. And there is a sense of a shared resource (even if a self-interested one) that is found in the river and the region's power lines, for which all are willing to collaborate at least to some extent (Vogel, 2007b). However, 'the region' remains an area of competing territories and jurisdictions that come together only partially, and then do so strategically, for shared gain (Vogel, 2008). Holism and division are one.

Actual result? Parcelling out the watershed

If in the Columbia basin region, holism and division are one, in Columbia river management, holism and division work in concert with each other. This partnership of opposites derives from the interaction over time between a river basin territory on the one hand, and the varied political territories of more conventional jurisdictional spaces on the other. The recurring product is a narrowed holism built to serve fragmented parts. This is the pattern I call 'parcelling out the watershed'.

The overall interaction that has led managers to parcel out the watershed has been fairly straightforward. It has recurred in widely different contexts. It begins when Columbia river planners or managers, often led by the BPA, have advanced policies that encompass some kind of unified vision of river basin management and regional development. In some cases, this has promised access to outside

resources (such as federal funds) or a competitive advantage (such as cheaper electricity) compared to those outside the region. Then, new claimants have sometimes demanded access or increased control. In other cases, proposals for unified management have provoked political or legal challenge. Challengers have attacked not only policy proposals but in many cases, collective watershed management itself or the authority of the BPA. They have done this in or from whatever jurisdiction they could access – US federal, state, and local jurisdictions were prominent forums and their representatives common complainants early on; later, tribal and Canadian federal and provincial jurisdictions also rose in significance (cf. McCarthy, 2005). River managers have responded – sometimes happily, sometimes strategically, and sometimes only when forced through legal or political compulsion – by working to placate these challengers by offering up responsibilities and benefits, and by agreeing to allow them a seat at river basin decision-making tables.[11]

Whether in response to eager claimants or angry challengers, the result has been similar. Management and governance of the watershed, as well as watershed benefits, are all parcelled out among an increasing array of institutions, jurisdictions and interests. The pressure in terms of physical management of the river system is on one-sided development that can produce these spreadable, valuable benefits.

In each of the three ways described earlier that watershed and river basin management are expected to be more holistic than conventional management (summarised in table 1), the dominant pattern on the Columbia has instead been 'parcelling out the watershed'. This contrast is summarised in table 2.

Parcelling out the watershed's goals and areas

The first way Columbia river managers parcel out the watershed is by relinquishing aspects of watershed management or portions of the watershed. This has happened when there was no way for basin managers to escape fully from challenges. Other agencies, jurisdictions, and interests were left to manage most aspects of river management, and some parts of the watershed. Only a few aspects, and only a portion of the basin, remained managed by a unified river basin agency or governance system.

Two examples illustrate. First, in the creation of the Bonneville Project Act, every responsibility other than transmitting and marketing power was stripped away from the new agency, compared to what had been envisioned for a Columbia Valley Authority. These other responsibilities included ownership and operation of the dams (kept with the Army Corps of Engineers and the Bureau of Reclamation), irrigation and agriculture, forest management, soil conservation, and regional planning (BPA, 1980; Vogel, 2007b). Fisheries remained managed largely by the four Northwest states and the tribes, and, when water pollution became a national concern in the 1970s, yet another agency was added to the mix, the Environmental Protection Agency.[12]

Second, while the vision for Columbia basin regional management always included virtually the entirety of the state of Idaho (figure 2a), basin managers were largely forced to relinquish management of the middle and upper Snake river, the Columbia's largest tributary, in southern Idaho. In a prolonged political and legal battle in the 1950s, irrigation and private power interests from Idaho defeated a proposal for a large federal dam in the middle Snake that would have extended coordination of the river's waters into the upper Snake basin (Brooks, 2006); a parallel fight kept BPA power lines and power out of most of southern Idaho (Stacy, 1991; Aho, 2003) (figure 2c).

[11] A companion article is planned that will provide more of the historical narrative of these interactions at particular moments in time and show their varying players, dynamics and results.

[12] In other words, outside of flow management, power management, and later, fish and wildlife funding, the Columbia river has been managed by agencies and actors working from, for and in non-basin-based territories. These may coordinate in a kind of river basin management in one sense, but in another they represent the kinds of fragmentations, inefficiencies, and conflicts that advocates of river basin and watershed management hope to overcome (see e.g. Wilkinson and Connor, 1983).

Parcelling out the watershed's benefits

The second way Columbia basin managers parcel out the watershed is by distributing watershed benefits. River planners or managers have found ways to accommodate challengers by doling out resources to them. This is premised on finding ways of extracting more and more distributable benefits from the river and from outside funders and investors.

This pattern began in 1939, when, after only two years in existence, the BPA faced severe criticism from politicians and newspapers throughout the US Northwest and in Washington, DC. It had angered many by focusing heavily on development of public power utilities it might serve in the future, while declining to sell its copious hydropower to eager industries and private utilities. A new administrator in 1939 recognised the agency faced the possibility of annihilation at the hands of Congress, and began a new policy of actively recruiting industry to the region, and carefully placing new factories in areas desired by local governments, Chambers of Commerce, and representatives to Congress. The savvy administrator also quietly loosened restrictions on sales of electricity to private utilities. Support for the agency shot up (Davis, 1944, 1945; Hart, 1991; Vogel, 2007b).

Next, from the late 1930s through the 1960s, the BPA worked with federal dam-building agencies, Congressional representatives and state governors to plan a system of federal dams. Early on, federal agencies' plans had angered Congressional representatives and governors, either by leaving out their state or district, or else by proposing a dam in an undesired place. The bad press raised by controversy over a proposed dam at the mouth of Montana's Flathead Lake changed basin managers' approach. Soon, they were getting a list of dams pre-approved by governors and Congressional representatives. The plan – most of it authorised by Congress over the next few years – provided at least one dam for each of the four Northwest states (BPA, 1944; Davis, 1944; McKinley, 1952).

The most pervasive effort to distribute benefits over the years has been BPA's commitment to providing cheap hydropower to everyone and everywhere in its basin-based region. By 1948 it gave up any attempt to shape what this power was used for, as that raised opposition and possibly exceeded the BPA's legal authorities (Moment, 1990; Hart, 1991; Vogel, 2007b; Stein, 2008). Instead, local communities and utilities claimed as much power as they wanted, and BPA worked hard to get dams and wires built while keeping rates as low as possible. Local communities and states used BPA's power for conventional economic development, using cheap electricity as a lure for outside investors (BPA, 1980; Lee et al., 1980; Blumm, 1983; Tollefson, 1987; Luce, 1996).

The pattern of parcelling out benefits extended to Canada on two marked occasions. One was the 1964 Columbia River Treaty, when British Columbia won 50 percent of the downstream benefits that would be produced in the US in the form of increased hydropower sales and improved flood control. The second was in the 1990s when legislative representatives from the Columbia basin portion of British Columbia won a portion of the province's downstream benefits to use for itself, for social, environmental and economic projects within the Canadian Columbia basin (Swainson, 1979; Halleran, 1998; Columbia Basin Trust, 1998).

Finally, since the 1990s, as salmon protection efforts soared, BPA has paid hundreds of millions of dollars each year toward fish and wildlife protection, enhancement, mitigation and recovery. Thanks to their privileged status under the Northwest Power Act, state fish and wildlife agencies and Native American tribes receive a large portion of BPA's direct fish and wildlife expenditures, while federal agencies receive much of the rest (Luce, 1996; Buchal, 1998; Blumm, 2002, 2008; Learn and Milstein, 2008; NWPCC, 2011).

Parcelling out watershed decision making

In the third subpattern of parcelling out the watershed, the Columbia basin has been parcelled out by sharing control of decision making and benefits distributions. River basin and watershed territories are thought to entail holistic decision making that either includes all stakeholders or takes into account all people's water needs and uses, and thus produces balanced management. This is not what has

happened on the Columbia river. Instead, powerful challengers – generally from conventional jurisdictions, but also some interest groups that have been able to use various legislatures and courts – have regularly demanded and won privileged influence over management decision making. They have become co-participants in a multi-institutional, but not all-inclusive, coordinated system of river basin management.

Three examples illustrate. First, as the Columbia River Treaty was being negotiated in the late 1950s, the disgruntled owners and managers of non-federal dams on the US portion of the Columbia river demanded and won greater control over how future river flows would be managed. They had two points of leverage: several of their dams were located on the mid-Columbia, and their cooperation would be required in order to maximise treaty benefits; and they had the ear of their congressional representatives, who could block treaty ratification in the US Senate. Thus alongside the treaty grew up a coordination agreement on the US side among the federal agencies, non-federal dam owners, and major electricity-consuming industries, to collectively plan and manage river flows and regional power flows (Dean and Schultz, 1989; Logie, 1993; Vogel, 2007a).

Second, the 1980 Northwest Power Act grew in part out of the frustrations of state governors that they had too little influence over BPA's power planning and investments. In a moment of financial and political crisis for the BPA, governors demanded the creation of an interstate council to provide independent power planning analyses. This was the origin of the Northwest Power and Conservation Council, still a significant shaper of regional river and electric policy and management today. In this way, state governments finally broke in to become direct advisors of river management and its associated regional electric policy (Lee et al., 1980; Hemmingway, 1983; Blumm, 1983).

Table 2. Expected and actual water management practice.

Expected within watershed or river basin territories	Actual Columbia river pattern
Holistic integration of goals and areas. Managers integrate or coordinate different goals and areas within one watershed-wide institution, plan or programme.	*Parcelling out the watershed's goals and areas.* Policymakers relinquish aspects of management and portions of the watershed to rival administrations and jurisdictions.
Holistic benefits distribution. Managers distribute water and water benefits widely and fairly, sustaining a full range of social and environmental needs.	*Parcelling out the watershed's benefits.* Managers distribute valuable and spreadable benefits to all jurisdictions and to powerful claimants.
Holistic decision making that produces balanced management. Managers consider the full range of human needs and uses of water and water resources, to build basin-wide priorities and balanced management.	*Parcelling out watershed decision making.* Privileged influence and control are handed to constituents and constituent jurisdictions.

Third, after the passage of the Northwest Power Act in 1980, river flows finally began to be managed to assist fish as well as to optimise power production, under the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program. Power proceeds would now fund fish and wildlife projects and mitigation, not simply lower electric power rates. This new coordination was intentionally shaped to tap the expertise and enhance the influence of existing jurisdictions and agencies. The Council was to follow the recommendations of the agencies that had helped force in the fisheries provisions – the state and federal fish and wildlife agencies and the Columbia basin's Native American tribes. Today, states and tribes, often acting as leaders of local 'subbasin' planning groups,

remain central guides (as well as recipients) of river management priorities and expenditures (Northwest Power Act, 1980; Bodi, 1995; Buchal, 1998; Columbia Basin Fish and Wildlife Authority, 2007; NWPCC, 2009).

Deeply mixed social, environmental, economic, and democratic outcomes

As emphasised before, the outcomes of Columbia river management have been mixed. How do they derive from management whose main recurring pattern is parcelling out the watershed? The need to produce valuable, spreadable benefits led managers to prioritise hydropower production above all in the river's physical management (Luce, 1996; Vogel, 2007b, 2008). The desire to accommodate local jurisdictions' economic development ambitions led managers to support industrial development regardless of toxic runoff or other environmental problems.

Thus parcelling out the watershed wreaked havoc on the river's environment. Yet, after many decades, the long-term relationships and knowledge built from hydropower-centred river basin management, together with a regionally shared commitment to protect cheap Columbia river power, has enabled the beginnings of some real innovations in fish and wildlife management. Especially since the 1990s, these include significant funding for fish and wildlife, a robust scientific review of all fish and wildlife projects, a slowly developing effort to coordinate river basin and watershed management at multiple scales to better aid fish and wildlife, and the beginnings of real attention to restoring the dynamic processes of hydrological and geomorphological change (Lee, 1995; NWPCC, 2003; Williams, 2006).

Social impacts have also been mixed. Overall economic development in the region has been strong and largely continuous; and the effort to spread the river's cheap hydropower spatially has helped to support and sustain population and economies in remote areas somewhat more than might otherwise have occurred. Nonetheless, because river managers could not afford to offend any potential political constituents, cheap power was used to support entirely conventional, and sometimes harmful, economic development activities. Often it supported electricity-dependent industries like aluminium or industrial irrigated agriculture that arguably would have been more appropriate nearer to resource supplies like bauxite or ample rainwater (Dietrich, 1995; White, 1995; Harden, 1996; Power, 2009). Nor has river basin management quieted other kinds of conflict: Columbia basin management has been mired in expensive litigation on and off for decades (Blumm, 1981).

Economically, the obligation to please everyone – all jurisdictions, all political representatives' districts, and any interest that can sway various legislatures and courts – has meant enormously expensive and inefficient river management (Luce, 1996; Vogel, 2008). Economic gains have been great, but the costs have been enormous as well. Electric customers throughout the basin-based region have paid these costs.

Finally, democratic impacts are mixed – though perhaps on the whole, and over the long term, more positive than not. BPA's most direct allegiances for years were to its customers (which provide its revenue and political support), the other federal Columbia river agencies (with which the BPA must cooperate in managing the river), and the US Congress (which controls the BPA's authorities and financing[13]). In Congress, the Pacific Northwest congressional delegation has been especially crucial. But BPA's customers have been relatively diverse, spread out, and representative of the region's diversity – for they include well over a hundred small public utilities that are made viable by their purchases of BPA's inexpensive public power. And while for many years development-oriented groups dominated influence over regional congressional representatives, over time, outsiders gained legal leverage through new laws and court decisions. As the decades passed, BPA had to accommodate demands from non-federal dam owners, British Columbia, US states, opponents of nuclear power, proponents of

[13] BPA gained major financial independence in 1974, when it was granted the right to use its power revenues directly for its budget (Federal Columbia River Transmission System Act, 1974). However, it must still rely on Congress for borrowing authority from the US Treasury.

energy conservation, Native American tribes and fisheries advocates. There has never been an all-inclusive grass-roots participatory democracy on the river, but the messy conglomeration of participation through a host of jurisdictions, agencies, legislatures, and courts has come to represent something reasonably inclusive.

LESSONS FROM THE COLUMBIA RIVER: THE LONG-TERM CONSEQUENCES OF A RIVER BASIN TERRITORY

This historical analysis shows that river basin management on the Columbia river has not worked or played out as advocates of river basin and watershed governance territories expect. Organising management in a river basin territory did not mean the creation of a natural and therefore holistic space, nor did it lead to holistic, balanced management and well-rounded positive social, environmental, economic, and democratic outcomes. Instead, management has long been one-sided, disproportionately focused on hydropower production, while responsibilities, benefits, and influence have been doled out in pork-barrel fashion.

Many authors have seen the Columbia's story as tragedy, or else irony, for the ideals of the 1930s seem to have wrought contrary ends. Like the authors of other critical river basin histories, these Columbia river analysts have persuasively demonstrated the role of multiple influences in causing these sorts of negative results, including powerful and ambitious federal dam-building agencies, wartime needs and ambitions, the post war and Cold War drive for American economic growth, the belief in new technologies as ways to solve all problems, and the political power of the aluminium industry (Worster, 1985; Dietrich, 1995; Petersen, 1995; White, 1995; Harden, 1996; Lichatowich, 1999; Taylor, 1999). What my Columbia river analysis adds to this is the insight that all this did not run counter to the role of the river basin territory. In other words, it wasn't that these factors interfered with the holistic and natural harmony, balance and efficiency that could and should have been, once river management was organised within a basin-centred geography. Rather, the geography of river basin management was itself partly to blame.

The essential geographical problem was that the Columbia river basin crossed two countries, multiple state lines and one province, encompassed scores of local jurisdictions, and included the territories and fishing grounds of fourteen Native American tribes and several Canadian First Nations. It was not only that basin management had to deal with these other jurisdictions. The basin's formal development and management institutions, starting with the BPA but including others like the Columbia River Treaty and the Northwest Power and Conservation Council, all relied on these more conventional political jurisdictions and their representatives for legal authority, financing, and political backing – or at the very least, political and legal tolerance. In short, a river basin-based territory did not only join hydrological, ecological, and social parts; it also joined discrete, territorially defined, political units that had considerable power over it. Consequently, the BPA and other river basin managers have had to engage in ongoing negotiations with a host of divided spaces and multiple jurisdictions. These negotiations have been, if anything, more complicated, more numerous, and, over time, more controlling, relative to a river basin management institution than they would have been to a single-jurisdiction water management agency.

The recurring consequence has been that policymakers and managers have worked to parcel out generous benefits from, and influence over, the watershed. The BPA and its associates gained their power not so much by fiat but by accommodation, and not just of a few dominant industries or groups. Reduced mainly to managing hydropower, the BPA has distributed cheap electricity, investment attracted by the promise of cheap electricity, and fish and wildlife funds that come from the sale of electricity. To do this, river managers have had to prioritise dam building and hydropower production above all. Thus in the end a river basin territory has not produced more balanced management, but is itself a partial cause of one-sided management that has prioritised 'overbuilding' (Molle, 2008).

This does not mean river basin management was unable to do anything different from water management within single jurisdictions – anything other than what Washington, Oregon, British

Columbia, Montana, Wyoming, Idaho, Utah and Nevada could have done if they were each managing their portions of the basin on their own. River managers were able to effect a major basin-wide control system through a network of dams. With this, they could plan and execute a very well coordinated system of flow management that optimised production of desired services. Furthermore, they were able to link optimised river management to optimised regional power management, enabling the production and delivery of cheap, reliable electricity across a large geographical area. They also – partly driven by the ideological principles of river basin management and partly by the political necessity of appeasing so many political territories – spread benefits from the river out to the whole region in a spatially inclusive way.

The recurring patterns across this long history, as well this analysis of where the patterns came from, suggests that parcelling out goals and areas, benefits, and decision making to many decentralised parts and claimants was essential for river basin management to survive in any form in the Columbia over the long term. Only a long-term analysis could have produced this insight. This simply would not be seen if one looked, for example, from the 1960s to the mid-1970s. Then, BPA and its associates seemed to reign supreme – with strong backing from the federal government, they advanced ambitious and single-minded plans for dams, hydropower development, and nuclear power (Blumm, 1983; Pope, 2008). And it is not seen so easily with a look at today's most public portrayals of the Columbia, which focus on endless litigation over what seems to be a strictly federal plan (e.g. Hawley, 2011; New York Times Editors, 2011). Only by looking at the repeated moments when the BPA or river management faced significant threats and yet found a way through can one begin to see the pattern.

The long-term analysis also helps to explain both the negative and the positive results of this pattern. Clearly, river basin management on the Columbia has not ensured balanced physical management of the river. However, it has, over the long run, forced river managers to be accountable to a wide array of constituents from throughout their service area – including a host of public utilities and their local Chambers of Commerce, a variety of electricity-dependent industries and their would-be host cities and states, fish and wildlife agencies and Native American tribes, and the long-neglected citizens of the Canadian portion of the Columbia basin. This, in turn, has forced or led Columbia river managers to distribute their various bounties – dams, industrial investment, cheap hydropower, fish and wildlife funds, community development funds – across a wide spatial area. Again, the costs include efficiency: parcelling out pork-barrel benefits cannot in any way promise to provide for optimum financial value.

This relates to a final, crucial lesson: despite all the problems and the common negative outcomes of the recurring pattern of parcelling out the watershed on the Columbia, the specifics have been able to change. Here, there has been room for hope that river management might become more balanced and less destructive to people and the environment in the process of producing its benefits. River benefits diversified over time: for the first four to five decades they were mainly cheap hydropower and the BPA-recruited federal and corporate investment; by the 1990s they included fish and wildlife funds on the US side and funds to support social, economic, and environmental improvement on the Canadian side. Change has come both in response to new contexts and pressures, and also simply as the institutions and relationships that coordinate across the basin have become stronger, deeper, and more familiar. This late-term diversification of benefits shows two other positive results that grew from river basin coordination on the Columbia, though only after multiple decades. First, long-term coordination helped to provide institutional capacity and personal relationships that ultimately supported new river basin institutions and purposes. Second, coordinated river basin management produced a widely and highly valued benefit, cheap electric power. As the controversies over its control and geography eased, cheap hydropower became accepted as the 'region's lifeblood' by an array of politicians, agencies and business leaders (Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, 1996; Wyden, 2005; Craig, 2007). Then, advocates for other purposes, such as fish and wildlife, have been able alternately to threaten and tap that valuable benefit, in order to force, and then fund, more balanced river management.

RIVER BASIN AND WATERSHED TERRITORIES: POLICY, POSSIBILITIES, AND FURTHER RESEARCH NEEDS

This deep historical analysis of Columbia river management should serve as a cautionary tale for those who promote river basin and watershed governance territories as self-evident solutions to the problems of territorially fragmented water management. Even if water management is reorganised within a basin-based region, politics may remain fragmented, river basin managers may still be required to negotiate with leaders, agencies, courts, representatives and constituents of multiple jurisdictions, and the result may well be coordinated river management designed to support conventional economic development in these many divided spaces.

The problem for policy advocates and policymakers of river basin and watershed management is not that their vision is bad, but simply that new territories of management are unlikely to overcome old governance territories and their loyalties. As some of the most insightful critics note, river basin management and its broader cousin, integrated water resources management (IWRM), have become almost hegemonic discourses and policy strategies. Yet they too easily ignore, discount, or seek to disempower the existing political spaces and administrations to which many people feel considerable commitment, or which provide them with crucial political access or legal protections. Some of these analysts have suggested that those who seek to improve water management and policy need to let go of their fixation on river basin and watershed management, and even integrated management, and allow for more flexible, issue-specific inter-jurisdictional cooperation (e.g. Mollinga, 2006; Biswas, 2008).

My Columbia river analysis supports the contention that in many cases, more ad hoc arrangements may be as effective in producing desired outcomes, with potentially far less political and legal difficulty and less financial cost. But it also permits policy advocates and developers to harness deeper understandings of politics and history to improve watershed and river basin management – to enhance positive practices and outcomes while mitigating the inevitable negatives. John Shurts, general counsel of the Northwest Power and Conservation Counsel and a PhD historian, recently suggested that despite the many critical histories, it is likely that many people in the US Pacific Northwest think the Columbia river dams have done far more good than harm. In part this is because their benefits have been so abundant, relatively cheap, and so widely shared. It is also because of a change in management emphasis since the passage of the Northwest Power Act in 1980. Columbia River basin management continues to prioritise hydropower production and flood control, but not as wholly as before 1980, and not for such narrow ends, for management is no longer dominated so completely by federal dam-building and power agencies, local electric utilities and Chambers of Commerce, and their political representatives. River management since 1980 has been tempered by a regional power plan that emphasises energy efficiency, and a Fish and Wildlife Program that is shaped to a considerable extent by the state and federal fish and wildlife agencies and Native American tribes. Crucial to this tempering is a legal obligation written into the Northwest Power Act that directs the BPA to act in a manner that is consistent with the Council's Fish and Wildlife Program, and all federal river management agencies to provide equitable treatment to fish and wildlife. This mitigation program was also able to expand dramatically after several salmon runs were listed under the federal Endangered Species Act in the 1990s (Shurts, 2012).

This kind of dual institutional structure, with *two* river basin organisations that work in some ways in concert and some ways in opposition, with the larger bound by legal obligation to the smaller, has been, in the Columbia, a way to *take advantage* of the continuing political fragmentations in the basin, harnessing them for a more balanced management. This might serve as a model to be considered elsewhere. Of course, the inevitable cost has been money – to make this system work as well as it does now requires $400 to $800 million dollars per year (depending on how costs are calculated; see note 9) to mitigate hydrosystem impacts on fish and wildlife. Only a river with a well-developed, productive, and unified hydropower system can produce the financial resources to sustain such efforts. Those who advocate river basin and watershed management as a way to achieve balanced management, democratic participation, limited development, *and* cost efficiency may need to adjust their

expectations, and decide which goals are most important. But those who are able to face these kinds of tradeoffs may be able to shape the politics and outcomes of parcelling out the watershed in a way that *is* more balanced and inclusive.

Further comparative work is crucial to determine whether the patterns I have uncovered are unique to the Columbia, and if not, how they translate across time and space, and what are their consequences in different contexts. Long-term historical analyses such as this can begin to show the effects of both context and change over time. This is crucial if we want to understand the possibilities and the challenges to the advancement of improved social, environmental, economic, and democratic outcomes in or through river basin and watershed management.

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