

**Transgressing Scales:
Water Governance across the Canada-U.S. Borderland**

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**Forthcoming Manuscript in the
Annals of the Association of American Geographers
Vol. 98, Number 4, December 2008**

Abstract

This paper examines the rescaling of transboundary water governance along the Canada-U.S. border. We draw on recent research in geography on rescaling and borderlands to query two assumptions prevalent in the water governance literature: that a shift in scale downwards to the subnational or “local” scale implies greater empowerment for local actors; and that rescaling implies that higher orders of government become less important in water management. The case study presents an analysis of qualitative and quantitative data drawn from a comprehensive database of transboundary water governance instruments compiled by the authors, interviews with water managers on both sides of the border, and participant observation in transboundary water governance activities. Our analysis indicates that although a significant increase in local water governance activities has occurred since the 1980s, this has not resulted in a significant increase in decision-making power at the local scale, nor has it been accompanied by a “hollowing out” of the nation-state. This suggests the need to question some of the assumptions widespread in the water management literature, such as the putative primacy of the local scale, and highlights the utility of bringing current geographical debates over scale and borderlands to bear on questions of environmental governance.

Keywords:

borderlands, Canada-U.S., scale, transboundary, water governance

1. Introduction

Recent debates on changing patterns of governance have largely centered on the putative shift from “government” to “governance” in which non-governmental actors play a more significant role than in the past (Rhodes 1996; Herod, O’Tuathail and Roberts 1998; Pierre 2000; Pierre and Peters 2000; Swyngedouw 2000a and 2000b; Gibbins 2001; Swyngedouw et al 2002; Jessop 2003, 2004; Strange 2006). Much of the literature suggests that a simultaneous shift toward the supranational scale, such as the North American Free Trade Agreement (NAFTA) and European Union (EU), has accompanied devolution, in a process sometimes termed “glocalization” (Swyngedouw 1997, 2004). This poses a challenge to conventional theories of governance, such as the regime approach, that naturalize the scale of the nation-state as the primary locus of political power. In turn, this echoes Agnew’s “territorial trap” critique (Agnew 1994, 1999) through questioning the tendency within the international relations (IR) literature to focus on the nation-state as the geographical scale of sole or primary importance.

This critique (notwithstanding debates over the limitations of scale as a means of inquiry into governance issues (Brenner 1998, 2001; Marston 2000, Marston, Jones and Woodward 2005; Jonas 2006)) has opened up an important avenue for geographical research on rescaling of governance. Within this body of literature, research on the rescaling of environmental governance has attracted increasing attention (Harrison 1996; Paterson 1999; Hirsch 2001; Paehlke 2001; Parson 2001; Kramsch 2002; Jonas and Gibbs 2003; Kramsch and Mamdouh 2003; Munton 2003; Verchick and Hulen 2003; Evans 2004; Maddock 2004; Wismer and Mitchell 2005). This growing body of literature explores the production of scales and scalar boundaries of environmental governance, as

well as the degree of rescaling with respect to the management of specific resources or environmental issues. Much of the research focuses on sub-national scales of environmental governance, thus deepening our understanding of what Brown and Purcell (2005, 607) call the “local trap” – an analogue to Agnew’s territorial trap – in which “organization, policies, and actions at the local scale are [thought to be] inherently more likely to have desired social and ecological effects than activities organized at other scales.” Other contributions to the literature, however, appear to fall prey to the “local trap”, in asserting the importance and/or necessity of involving actors at local scales. For example, the assumption that operating at the local -- and particularly watershed -- scale will increase empowerment, accountability, or cost-efficiency is implicit in much of the water management literature (see, for example, Gibbins 2001; Corry et al 2004).

This paper speaks to the questions raised in this literature through an analysis of the rescaling of transboundary water governance between Canada and the United States. Our analysis focuses on the international border dividing the two countries, colloquially known as the “longest undefended border in the world,” but also a border subject to increasing scrutiny, surveillance, and contestation. The Canada-U.S. border is an intriguing case because of over a century of engagement between the two countries with respect to transboundary water management, providing an opportunity to analyze long-term trends in water governance. Furthermore, the relatively culturally integrated population and lack of language barriers (with the exception of the U.S.-Quebec border) significantly reduces external variables that might otherwise have complicated the analysis (Norman and Melious 2004).

The primary purpose of our analysis is to analyze the degree of rescaling, and role

of sub-national scales in transboundary water governance (understood as decision-making processes through which stakeholders provide input, decisions are made, and decision-makers are held accountable). In conducting the analysis, we have attempted to avoid both the territorial trap (through querying the nature of the involvement of non-state actors and local scales in governance) and the local trap (through analyzing the degree to which rescaling has led to greater empowerment on the part of local actors). This analysis leads us to argue that although rescaling of water governance to the local level is indeed occurring, this process is not necessarily empowering for local actors. This conclusion is at odds with an assumption prevalent in much of the water governance literature that rescaling to the local level will be empowering and, moreover, that this will in turn lead to better water management outcomes.

The paper begins by reviewing recent debates on rescaling and borderlands, which offer useful concepts with which to expand conventional analyses of transboundary water governance. Notably, recent debates in the borderlands literature have challenged the territorial trap in their focus on issues of the porosity and fluidity of borders. In our analysis, we query several assumptions underpinning water-related studies. Specifically, we query two assumptions: that a shift in scale downwards to the local implies greater empowerment for local actors; and that rescaling implies that nation-states become less important in water management.¹

In the second part of the paper, we present a quantitative analysis examining whether rescaling of transboundary water governance has occurred along the Canada-U.S. border, and to what degree. Our analysis indicates that rescaling of transboundary

¹ We define “local” governance as decision-making processes enacted primarily or solely at the subnational scale.

water governance has occurred over time, with a significantly greater number of sub-national (state, provincial, and sub-state/provincial) governance instruments being created for Canada-U.S. transboundary water management from the 1980s onwards.² However, these results tell us little about the relative strength and effectiveness of local transboundary governance, nor do they indicate whether the rise of the local has undermined, or rather complements ongoing bilateral activity at the federal level.

The third part of the paper seeks to flesh out these latter issues by presenting qualitative evidence on the effects of rescaling on the empowerment of local actors, gathered through interviews and participant observation. The two indicators selected to represent “empowerment” in our analysis are: institutional capacity (where ‘institutions’ are defined in the sociological sense as rules, norms, and customs, and institutional capacity refers to the ability of actors to create, interpret and enact institutional change); and the degree of involvement of local actors in water management decision-making processes.³ We argue that downscaling of governance to the local level has not necessarily resulted in greater empowerment. Moreover, we present evidence that suggests that the rescaling of water governance to the local scale has not led to a reduction in power for the nation-state. Finally, we document how glocalization is occurring differently on either side of the Canada-U.S. border, and argue that the differential pace of rescaling of governance across the border is an important factor in limiting the potential of locally-led transboundary water governance.

² We define "instrument" as a device to govern water, such as a Treaty, Exchange of Notes, Memorandum of Agreement, Memorandum of Understanding, Agreements, Orders and Organizations.

³ “Empowerment” thus does not refer to the *outcomes* of governance, in terms of the quality of decisions, or their impact on water regimes. Rather, empowerment refers solely to the degree to which actors are able to participate in, and influence, governance (i.e. decision-making) processes.

Methods

This research project is part of ongoing project initiated in the fall of 2004 by the authors. The data were derived from a series of semi-structured interviews and participant observation in several transboundary meetings and conferences, as well as a transboundary workshop at the University of British Columbia in Vancouver, Canada.

Overall, thirty-four interviews were conducted with water management professionals and local stakeholders from both the United States and Canada. The interviews were conducted in two transboundary regions, the relatively water-abundant Pacific Coastal (British Columbia-Washington) region and the relatively water scarce Western Montane (Alberta-Montana) region.⁴ A questionnaire with both closed and open-ended questions was administered in interviews lasting approximately ninety minutes. The research methods were approved by the Behavioral Research Ethics Board at the University of British Columbia. Interviewee identity cannot be disclosed because of confidentiality requirements.

A facilitated workshop, with twenty-six actors involved in transboundary governance of water, was a secondary source of data. The workshop participants were drawn from a variety of fields, representing both governmental and nongovernmental actors. The symposium provided an opportunity for those involved in bi-national governance of water at a local and regional level to engage in dialogue and critically explore recent changes in Canada-U.S. transboundary water governance.

The analysis also draws upon a comprehensive database compiled by the authors.⁵

⁴ These designations were adopted from the regional divisions employed by Environment Canada (http://www.ec.gc.ca/commentreg_e.html) and U.S. Environmental Protection Agency (<http://www.epa.gov/epahome/locate2.htm>).

⁵ Full details of the database are available at the University of British Columbia's Program on Water Governance Website (<http://www.wateregovernance.ca/Institute2/transboundary/index.htm>)

This database details one hundred years of governance instruments used to manage transboundary water along the Canada-U.S. border starting with the 1909 Boundary Water Treaties.⁶ The dataset represents a range of mechanisms designed to address binational water issues, restricted to water quantity (such as water allocation) and water quality issues.⁷ It consists of formal and informal transboundary water governance instruments operating between Canada and the U.S., and/or constituent states/provinces, municipalities, and First Nations/Tribes. We organized the data by geographical region (Pacific, Western Montane, Central Prairie, Great Lakes, and Atlantic); types of governance mechanism (Treaty, Exchange of Notes, MOU/ MOA⁸, Agreements, Orders) and institution (Organization); and temporally.⁹ A total of 166 government instruments were identified, and analyses of temporal trends and content are presented. The information was collected from September 2004 – May 2007 and was peer-reviewed by more than thirty experts in the field ranging from high-level governmental officials to local NGO stakeholders in both Canada and the United States.

⁶ Key stakeholders were consulted (including the, Department of Foreign Affairs and International Trade, Environmental Protection Agency, International Joint Commission, and U.S. State Department) to review the database. Partial databases exist, but none are accessible to the public or even widely available internally. Aaron Wolf's "Transboundary Freshwater Dispute Database" is a notable exception, and is a key source for information on transboundary river basins and freshwater conflicts at a global level. The database is housed at Oregon State University and is available at: <http://www.transboundarywaters.orst.edu>.

⁷ Both water quality and quantity issues are included in the dataset because of the widening scope of water-related issues within transboundary governance. The shift from single-issue to more holistic approaches at a watershed scale is part of the trends discussed later in the paper. See Table 2 for details on the changing trends of transboundary water issues.

⁸ Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA)

⁹ This dataset only includes binational agreements between Canada and the U.S. Other international water agreements, where Canada and the U.S. are signatories, are not included in this analysis.

2. Rescaling water governance in the borderlands

*“Territory is not; it becomes, for territory itself is passive,
and it is human belief and actions that give territory meaning.”*
Knight (1982)

Rescaling transboundary water governance: The territorial trap

Many recent water management initiatives in Canada and the United States entail the involvement of local actors -- usually sub-provincial or sub-state, and often community-based -- in water management. This trend parallels the devolution of environmental governance¹⁰ to the sub-national level (Feitelson and Haddad 1998; Gibbons 2001; Feitelson 2003; Maddock 2004; Marine and Environmental Law Institute 2006). In Canada and the U.S., devolution has led to an increased role of citizen participation in environmental governance, particularly for water resources (Allee 1993; Herzog 1999; Liverman 1999; Mumme 1999; Wolf 1999; Day, Gunton and Frame 2003; Day 2004; DeLoe et al 2002).

In many instances, this poses a challenge to conventional theories of governance such as the regime approach that naturalize the scale of the nation-state as the primary or sole locus of political power (Agnew 1999). This is particularly true for scholars working within the IR tradition and those operating within an international regime framework (Bulkeley 2005; Furlong 2006). Within these frameworks, the scales at which environmental governance takes place are often treated as hierarchical and distinct, “as self-enclosed political territories within a nested hierarchy of geographical arenas contained within each other like so many Russian dolls” (Brenner, Jones, MacLeod 2003,

¹⁰ “Environmental governance” is often used as blanket term for complex interrelationships between land-use planning, resource use, and environmental conservation (Jonas and Bridge 2003), thereby conflating governance and management. In this paper, governance refers to decision-making processes whereby stakeholders provide input, decisions are made, and decision-makers are held accountable, whereas water management refers to the operational principles and approaches through which water resources are managed.

1). When deploying a regime approach, the state remains relatively unproblematized and indeed often becomes both naturalized and abstracted as a bounded demarcation of political power (Brenner, Jones, MacLeod 2003; Brenner 2004)

A reliance on the regime approach has meant that the process of rescaling has, until recently, received relatively little attention in the IR literature on transboundary water governance. Largely state-centric in orientation, the literature has focused on formal instruments such as treaties and agreements (Toset 2000; Kliot et al 2001; Giordano, Giordano and Wolf 2002; Wolf, Yoffe and Giordano 2003; Dinar 2004; Epey and Towfique 2004). Although much recent debate on fresh water resources has focused on the need to improve governance, as distinct from management (see, for example, UNWWAP 2003), the question of appropriate scales of management other than the nation-state is rarely a central focus. Rather, bilateral or multilateral transboundary water governance instruments dominate the conceptual frame (Sadoff and Grey 2002, Taylor 2004, Conca 2006).

This suggests that the conventional IR approach to transboundary water governance is ill-equipped to analyze the emergence of scales other than the nation-state. The politics of scale literature offer useful insights into exploring alternative scales, such as the rise of the local (Howitt, 1988, 2000; Smith, 1992, 1993, 1995; Jonas 1994, 2006; Swyngedouw 1997; Brenner, 2001; Jessop 2003, 2004). First, this literature insists that there is “nothing inherent about scale.” Rather, scale is produced, contingent, and transient – as work on “regions” in geography has, for example, demonstrated (Brown and Purcell 2005, 608; Smith, 1984, 1988; MacLeod 2001; Jones and MacLeod 2004). This perspective opens up analytical space to explore the production of, and

interconnection between, new scales of water governance, such as the local and the watershed scale (Betsill, M.M. and H. Bulkeley 2004; Bulkeley 2005).

Second, the focus on the relationship between space, scale, and the political economy of capitalism has provided important insights into the evolving role of the nation-state (Harvey 1989; Pred and Watts 1992; Smith 1995; Cox 1997; Swyngedouw 1997; Escobar 2001). In particular, the concepts of glocalization (cf Swyngedouw) and the hollowing out of the state (cf Jessop) suggest that the phenomenon of rescaling is multi-scalar and intimately connected to the emergence of non-state actors such as NGOs, while implying significant changes in the role and extent of nation-state activity and influence.

These insights suggest that an analytical strategy to avoid the territorial trap would entail an analysis of the evolving role of the nation-state in governance, and of the “power geometries” amongst stakeholders. The following section of the paper expands on these issues in the empirical analysis. Prior to that, however, we turn to a consideration of the conceptual foil of the territorial trap in the water management literature: the local trap.

The rise of local water governance: The local trap

A large proportion of watersheds are transected by international boundaries: Wolf et al (1999) estimate that international boundaries transect 261 river basins, representing 45.3 percent of the land surface of the earth.¹¹ The difficulties that arise in managing water, a flow resource, which distributes negative environmental externalities (as well as captured benefits) differentially amongst upstream and downstream users, across national boundaries have been well documented, as have the shortcomings of conventional multilateral and bilateral governance frameworks (see, for example, Conca 2006). In response, one strand of the transboundary water governance literature asserts the need for a “watershed approach” (Gleick 1993; Newson 1997; Pentland 2006), effectively substituting hydrological boundaries for political borders. Indeed, the watershed approach will likely come to be increasingly central to transboundary water governance in North America.¹² This trend is apparent along the Canada-U.S. border as the International Joint Commission (IJC), which has historically addressed disputes in a formal nation-to-nation setting, moves towards adopting a watershed approach via watershed commissions (IJC 1997, 2000, 2005).¹³

Discussions in water governance literature often indicate the benefits of addressing environmental issues on a watershed basis (Lundqvist, Lohm, and Falkenmark 1985; Gleick 1993; Kliot, Shmueli and Shamir 2001). A common, and often implicit,

¹¹ Excluding Antarctica

¹² This trend is part of world-wide phenomena. For example, in Europe, the Water Framework Directive mandates a watershed approach to all rivers within the EU, over fifty percent of which are transboundary (European Commission 2000). In India (van Koppen and Tushaar Shah 2007) and continental Africa (Lautz and Giordano 2005) the use of a watershed approach and Integrated Water Resource Management (IWRM) are also increasingly common in water-related projects -- partially driven by requirements to receive international funding.

¹³ The IJC was established with the creation of the 1909 Boundary Waters Treaty, which marks the earliest Canada-U.S. binational approach towards transboundary water governance.

presumption in the literature is that human, environmental and social decisions can be integrated through water basin-based governance instruments, rather than through political jurisdictions. In many instances, these assumptions are legitimated through appeals to the Integrated Water Resources Management (IWRM) literature. IWRM proponents often assert the necessity of multi-agency integrated management of land and water resources on a watershed basis, thereby implying governance across jurisdictional and political boundaries and prioritizing the involvement of multiple local actors in water management (Biswas 2004; Shrubsole 2004; Mitchell 2005).¹⁴

The assertion of the importance, even primacy, of the local scale in IWRM coincides with an important strand of the broader environmental management literature, which Corry et al (2004) describe as a new localism, in which the involvement of local actors tends to legitimize policy and environmental programs (Raco 2000; Raco and Flint 2001). The new localism advocates local involvement as necessary and positive, and as a means to supplant higher order levels of government and to reinforce the emergence of “social trust” in which both public and private needs are met and local democratic institutions are enabled. From this perspective, local governments are portrayed as being in touch with community needs, more empowering, more effective in cooperative practices, and more cost-efficient than “higher” scales of governance (Gibbons 2001; DeLoe et al 2002; Corry et al 2004; O’Riordan 2004).

Three questionable assumptions are often embodied in this literature. First, calls for watershed-based governance often contain an implicit assumption about the positive benefits of downscaling governance to the local level. This is problematic insofar as it

¹⁴ For an up-to-date overview of water-related issues, see Peter H. Gleick’s *The World’s Water (2006-2007): The Biennial Report on Freshwater Resources*. Washington: Island Press.

implies that the inclusion of stakeholders on an equitable basis across the watershed is possible (and, indeed, assumed to be probable). With respect to water resources, it is often suggested that the river basin is the most appropriate scale for water governance (Lundqvist, J, U Lohm, and M Falkenmark. 1985; Gleick 1993; Kliot, Shmueli and Shamir 2001). As Fischhendler and Feitelson (2005) note, the river basin scale is often endorsed as the most appropriate scale as it “allows land, water and human development issues to be integrated, thereby potentially internalizing all externalities, regardless of political boundaries” (792-3). This is in line with more general arguments by scholars such as Gibbins (2001), who maintain that it is imperative to bring local communities and their governments into the fold of evolving federal systems, as local stakeholders are playing an increasingly important role in federal government structures in the United States and Canada. Indeed, the assumption that the local is somehow a better scale for environmental management prevails throughout much of the water governance literature. However, this assumption may overlook limited local institutional capacity, or merely serve to endorse the purpose of rescaling tactics of higher orders of government – which may “downshift” responsibility without an associated allocation of resources necessary to undertake newly delegated responsibilities (Cochrane 1986).

Some scholars, however, have challenged the uncritical acceptance of the rhetoric of the local in environmental policy (Evans 2004; Sabatier et al 2005). Brown and Purcel (2005), for example, articulate the dangers of a local trap. This analytical counterpart to Agnew’s territorial trap assumes that organization, policies, and action at the local scale are inherently more likely to have desired social and ecological effects than activities organized at other scales.¹⁵ As Cochrane (1986, 51) claims, “governments seem to use

¹⁵ This concept, although originally applied to political ecology, is transferable to the work within

community as if it were an aerosol can, to be sprayed on any social programme, giving it a more progressive and sympathetic cachet”.

Second, the water management literature rarely problematizes the process of rescaling of governance which must occur if watersheds become the locus of water management. Yet these rescaling processes may have significant implications for the ability of actors, at local, national and supranational scales, to engage effectively in water governance. These issues are further complicated by governance mismatches, or asymmetries, in the case of transboundary watersheds. Water is a flow resource and a multi-use resource, and thus almost inevitably transgresses geopolitical and jurisdictional boundaries. IWRM presents a complex challenge for transboundary water management regimes, which have generally been state-centric, operating through formal instruments such as treaties, with little scope for local involvement of non-governmental actors.

Third, calls for the watershed approach frequently imply that nation-states necessarily lose a degree of power and influence when transboundary waters are managed on the basis of watersheds, and that devolution of responsibility and authority to local and supra-national scales also implies an increasing porosity or fluidity of borders to local actors (Coates 2004). In other words, embedded within the water management literature (and environmental management literature more generally) are the implicit suppositions that transboundary watersheds emerge inevitably from processes of decentralization, and that this rescaling necessarily increases the power of local scales at the expense of the nation-state. This raises the risk of treating the involvement of local actors in water management in a relatively uncritical fashion, particularly with respect to assumptions of equitable and meaningful participation, significant influence over decision-making, and environmental governance, as both have limited engagement with politics of scale literature.

accountability or empowerment (VanRooy 1997, 2004; Taylor 2004).

These critiques are to some degree anticipated, and certainly enriched, by recent debates in borderlands studies. Indeed, the mutual constitutiveness of borders and of processes of rescaling governance is the subject of increasing attention in borderlands studies. Within the past decade, border scholars have begun challenging the idea of a fixed and territorially bounded world and started unpacking issues of power, space, and territory (Newman and Paasi 1998). For example, Paasi (1996) argues that regions and territories evolve from processes of social construction in which the nation-state is actively involved. Approaching the process of border creation from a historical perspective, Paasi documents how the creation of a border is simultaneously material and symbolic. Geopolitical borders reinforce national identity by physically keeping its citizens in (and outsiders out). Nation-building narratives help its citizen internalize, and reify, national identities. Other scholars have made similar arguments, calling for geopolitical borders to be situated within wider historical frameworks and to be recognized as socially constructed spaces of power (see, for example, Anderson 1991; Sparke 2000, 2002; Kramsch 2002; Newman 2003; Fall 2005). This is particularly important in transboundary discussions, which often neglect to problematize the inherent asymmetrical power relations in the boundary-making process, which has particularly significant consequences for indigenous communities who predate the construction of many state borders.

The notion that scales of governance and borderlands are simultaneously socially constructed and material has important implications for our understandings of the rescaling. First, it implies the importance of treating scales of governance as

interconnected, socially constructed, and evolving, rather than distinct, naturalized, and immutable spaces. Second, it implies the acknowledgement of the simultaneous social construction and materiality of scale, and examines how water management scales are socially constructed, yet have material impacts that shape, and in turn are shaped by governance practices. In other words, insights from the borderlands approach imply that we need to approach the social construction of scale as a material as well as political process, with both material and discursive effects (Brown and Purcel 2005). This is particularly relevant to resource sectors that have experienced significant rescaling of environmental governance in recent years (see, for example, Mansfield 2001, 2005).

This, in turn, justifies an interrogation of the implications of rescaling for local communities and hydro-social cycles. It also implies skepticism with respect to assumptions often embedded in prioritization of the watershed scale in water governance debates. Implementing watershed governance does not, for example, automatically imply equitable representation of all stakeholders, or more power for local stakeholders vis-a-vis higher orders of government. Rather, this perspective reminds us of the simultaneous fixity and porosity of borders, and documents how local actors simultaneously undermine, yet are constrained by the container of the nation-state. Indeed, ironically, local actors are often less able to transcend the border than their nation-state counterparts. In short, this approach implies the need to query certain assumptions prevalent in the transboundary water governance literature as it pertains to local and watershed based management, such as the notion that borders have become more porous over time, or the assumption that scaling downward to the local implies that the border is more fluid, and less fixed (Rhodes 1996; Coates 2004). These questions are the focus of the following

sections of the paper.

3. Rescaling Canada-U.S. transboundary water governance

In the above section, we explored assumptions prevalent in the two main literatures dealing with transboundary water governance: international relations; and integrated water resources management. We argued that these literatures respectively fall prey to a territorial trap and a local trap, and we presented insights from recent work in geography on rescaling and the borderlands that offer alternative conceptions of scalar processes and outcomes of transboundary water governance. In order to flesh out these critiques, we now turn to a specific case study of Canada-U.S. transboundary water governance.

In this section, we analyze whether and how rescaling has occurred. The analysis draws on our comprehensive database of bi-national, water-related governance mechanisms between Canada and the U.S. managed at multiple scales: local, provincial/state, national and international. Table 1 explores the relationship between scales of governance and type of governance instrument. Overall, we found that of the 166 water-related governance instruments, 57 percent were federal and 43 percent were sub-national (state-provincial, multi-level, or local). When disaggregated into formal and non-formal (treaty/ non-treaty), it is clear that the federal instruments rely more heavily on formal agreements (77 percent), whereas sub-national or multiple-scaled groups rely more on organizations (57 percent) and informal agreements (16 percent). This is unsurprising, given the limited capacity for local organizations to create “binding” or “formal” agreements in an international setting. In lieu of binding agreements, the sub-

national, particularly at the multi-scale and local level, rely heavily on organizations.¹⁶

Through the creation of groups dealing with a singular issue (i.e. Flooding of the Nooksack River Task Force in the Pacific region) or basin-wide issues (i.e. Gulf of Maine Council in the Atlantic region), these organizations are able to create networks for information sharing and problem-solving with relatively little infrastructure.¹⁷

Overall, we found that the number of instruments designed to manage transboundary water have substantially increased over time, as has the rate of growth of new instruments over the past three decades (Graph 1). The rate of growth of instruments was relatively slow in the first half of the century. From the 1940's through the 1970's, the growth in instruments stayed steady, averaging about fifteen new instruments per decade. However, through the 1980s, the number of new instruments doubled to twenty-six, and then increased again to thirty-seven during the 1990's. From 2001 to present, twenty-five instruments have been established. This rate is congruent with the 1991-2001 rate, with an average of 3.6 instruments per year. Moreover, whereas the period up until the 1940s was dominated by treaties, agreements, and exchanges of notes, the majority of instruments created since the 1980s were conceived and implemented at the sub-national level, as described below.

¹⁶ We use the Oxford international law dictionary to define these instruments. E.g. Treaty is defined as "An international agreement in writing between two states (a bilateral treaty) or a number of states (a multilateral treaty)." Similarly, Vienna Convention of the Law of Treaties, 1969, Article 2 defines a treaty as "an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation." Such agreements can also be known as conventions, pacts, protocols, final acts, arrangements, and general acts. Treaties are binding in international law and constitute the equivalent of the municipal-law contract, conveyance, or legislation. MOU is defined as an "An informal record or memorandum of international understandings arrived at in negotiations. It is frequently a preliminary step in concluding a treaty." Non-Governmental Organization: "A private international organization that acts as a mechanism for cooperation among private national groups in both municipal and international affairs, particularly in economic, social, cultural, humanitarian, and technical fields."

¹⁷ The interviews revealed that these organizations and networks tend to mobilize in times of crisis, but are sustained even in non-crisis times through intermittent meetings.

Analyzing the data temporally also reveals some very interesting trends regarding the changing roles of federal and sub-national actors in water governance. Graph 2 shows a trend of declining federal involvement and increasing local involvement, in terms of number of organizations/ instruments. Even when evaluating solely governance instruments, excluding organizations, the trend clearly indicates a rise in local participation over the past two decades.¹⁸ Our analysis reveals that the federal role peaked in the 1940s, during what Pentland and Hurley (2007) refer to as the Cooperative Development Period. In fact, the trends found in our analysis coincide closely with the transboundary water periods identified by Pentland and Hurley (2007) (Table 2). While the federal role declines, the local governance instruments start to emerge during the Comprehensive Management Era in the late 1960s and 1970s. However, not until the 1990s, in the middle of the Sustainable Development Era, and the beginning of what we refer to as the Participatory Era, did the role of the local reach its zenith. When analyzing this trends pre and post-NAFTA (1992), a trend of greater local involvement emerges a decade after NAFTA is signed. This is significant given the role of NAFTA's environmental side agreement, which established the Commission for Environmental Cooperation (CEC), a tri-national transboundary environmental agency with funding mechanisms.¹⁹ Several of the recently established organizations received funds from the CEC, including multi-level groups in the Pacific and the Atlantic regions.²⁰

¹⁸ The trend is even more pronounced when organizations are included in the graph. However, in order to stave off the possibility of "presentism", in which more contemporary organizations are reported than those from the past, we excluded organizations in this particular analysis. Even without organizations, the overall trend remains the same (declining federal involvement and increasing sub-national). Organizations are included in Table 2.

¹⁹ The funding opportunities through the North American fund for Environmental Cooperation closed as of April 2007. A review of past grant recipients can be viewed on their website: <http://www.cec.org/grants/index.cfm?varlan=english>.

²⁰ Further study would be needed, however, to make a direct link between NAFTA – CEC and greater presence of transboundary cooperation. Anecdotally and through interviews, the CEC was not linked to greater mobilization for transboundary water groups (at any scale). The availability of funds for these

These trends in water governance parallel trends reported by the IJC. In a recent Canadian Department of Foreign Affairs presentation, representatives from the IJC reported that the instruments used to enable the IJC, such as references and applications, have steadily declined over the past several decades (Graph 2). In an effort to adapt to these changing patterns, the IJC has developed a new mechanism, the watershed approach, which is intended to allow for greater multi-level and specifically local participation (see IJC 1997, 2004).

Tables 3 and 4 outline the regional variation in the proportion of federal and sub-national instruments. The highest number of local instruments is found in the Pacific region; however the Atlantic and Western Montane have the highest percentages of local instruments as a proportion of the total. The Great Lakes - St Lawrence region has the lowest proportion of local instruments - which may result from the scale of the lakes where fewer bodies of water means fewer instruments; large number of actors, which complicates any local agreements; and/or the level of IJC involvement keeping activities focused at the federal scale. Despite the proportionally small amount of local level participation, the Great Lakes region was one of the first to include multi-level stakeholders in transboundary water governance with the establishment of the Great Lakes Fishery Commission in 1955. In terms of Provincial – State relationships, the Pacific region led the way with the founding of the Environmental Cooperation Council in 1992. This binational organizational body was emulated in Montana - Alberta and British Columbia – Montana more than a decade later.

Another important aspect of our analysis examined the spatial clustering of

groups provides increased capacity for short-term projects, but did not make significant changes in the capacity of binational relationships.

governance instruments around watersheds, rather than regions. Through this analysis, we find that a few basins make up a large proportion of the governance instruments. We found that 61 percent of the transboundary governance instruments were created for eight (out of thirty) watersheds (Great Lakes 23, St. Lawrence River 17, Columbia River 15, Niagara River 10, Red River 9, Rainy Lake 8, Georgia Strait-Puget Sound 8, St. Croix River 7).²¹ In fact, the top five watersheds make up almost 50 percent of the governance instruments.

A significant amount of this activity occurred around during the Cooperative Development Period in preparation for shared hydroelectric development. However, in the Great Lakes region, where there is the greatest number of governance instruments, the efforts have been both sustained and dynamic. The transboundary instruments date back from the beginning of binational cooperation with the Boundary Water Treaty and the International Lake Superior Control Board (1925), to the Great Lakes Water Quality Agreement (1972), to, most recently, the preparation for the Upper Great Lakes Study Board (2007). The second most active geographic region, the Pacific, looks notably different than the Great Lakes - St. Lawrence River Region. In the Pacific, the development of water governance instruments has emerged largely during the 1990s in the Sustainable Development and Participatory Era. Leading the way in binational cooperation at the provincial-state level, the Pacific developed a significant amount of its instruments to work with many multi-stakeholders at various scales. A notable exception is the Columbia River, where many of its binational governance instruments were developed in 1940s to support its role in generating hydro-electric power and managing

²¹ The top eight watershed basins are listed with actual number of instruments, e.g. 23 instruments in the Great Lakes.

flood control. However, like the Great Lakes, the governance instruments are dynamic, with efforts to become more participatory in recent times (e.g. the Columbia Basin Trust (est. 1995) and the Columbia River Transboundary Gas Group (est. 1998)).

4. Porous borders?

In the above section, we documented the reconfiguration of governance instruments for transboundary water. The trend of a declining federal role and an increasing local role was clearly exhibited (Graph 1). We also found significant regional variances in governance instruments across the border, where a relatively small number of watersheds comprised the majority of governance instruments. We now query whether this reconfiguration has led to more porous borders and more empowerment (increased institutional capacity and involvement in water management decision-making processes) for local actors.

Although the majority of respondents identified an increased participation of local actors²² in water governance over the past fifteen years, they consistently articulated the opinion that this increase failed to translate into greater local institutional capacity. Nor has it enhanced their ability to travel across the Canada-U.S. border (particularly post-9/11). This result was also found in our binational water governance workshop, where the participants concurred that the local scale is increasingly involved in binational governance. However, several of the respondents noted that this decrease in scale should not be glorified; rather in many cases it is the result of a “downloading of responsibility by senior government.” The Columbia River in Washington State and British Columbia was identified as an example where a shift from federal responsibilities to mixed

²² For the purposes of the discussion, local actors were defined as community-based and First Nations groups, local governments, and elected local officials.

arrangements between state, province, NGOs, and tribal governments has occurred with mixed results. One group reflected:

Yes, local involvement and importance has increased, *but* the greater good has to be considered. We cannot let ‘single-issue’ groups make decisions. However, local stakeholders must be involved or else things just don’t happen.

Similarly, a second focus group noted that, “local governments are more susceptible to local political pressures, such as land development, if there is no state or provincial standard to be met.” These findings are not limited to the Canada-U.S. border. In a recent study including eighty-three river basin organizations worldwide, it was found that although decentralization to the “lowest appropriate level” is an internationally accepted principle of river basin management, the “actual application often encounters obstacles due to the varying interests of different stakeholder groups” (World Bank 2007, see also Cassar 2003).

Our empirical work explores the root causes for the lack of increased capacity for transboundary water governance at the local scale. Our analysis indicates that mismatched or asymmetrical governance structures, limited institutional capacity, and lack of intra jurisdictional integration all play an important role in limiting the extent and effectiveness of transboundary cooperation. Table 5 provides a list of barriers and drivers of transboundary cooperation identified through interviews and focus groups. Respondents also argued that asymmetrical governance structures at the local scale were aggravated by the different pace and timing of rescaling in Canada and the United States. Specifically, in the U.S., interview respondents indicated that despite state-wide programming aimed to include local stakeholders in water governance activities, such as

the 1987 Water Act Amendments, “water governance has decidedly *not* shifted to local communities.” Some respondents stated that, “there was actually *less* power for the local communities today than fifteen years ago.” Although the 1987 Amendments aimed to bring more power to local communities through state empowerment, some water managers felt that the “local communities had their hands tied by the amendments” and that, “the idea that local communities have more power is [simply] illusory.”²³

Several of the U.S. respondents further indicated that state employees tend to have little involvement in the transboundary process – “it was either local or federal.” Many of the state employees felt that their hands were tied in terms of involvement in transboundary water issues, as reflected by one respondent, “They [the feds] limit our opportunity – we *could* get involved, but then they [the feds] could just take over.” For the local groups and ENGOs in the study region, we found that limited financial resources and over-extended staff tempered binational cooperation. One of the difficulties was the constituent base, which was often reticent to have their donor dollars stretch across international jurisdictions.²⁴ These barriers tend to limit the scale and scope of the groups’ projects and limit their involvement in transboundary governance in general.

In Canada, in contrast, jurisdictional fragmentation has led to confusion over appropriate roles and appropriate scales of responsibility for water governance. Our interviews echo the observations from Parsons (2001, 131) that this fragmentation is exacerbated by a process of rescaling in which “environmental authority is being ceded at once downward to the provinces and upward to international institutions” (see also

²³ However, several workshop participants noted that NGOs are playing a greater role in shaping agendas, but that these NGOs are not necessarily transboundary.

²⁴ These findings are consistent with an earlier study by Norman and Melious (2004). However, a notable exception is the Gulf of Maine Council, where although eighty percent of the donor dollars come from the U.S., the project funds are equitably distributed between Canada and the U.S.

Paehlke 2001). In particular, the private sector and local governments have experienced an increase in responsibilities as a result of this devolution. Several of the interviewees described how this devolution of provincial authority has led to greater local participation in water governance as well as greater federal responsibilities. In the words of one provincial respondent, “the local is becoming more responsible for water governance issues as a flow-over from provincial downsizing.”

This reconfiguration has impacted volunteer organizations and Canadian NGOs, whose increased participation in environmental governance is well documented (Gibson 1999; Harrison 2001; Dorsey and McDaniels 2001; Howlett 2001; Savan, Gore and Morgan 2004), and growing influence in environmental policy-making and monitoring is recognized (Savan, Morgan and Gore 2003). Several provincial employees concurred that “more and more people are becoming involved in water governance issues” and that “there has been an increase in cooperation at the local neighbor – neighbor level.” However, this participation has its limits; as reflected one interviewee, “Canada has a strong government-to-government mentality, which provides a barrier for citizen participation in transborder issues.” Thus, although NGOs are more present, and have increasingly more influence, the devolution of power has not yet translated to direct governing authority for non-governmental actors.

These observations are important for several reasons. First, they decouple the “hollowing out of the state” from “glocalization” by showing that an increase in local and non-state participation does not necessarily lead to a lessening in federal power (despite declining federal involvement). Secondly, they speak to the “local trap” by showing that an increase in local involvement does not equate to increased power of the local. Specific

examples from our case studies, both in our interviews and focus groups, help flesh out these trends.

Our case studies reveal that the border remains a significant barrier to co-managing shared water resources, despite the programming and energy expended towards transboundary governance at a local level. Several respondents attribute this lack of fluidity, or ability to move easily across the border, to limited institutional capacity. Issues such as inability to make phone calls internationally, travel across borders, purchase data, and generally work with counterparts contributed to this phenomenon. For example, one respondent noted that despite working on an international river basin for several years, s/he, until very recently, was unable to call out of the country - the office was able to receive international calls, but not able to make them. This type of limited capacity also occurred with data acquisition. One interviewee highlighted the nuisance in getting departmental funds to purchase data from Canada pertinent to his/her work on an international river basin. As “the data was not public domain” and his/her department “was not quick to spend the money” to acquire the information, the respondent reported that s/he was forced to “bypass the organization and purchased the data using personal funds.” Another respondent reflected on how intractable binational governance could seem:

When I ask if I can get data, they [the Canadians] say “you can buy it or we don’t have it.” Then, I find out later they really *do* have it, but just didn’t share it or they didn’t know that it existed. It is frustrating..... In Alberta, they have great websites, very flashy and looks nice, but the raw data is not there – it doesn’t seem to be easily available.....We do things differently on *our* side. We have more public information – USGS has a public website where you can get any information – it is free public information for anyone at anytime to access.²⁵

²⁵ Although the respondent noted that after 11 September, 2001 some of the sites are no longer public domain – particularly information regarding reservoirs. It was reported that even state employees have

Similar issues with data were reported by the coastal Pacific respondents. As one interviewee notes,

There is a lot more capacity in the United States [for water governance]. Even from the data perspective, they [the U.S.] have more data to work with.²⁶

General lack of knowledge of the “other” was also consistently reported as a barrier to transboundary cooperation. Many of the water managers interviewed were largely unfamiliar with the political structure and key environmental legislation of the other country. They were, however, interested in knowing this information. Not only were the interviewees unfamiliar with the political structures of Canada or the U.S., they were largely unconnected to their counterpart across the border, despite the shared watersheds and water-related concerns. One bi-national creek in the Pacific region, for example, which is experiencing significant decline in salmon population due to habitat loss and lack of water flow, has little coordination between agencies and groups managing the watershed. Despite the physical proximity of the border towns (approximately 3 miles), the staff (city, state, and NGO) that work on the management of the creek operate with little to no communication with their counterparts across the border. One extension officer from a Washington State agricultural office reported a desire to work with her/his counterpart, but was unsure who that person was or which office to contact. In fact, the extension agent turned to our project as a way to connect with their counterpart. In this case, the border is both materially and socially constructed

difficulty accessing the sites because they are maintained at a federal level.

²⁶ Data is considered a “public good” in the U.S. because it was created using public funds. In Canada, less comprehensive policies tend to limit access, both internally and externally. However, several of the Canadian respondents noted the presence of informal networks of data exchange where, after working in one’s field for several years, you “just know who to call for specific information” and are able to “bypass the system.”

– although the physical space connecting the creek is minor, the border creates a very real socially binding arena that provides barriers to coordination.

Coordination between counterparts is even more strained when great geographic distance separates the water issues. Several of the interviewees identified spatial distance as a significant factor limiting binational cooperation. The St. Mary – Milk River in Alberta and Montana was identified as an example where great physical distance between the issue and population base limited civic engagement. In this case, the sparse population at the border, particularly in Montana, has kept the issue largely in the hands of state and federal officials, effectively reifying the political border. More generally, the role of distance decay can partially explain the clustering effects around specific watersheds (e.g. Great Lakes, Columbia, St. Mary – Milk) which receive the bulk of attention, while other transboundary water issues (e.g. Skagit River, Yukon) receive much less. The bodies of water that are more visible at the national level tend to have more governance instruments built around them.²⁷

Inconvenient meeting venues were also identified as a limiting factor for civic engagement and a barrier to fluid borders. This is exemplified by one local stakeholders group in the Pacific region where the meeting venue perpetuated significant asymmetry in participation. Although the group's mandate is binational (British Columbia and Washington), the meetings are almost always held in British Columbia, leading to significantly more participants from Canada than from the U.S. The official roster has an equal number of participants listed, however, only one member of the U.S. attended over the past six meetings (with an average participation rate of twelve people). In order to

²⁷ There is, of course, a temporal element to this – the bodies with longer colonial settlement histories such as the Niagara and St. Lawrence, tend to have more instruments built around them, than the 'newer' issues such as the Flathead Basin.

help mitigate this asymmetry, the group leaders recently agreed to meet *at* the border. Although the change in venue provided a neutral setting, minimized the amount of travel for the U.S. participants, and eliminated the need to cross through customs, the asymmetry continued: only one U.S. participant attended.

The difficulty in convening a binational forum serves as an example of the simultaneous fixity and porosity of borders. In this case, the local actors undermine the border by treating a binational watershed that spans a political border as a singular “borderless” bioregion. However, due to physical constraints of the contained nation-state, the local actors are impacted by the bordered region, and unable to transcend the border for their meetings.

Mismatched political structures and governance mechanisms in Canada and the U.S. were also repeatedly identified as a barrier to transboundary cooperation. In a focus group survey of barriers to transboundary water governance, asymmetry consistently rose to the forefront of the issues. One respondent lamented,

There is no symmetry to how decisions are made across the border. The fact that the U.S. and Canadian governments have inverse state-federal power distributions significantly impacts how decisions are made.

Because Canada has a strong provincial system and a weak federal system, and because the U.S. has a strong federal system and a weak, relative to provinces, state system, negotiations between counterparts are often tenuous.²⁸ Furthermore, different funding cycles and legal structures accentuate the difficulty in coordinating projects across the border. One respondent reflected,

because there are potentially four relevant jurisdictions (two federal, state, and provincial) and four different fiscal schedules to coordinate, it can be a

²⁸ Many of the respondents noted that the IJC serves as counterbalance to this mismatched governance – creating “an even playing field” for bi-national cooperation.

nightmare to figure out.... [we try to] come up with ideas, implement pressure, and spend it all by the end [of the fiscal year] to ensure that there will be funding again next year.²⁹

This asymmetry of governance mechanisms further complicates the possibilities of transborder, basin-wide management of water, particularly at the local level. It has been argued that the sub-national organizations are more flexible than the more formal federal institutions. However, in a transboundary setting, we find that the asymmetries in governance structures serve to immobilize, or at least temper, the ability for regional groups to work effectively across national boundaries. Conversely, the IJC was specifically developed to mitigate these asymmetries by creating a level – playing field between nations. However, as the trend towards more localized scale persists, the IJC is receiving fewer references and applications for study.

The majority of our respondents argued that cross-border cooperation was considered intermittent, issue driven, and unequal across the border. The interviews reinforced our earlier findings that transboundary governance instruments are narrowly concentrated among a few major basins, rather than spread equitably across the border. As one provincial employee noted, the “higher profile watersheds and larger bodies of water tend to be the focus of transboundary committees (i.e. Columbia River, Georgia Strait – Puget Sound).” Several lower-profile water systems, although rife with environmental concerns, are eclipsed by these more public issues. We also found that the attention to transboundary watersheds was largely sporadic. This is true particularly for the lower-profile watersheds which arise mostly in times of crisis. As one senior Washington state employee reflected,

²⁹ Biswas (2004) speaks to the difficulties of cooperative government and integrated water resource management in a recent article in *Water International*. He argues that the difficulties of coordination lie in the very foundation of a confusing and amorphous definition – if parties are unable to agree on a common definition how are they able to succeed in practice?

It would be nice to have ongoing [transboundary] institutional cooperation. It [cooperation] has always been episodic.....We don't even have good interstate agencies. How are we supposed to have good international agencies if we can't even coordinate between states?

These points highlight our finding that despite the increase in the number of local – and decline in federal – instruments to govern transboundary water, the nation-state remains a key instrument in negotiating transnational water issues. In other words, rescaling is not leading to a hollowing out of the state; nor a new localism. Rather, the rescaling of governance instruments might better be described as a game of musical chairs, where the players might be changing, but the balance of power has remained relatively constant.

6. Conclusions: Querying the power of locals in transboundary water governance

The analysis presented in this paper speaks to recent debates over the rescaling of environmental governance, and to recent research on borderlands as an interstitial geopolitical space. We emphasize the simultaneous fixity and porosity of borders, and document how local actors simultaneously undermine, yet are constrained by the container of the nation-state. This has allowed us to document the pitfalls to which transboundary water governance is subject (both the local trap and the territorial trap), and to question the desirability of strategies, currently being explored by policy-makers, of giving greater weight to local transboundary water governance at a watershed scale between Canada and the U.S.

Specifically, our analysis has suggested that although rescaling of transboundary water governance has occurred (i.e. local actors are increasingly present in transboundary governance), greater empowerment (specifically defined as institutional capacity) for

local actors has not resulted. Indeed, ironically, we found that local actors are less able to transcend the border than their nation-state counterparts. Although local actors are genuinely attempting to engage in transboundary governance, they encounter limited success due to inadequate resources and restricted capacity. Thus, despite the documented increase in participation of sub-national actors in transboundary water governance, significant barriers have limited the capacity for these actors to effectively participate in decision-making on the management of water resources across an international border.³⁰

Moreover, considering the substantial financial and human resources available for downscaling in the Canada-U.S. case, the issues identified above suggest that success is by no means straightforward, bringing into question the current policy preference for downscaling – particularly on the part of international donors and NGOs in the South. These findings serve to underscore the perils of the “local trap”, insofar as the assertion of the increased power or influence of local scales does not hold in this case, despite significant rescaling of water governance on both sides of the border.

Additionally, our analysis refutes the assumption – prevalent in the environmental management literature – that the rescaling of transboundary water management implies that the border is more porous, and less fixed (Gibbons 2001; DeLoe, DiGiantomasso and Kreutzwiser 2002; Corry et al 2004; O’Riordan 2004). Rather, the analysis in Section Four documented the relative fixity of the Canada-U.S. border, and explored how the asymmetrical governance structure and disparate governance rescaling trends in Canada and the United States limited managers’ abilities to govern water across political borders.

³⁰ This is not to say, however, that the role of the local does not contribute to environmental governance at all. Our study reveals several positive attributes of local participation in transboundary environmental governance (particularly in terms of raising public support of an issue). (See Figure 2 for list of reported barriers and drivers of transboundary cooperation). However, our focus in this paper is not to explore the drivers of cooperation, rather we aim to temper the assumptions that the local actors are more effective than other actors due to their “on the ground” standing.

The process of rescaling documented in Section Three has entailed a degree of “glocalization” (cf Swyngedouw), but this has been decoupled from the “hollowing out of the nation-state” (cf Jessop, Brenner): The nation-state retains key powers and authority to govern, and the federal scale offers the best hope of a “level playing field” between asymmetrical actors.

This, in turn, suggests that we must re-examine the desirability and feasibility of local transboundary governance at the watershed scale as the primary means of governing shared waters. Our interviews with water managers engaged in transboundary water governance indicate that significant and systemic barriers exist to effective transboundary water governance at a local scale, including asymmetrical participation, mismatched governance cultures and structures, spatial distance, and limited capacity. These findings are at odds with much of the water management literature, but correspond with Fischhendler and Feitelson’s argument (2005) that in contemporary transboundary water governance between Canada and the United States, through the Boundary Waters Treaty and the IJC, reducing the scope of transboundary management to include solely border waters is successful because it minimizes external players and lowers the political costs.

Finally, our analysis suggests two more general hypotheses for consideration in studies of the rescaling of environmental governance. First, the process of rescaling is not necessarily positive or empowering for its supposed beneficiaries. Rescaling may become a “down-loading” of responsibilities without commensurate power and resources. In some cases, this is accidental; in others, intentional. Second, all scales are socially constructed - even apparently “natural” scales such as the watershed. The extent to which these scales are meaningful bases for social action rests on the shifting power geometries

of actors at multiple, and overlapping, scales. Analyzing the activities of solely local actors, or privileging any one scale, in environmental governance risks misinterpreting the degree to which local actors are indeed empowered by processes of rescaling.

Table 1. Relationship between scale of governance and type of governance instrument (2005 data)

	Federal		State-Provincial		Multi-level		Local		Total Sub-National	
	Number	%	Number	%	Number	%	Number	%	Number	%
Binding	73	76.84	15	42.86	0	0.00	0	0.00	15	20.55
Non-Binding	3	3.16	12	34.29	2	6.45	1	0.17	15	20.55
Organization	19	20.00	8	22.86	29	39.55	5	0.83	42	57.33

Source: Authors' Canada-U.S. Transboundary water governance instruments database

Notes: 'Binding' refers to formal mechanism such as Treaty, Agreement, Order, and Exchange of Notes.

'Non-Binding' refers to Memorandum of Understanding, Memorandum of Cooperation and Memorandum of Agreement.

'Organization' refers to multi-stakeholder and local (sub-national) transboundary groups.

Table 2. Eras of Canada-U.S. transboundary water management (1945 - 2007)

Transboundary Water Era	Time period	Role	Example
Cooperative Development	1945 – 1965	<ul style="list-style-type: none"> ▪ Projects of mutual benefit ▪ Federal government encouraged hydroelectric development 	Columbia River dam; St. Lawrence Seaway
Comprehensive Management	1965 – 1985	<ul style="list-style-type: none"> ▪ Issue – based ▪ Comprehensive river basin planning and more 'environmentally conscious' framework ▪ Water expertise built up at Federal level 	Great Lakes Water Quality Agreement
Sustainable Development	1985 – 2000	<ul style="list-style-type: none"> ▪ Linking economy and environment ▪ Issues more integrative, anticipatory and preventive 	Great Lakes Annex
Participatory	2000 – current	<ul style="list-style-type: none"> ▪ Increased local participation 	Watershed Boards

Source: Adapted from Pentland and Hurley (2007)

Table 3. Regional variation of governance instruments in Canada-U.S. transboundary area

Basin Region	Country- Wide	Pacific	Western Montane	Central Prairie	Great Lakes	Atlantic
Federal						
Organization	2	3	1	7	5	1
Treaty	2	3	0	4	7	0
Agreement	1	3	0	0	7	3
MOU/MOA	1	0	0	0	2	0
Exchange of Notes	4	5	2	2	9	5
IJC Order	0	8	1	4	3	0
State-Provincial						
Organization	0	5	2	0	0	1
Agreement	0	5	2	0	5	3
MOU/MOA	0	4	2	2	1	3
Multi-Level						
Organization	0	8	2	7	6	5
MOU/MOA	0	0	0	0	1	1
Non-Government						
Organization	0	2	1	0	0	2
MOU/MOA	0	0	0	0	1	0
Sub Total	10	46	13	26	47	24

Source: Authors' Canada-U.S. Transboundary water governance instruments database

Table 4. Percentage of local governance instruments per Canada – U.S. transboundary region

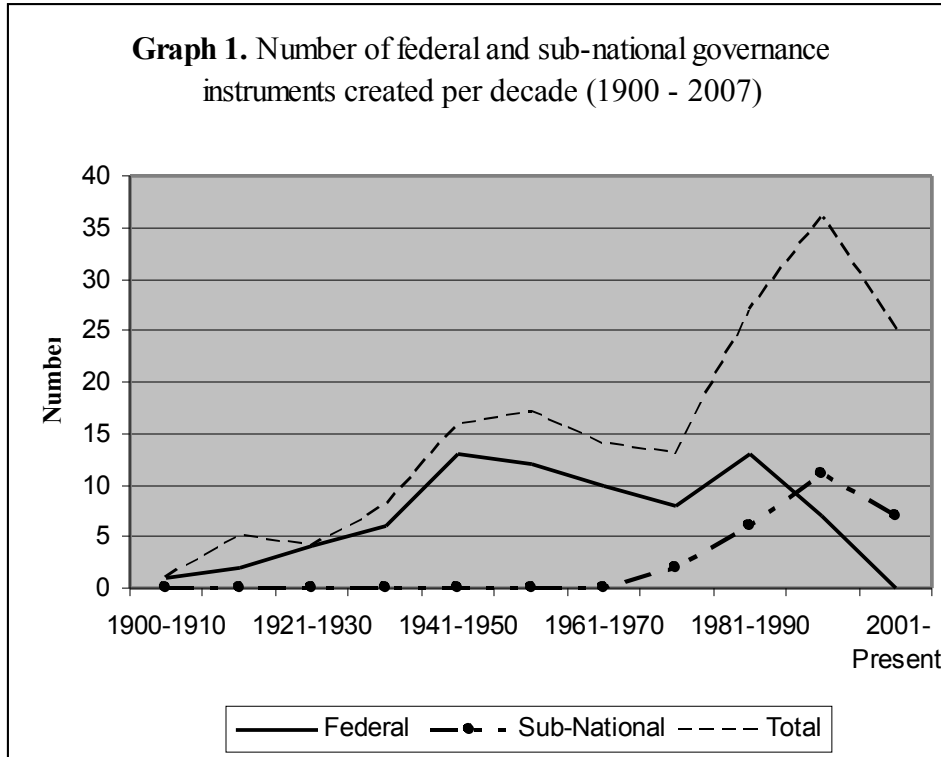
Region	Federal	Local	Percent Local/ Federal
Country-wide	10	0	0
Pacific region	22	24	52
Western Montane	4	9	69
Central Prairie	17	9	35
Great Lakes - St Lawrence	33	14	30
Atlantic	9	15	63

Source: Authors' Canada-U.S. Transboundary water governance instruments database

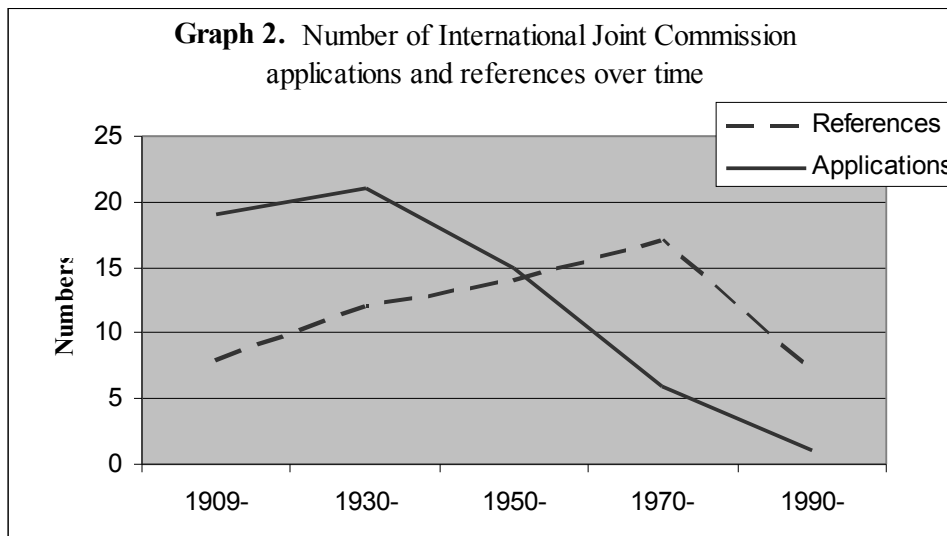
Table 5. Transboundary Cooperation: Barriers and Drivers

<i>Drivers</i>	<i>Barriers</i>
Specific issues	Mismatched governance structures
Leadership	Different governance cultures
Informal contacts	Different mandates
Established networks	Lack of institutional capacity
Crisis	Lack of financial resources
Personal relationships	Asymmetrical Participation
Public availability of data	Data, lack of / difficulty accessing
Proximity	Lack of intra jurisdictionally integration
Legal obligations	Gaps in knowledge of the ‘other’ country
Opportunity-driven	Spatial Distance
Transparency	Federal jurisdiction tempers regional action
Practicality	Mistrust
Respect / Fairness	Lack of leadership

Source: Transboundary Governance Workshop (April 2006) and Water Manger interviews (2005 – 2007)



Source: Authors' Canada-U.S. Transboundary water governance instruments database
 Notes: Total includes all 166 governance mechanisms, including 'organizations'; Federal and sub-national, exclude 'organizations'.



Source: Canadian Section of the International Joint Commission

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Acknowledgments:

We would like to thank the anonymous reviewers and section editor for their thoughtful and constructive comments. Thanks also to the water officials and stakeholders who reviewed the database at various stages. Thank you to Alicia Tong who helped construct an earlier version of the database and Alice Cohen who provided useful comments on a later version of the manuscript. Lastly, we would like to acknowledge the generous support from the Walter and Gordon Duncan Foundation, The Social Sciences and Humanities Research Council, The Weyerhaeuser Foundation, and the Canadian Consulate in Seattle, Washington.