



Investigation of Cross Border Environmental Management and Consciousness at the Local Level: Power Plant Development within a Confined International Air Shed

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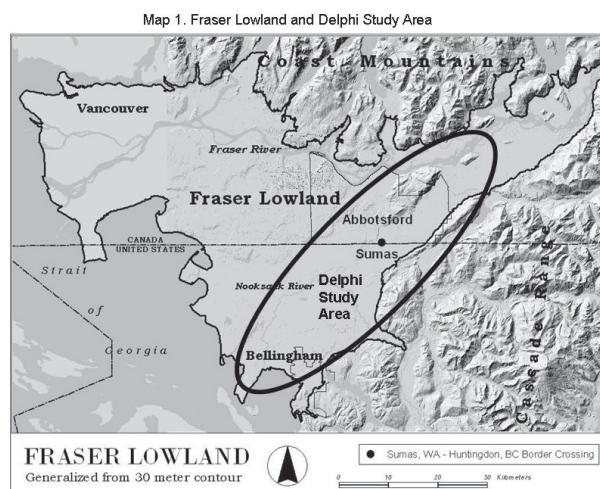
Patrick BUCKLEY* and John BELEC**

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Abstract

Localized cross-border management of environmental issues is a growing trend. This paper focuses on a pair of nested questions regarding such management using a Delphi Methodology applied to a panel of local decision makers along the United States – Canada border. First, in response to the past threat of overstressing the shared air-shed is a trans-border consensus emerging among decision makers? Second, if true, might Cross-Border theory and the applied model of the International Watershed Initiative provide insight into how cross-border management might evolve? The study answers each of these affirmatively. However, when the panel is asked if a similar consensus exists across the general public of the transnational - region, panelists are split. Half clearly in the affirmative and half in disagreement, but the bifurcation is not based on nationality. Clearly this is the next area for investigation.

Keywords: International Environmental Consciousness, Cross-border region, Cross-border Resource Management, Delphi Methodology



* Huxley College of the Environment, Western Washington University, Bellingham, WA, USA

** Department. of Geography, University of the Fraser Valley, Abbotsford, BC, Canada

1 INTRODUCTION

Between 1999 and 2006 a very divisive cross-border dispute erupted in the heart of the American-Canadian macro level cross-border region referred to as Cascadia¹ over the proposed development of an ill-fated 660mw electrical generation plant adjacent to the American side of the border using imported Canadian natural gas. The plant was slated for construction in Sumas, WA less than a kilometer from neighboring Abbotsford, BC. Given the close and cordial relationships of politicians in these two places and a long history of mutually benefiting from the *border paradox* (Knotter, 2002-2003), the sudden grass roots revolt against the plant, which spread like wildfire from the US side to Canada, caught city fathers on both sides of the border scrambling. The key complaint of both populaces was the potential for increased stress to a confined and shared air-shed in the surrounding Fraser Lowland (Map 1). However, it is not the purpose of this paper to detail the events surrounding this dispute and its resolution, which eventually drew state, provincial, and national actors into the fray before it was solved. The authors have done that elsewhere (Buckley and Belec, 2009). Instead, this paper seeks to shed light on the future rather than recount the past. It asks the following question: in light of these recent events are the local decision makers on both sides of the border coming to a common consensus over joint resource management like the shared air-shed or not? That is, is there an understanding emerging of the need for a common regional consensus among local decision makers; one that will evolve in such a way as to decrease, address, or even eliminate contentious issues like the one presented above before they become disputes requiring the direct intervention of outside provincial and/or national actors?

To address this question the study uses a Delphi Panel of local decision makers and experts to evaluate whether or not a common vision is emerging in the immediate environs of the Sumas-Abbotsford flashpoint on addressing cross-border environment and resource management issues. Specifically, one that favors a proactive eco-regional approach rather than a reactive politically bounded and charged one. Further, this research begins by presenting a possible model for such change, the International Watersheds Initiative (IWI), a pilot project of the International Joint Commission (IJC) instituted in 1998 under the 1906 Boundary Waters Treaty (IJC, 2005, 2009). Key to the eco-region based IWI is its proactive approach to

¹The Cascadian Cross Border Region or simply Cascadia is region focused on the corridor extending from Portland, OR, through Seattle, WA, north to Vancouver, BC. Beyond this Pacific Northwest coastal alignment its full north-south and inland extent is debatable. Many observers suggest it extends as far north as Alaska, inland to Alberta and Montana, and south to Oregon border.

addressing cross-border resource management issues at the local level before they become international disputes requiring intervention by the national level. Essential to the success of such a mechanism is the development of a local cross-border consensus and consciousness. However, it should be noted that the IWI by design is primarily a management tool for water resources within defined water basins. Thus, to expand beyond this and demonstrate how a method like the IWI relates to a variety of other resource management and cross-border issues, such as the one above, this research places the IWI into the context of the broader cross-border region (CBR) theory (Jessop, 2002, 2005; Leresche and Saez, 2002; Perkmann and Sum, 2002; Scott 1998, 1999, 2002). The CBR approach allows for a much more flexible set of geographical bounds, scales of governance, and goals which easily subsumes watershed based eco-system management, as well as providing the potential to extend joint local management to socio-economic issues as well. In addition, a CBR relies on a form of paradiplomacy as the active expression of a common cross-border vision both as an initiator and outcome of its success. This enables us to ask a second question; does CBR theory and especially the IWI applied example provide insight into how cross-border resource management might evolve in the Abbotsford-Sumas region?

The results of the Delphi study demonstrate that the expert panelists hold a great deal of commonality in identifying resource management issues in need of attention. Further, they favor the evolution of existing institutions to address these cross-border issues with a place at the table for local and regional representatives as well as national ones and a public-private partnership, much like the IWI approach. From this a common cross-border consensus is clearly demonstrated among the expert panelists. However, when asked about the development of such a consensus across the region by the public in general they are split. Roughly half, regardless of nationality or background, see such a consensus as currently in place at a strong level and half see it as still only weak to moderate, however both see it growing modestly stronger with time. Thus, the results demonstrate that local decision makers and experts appear ready and anticipating an IWI type of locally focused cross-border management of resource issues, yet half feel that the general public is not yet on board.

The remainder of the paper is organized as follows; the next section discusses two cross-border concepts that underlie the future of cross-border resource and environmental management; the currently applied IWI and the broader theory of CBR governance and a form of paradiplomacy. All of these are premised on the development of a localized common cross-border vision and cooperation. Section three then describes how the Delphi method was utilized to search for such

a common vision. Section four provides a summary of key outcomes of the Delphi study. Section five then analyzes and discusses the results in the context of the IWI model and CBR theory and addresses the question of whether the Abbotsford-Sumas sub-region seems to be moving towards an eco-regional based management scheme. Finally, the last section summarizes the results and suggests areas for future investigation.

2 CROSS-BORDER RESOURCE MANAGEMENT

The IWI is an applied example of how cross-border natural resource and environmental issues are being managed within a targeted water resources framework. Locating this approach as a sub-category of the broader CBR theoretical approach, provides a greater understanding of how such an eco-system approach can address issues as occurred in the Abbotsford-Sumas area in a much more flexible and complete fashion than simply the IWI. Finally interwoven within and cementing this management approach is the concept of a form of paradiplomacy, or cross-border international relations initiated by non-national entities for their own benefit; or simply a means of furthering the development of a cross-border consensus. This section will develop and link these topics.

2. 1 International Watershed Initiative (IWI)

Over the past fifty years under the 1909 Boundary Waters Treaty the International Joint Commission (IJC) has assisted the United States and Canadian governments in managing boundary waters and their watershed environments. During the past decade the geographical and ecological focus of such activity has evolved from merely managing water quantity and quality within specific borderland rivers and lakes taken in isolation to an eco-system based approach. This new approach focuses on the complex interrelationships within entire borderland watersheds. Besides this ecological/spatial shift, under the IWI the IJC has favored bottom-up local initiatives over top down national ones. The guiding principle is that with the appropriate assistance and information "...local people and institutions are often the best placed to anticipate, prevent or resolve many problems related to water resources and the environment, and to take shared actions towards shared sustainability objectives." (IJC, 2009, 3)

The IWI pilot program began in 1998 and currently includes four cross-border watersheds. Although it stresses localized bottom-up solutions as the best way to prevent issues from escalating into international disputes requiring the intervention of the national governments, its creation has been very much a top-down exercise. After identifying three and later four test watersheds, the IJC merged existing water boards

within each watershed. Prior to this boards had specific mandates which could be limited to either water quantity or quality issues or even be focused on a single control or diversion feature along a lake or stream. The result was the creation of international watershed boards (IWBs) that are perceived as better integrated, more locally participatory, and proactive in anticipating, preventing, and resolving local issues.

However, the development of the IWBs is much more than simply spinning-off problem solving activities within watersheds. It is a training ground to create a competent and motivated set of local experts who both augment and extend the historical activities of the IJC with the goal of not only good management but also long term sustainability and the prevention of disputes. In a sense it works much like voluntarily bundling together massive numbers of individual computers to address problems too daunting to be reasonably addressed by a single centralized unit. But it is much more than that. Beyond leveraging the strength of numbers it also exploits the advantage of local knowledge, contacts, and commitment. Its goal is to create a system capable of independently evaluating and solving local issues without the need for recourse to centralized, national institutions. Much like the cells of an organ in a body operate independently yet in harmony with larger systems, only requiring outside intervention when issues go beyond their capacity, like a major infection; so too, the IWB is to exercise a great deal of local autonomy yet maintain harmony within the greater whole. Thus, possible circumstances for appealing to the IJC would be when issues over-tax their expertise or resources, their ability to compromise locally, or extend beyond their boundaries.

Critical to the success of such a radical departure from the old top-down system is the development of seamless cross-border information and databases, local expertise and experience, and common cross-border visions. Seamless cross-border databases and models, a critical first step, are currently being developed through generous federal grants. Experience and expertise only comes through providing IWB members opportunities to learn and to work together in structured formats while tackling issues, again an area fostered by the IJC and federal level institutions. It is the last point which requires the greatest local buy-in. Setting agendas based on common values. The development of a cross-border consciousness and implementing common values regarding resource management is a bottom-up activity. This can be encouraged but not mandated from above. It must evolve locally. A key assumption of the IJC is that by providing the IWBs with structure, watershed based knowledge, expert assistance and training, and an opportunity to plan and manage locally such a common cross-border vision will be a natural outcome.

To kick-start the IWI pilot projects the two national governments have provided seed money and grants. However, it has been made clear that no new line item will be added to budgets for the creation of a new level of bureaucracy. Although membership on the IWBs requires approval by the IJC, members serve voluntarily without salary, and although they are often drawn from government institutions they are not to be representatives of the same. They serve as independent agents focusing on the good of the whole.

In summary, IWBs are issue based, watershed bounded bodies assisted and broadly overseen and designed by the IJC, but acting in a very independent local capacity for first and foremost the good of their eco-region but in harmony with the greater good along the border. In addition, as localized entities they are both very responsive and open to input from their local cross-border public.

2. 2 Cross Border Region (CBR) Theory

CBR is defined to be ..." a territorial unit that comprises contiguous sub-national units from two or more nation-states... (where) the construction of cross-border regions has become a more or less explicit strategic objective pursued by various social forces within and beyond the border" (Perkmann and Sum, 2002,3). Scott (1998) adds that this operates as a form of cross-border paradiplomacy². However, such international activity operates within bounds "...senior governments and nation-states – unilaterally, bilaterally, or within multilateral cooperation contexts – define the basic parameters of cross-border regionalism" (Scott, 2002, 205). In some instances, such as in the European Union, national and the supra-national institutions actually provide financial incentives and other inducements for the creation of CBRs. As a result, Scott concludes that CBR identity is not by design a challenge to the existing nation-states, but instead the beginnings of the creation of pragmatic local institutions to address unanswered cross-border issues. Finally, it should be noted that there is no single form for a CBR. Scott (1999) identifies seven different and overlapping parameters on which CBRs can differ. They are:

- local context
- degree of regional self-awareness
- local identities
- ideological discourses
- level of material incentives for integration
- level and types of threats or issues faced
- logics of supranational economic and political integration in a region.

Historically, CBRs arose with the winding down of the Cold War and the ascent of global capitalism, but they encompass much more than economic issues. The national scale as the "natural" unit for planning, policy and decision making changed as the supra national organization (e.g. multinational trade and/or political organizations like the European Union or NAFTA) and the CBR at opposite ends of the spectrum began to supplement and also complement the nation state (Leresche and Saez, 2002). As a result, there has been a ..."relativization of scale" (Jessop, 2002, 2005). Economic, political, social, and even environmental relations are no longer controlled solely at the national scale; instead a proliferation of scales has emerged ranging from the global to the local. This has been *causing governance to migrate to the scale both institutional and geographic most appropriate to the issues*. Leresche and Saez (2002) describe this as a multiplicity of overlapping scales with variable geometry. Rather than decisions being made based on a "topocratic" logic (a logic based on an authority in a single defined stable territory, i.e. nation-state) a multi-territorial "adhocratic" logic has emerged, where ..."adhocratic logics are based on reference territories of variable geometry, with vague and multiple boundaries that change according to scale on which problems are treated" (2002, 95).

Operating in parallel with these geographic logics are institutional logics. On the one hand is the affiliation logic related to identity with the traditional political territory. On the other hand, there is the more efficiency based network or functional logic which can emerge from and/or help create the CBR. What then results is "multilevel governance and problem solving." Under this new rubric the old national scale is not simply replaced or usurped by a new scale but instead coexists with a variety of new scales that overlap, parallel, replace, or are contained in all or part of the old. In a similar fashion, the new functional logic augments the affiliation logic in issues that can be "multiterritorial, multisectoral, and multi-institutional". Also, under this new cognitive regime, it is the problem that helps define the scale(s) at which it will be dealt, not simply the scale that defines and dictates the solution to the problem as the old national topocratic method had done. However, as Leresche and Saez emphasize, CBRs by their ad hoc nature face a regulatory weakness in enforcing decisions they make.

² Duchacek (1992) defines paradiplomacy as cross-border diplomatic activities by local areas to promote their own interest that are parallel and often complementary to and coordinated with national efforts, although there is always the potential for conflict between local and nation goals. Spatially, he further refines it into three separate types of paradiplomacy dependant on scope of activity regional, transregional, and global. A CBR focuses on the first of these three.

Thus, successful governance in these regions relies on recognition of interdependencies and cooperation between all parties as they pursue joint strategic objectives and a common vision.

In the post-war era, Leresche and Saez propose that there are three successive eras of governmentality regimes in borderland political frontiers which relate to the type and locus of control exerted by the overlapping scales affecting CBRs. Further they suggest that these three eras or regimes: *government*, *crisis of governability*, and *governance*, have appeared chronologically over the last several decades but are not strictly linearly evolutionary.

The *government* regime reflects the top down, centralized national scale which typified control over borderland public activities until the waning of the cold war. In this regime cross-border issues are treated as international affairs, and the boundary is both a defense against outside intrusion and a definer of national identity. In such a core-periphery structure, the local border regions have little room for autonomous independent movement or even influence on national decisions.

The *crisis of governability* regime is defined more as an interlude than stable end point, a period of crisis, conflict, and change where the national scale attempts to continue to control and even dam-up the ever-growing demands of a cross-border region which are beginning the process of *overflow* across the border. Here, if we think of the three political regimes as part of a continuum or balance beam, and there is more stability when the ends dominate (border as primarily barrier or primarily contact point), this regime represents a period of transition (overflow) where the national scale still attempts to exert absolute control, but is not equipped to address the burgeoning local needs. Meanwhile, the local region has only begun to exert itself, and is neither independent enough nor focused enough to exert much control over its local destiny. The local scale has begun to discover that to plan for its future as a CBR it must be more independent of the national scale than the center is willing to permit and also more open to building long term trans-national paradiplomatic ties with neighboring regions than it is often prepared to do, especially if cultural and economic differences are substantial

The *governance* regime emphasizes the emergence of governing cooperation and coordination networks across borders in an ad hoc and episodic fashion. A term used by Leresche and Saez to explain the underlying operational logic of this regime is synapsis, a borrowed biological term which is defined as ... "very fine communication between neighboring cells

through small networks in a membrane' or 'a point of contact between two neurons'" (Dictionary Robert, reported in Leresche and Saez, 2002, 88). Basically this stresses the functionality of public and/or private actions and relationships located on an *organic* network extending across the border. In the case of a CBR the informal networks occur at multiple and overlapping scales (local to national), geographies, and institutions both public and private formal and informal with the goal of furthering the strategic objectives and are activated in an ad hoc fashion based upon a local issue. Note that what is being stressed here is the mechanism, not the place, a mechanism that overcomes the problems of ineffective "...government institutions and the somewhat unsystematic activism of the social actors..." (2002, 88), as noted in the crisis of governability regime. The spatial extent of a CBR is thus not pre-ordained nor does it have a hard border. It is episodic and ad hoc. Through the evolution, growth, and decline as well as broadening and thickening some of the synaptic networks -- cross-border informal relationships -- slowly become formalized as a form of paradiplomacy that can be linked to public and private institutions at a variety of scales creating a maze of geometries with the CBR emerging from its core. However, much like we draw atoms with fixed orbital paths for electrons even though they are actually better understood as cloud like probabilistic structures, we find researchers using fixed boundaries to define CBRs.

In summary, CBRs exist where issues spread across international boundaries and tax the ability of national governments to effectively and fully address them due to lack of resources and/or interest. Second, they require the development of a common cross-border vision and commitment to address them. Third, this vision is fostered through localized paradiplomatic efforts. Fourth, supra-national and national governments set the parameters within which such cross-border activity can occur and can provide incentives to encourage it. Fifth, no single pattern, institutional nor geographic, exists for the establishment of a CBR, rather local conditions effect what emerges. Sixth, in recent years under the influence of globalization and relaxed international tensions (at least among the more developed and rapidly developing countries), borderland regions have been moving away from an era of top down centralized control within hard boundaries to local issue based governance with flexible issue based bounds. Finally, issues that are initially addressed are of an episodic nature and handled in an ad hoc fashion; however institutional evolution and development can occur as a result of the broadening and thickening of informal synaptic networks especially when issues prove to be of more persistent rather than of a temporary acute nature.

2. 3 Discussion

Using a point by point comparison it can be shown that the IWI program in many respects closely parallels CBR theory. First and foremost, it is premised on the concept that cross-border watershed issues are best addressed at the local level which limits the need for national level intervention and resources and instead leverages local efforts and resources. Second, such issues can be successfully addressed only through the development of a common eco-region based vision. Development of such a vision is a defined goal of IWBs and the IWB provides an ideal platform for such a paradiplomatic effort. The IJC along with the governments of the US and Canada provide financial incentives and expertise for the successful operation of an IWB, and also indicate the bounds within which the IWBs operate. Finally, IWBs represents an evolution of an existing transnational institutional structure to replace earlier ad hoc episodic attempts to address chronic cross-border watershed issues.

However, there are a number of ways in which the IWI does not fully reflect CBR theory. First, this is a top down initiated program and the establishment of IWBs has been the result of IJC decision making. Although in principle there is nothing preventing a watershed from petitioning on its own to become a designated IWB. However, again focusing on the top down nature of the IWI, it should be noted that many CBRs in Europe were stimulated and fostered by EU material incentives. Second, although synaptic networks can interact with the IWBs and may be fostered by their existence, the IWBs are not a direct result of the broadening and thickening of such activity. Third, hard boundaries both spatial and institutional are drawn by the IJC. Watersheds certainly reflect one of the physical characteristics of a given cross-border region, but this limits the flexibility of local actors to work on a more issue defined set of bounds. In addition, creating a specialized institution to focus on watershed issues may inhibit the ability of a cross-border region to holistically address a variety of resource management or other issues not falling neatly into this narrow mandate. However, before leaving this point, it is important to note that when most CBRs are defined in the research field they are assigned existing political bounds, and quite a number of cross-border institutions established in EU CBRs are linked directly to existing political institutions on each side of the border.

In conclusion, we have here the classical battle between theory and practice. It is clear that the IWI as a practical experiment is a bit different from a CBR as a theoretical exercise; however, not so different as to fail to see a very strong relationship. Thus, we argue that an IWI type approach is a potential part of a CBR, one stimulated in a top down manner, but one that will only operate successfully if it develops its own cross-border vision, an outcome that clearly is more bottom up. It is now that we turn to our exploration for such bottom up vision building in the Abbotsford-Sumas area.

3 THE DELPHI METHODOLOGY AND APPLICATION

The Delphi method (Adler and Ziglio 1996, Dalkey 1972, Gupta and Clarke 1996, Sackman 1975) is a controlled anonymous qualitative information gathering and generating technique that draws upon the combined knowledge of a panel of experts by eliciting and refining information from the panel through a series of rounds. As rounds progress panelists are asked in addition to discussing their own ideas to rank and order all the ideas submitted by members of the group as a whole. This allows for the airing of all positions including contradictory or unpopular ones and for evaluating the level of their impact. In addition, a Delphi does not require the panel to eventually agree to a single set of answers. Thus, a Delphi will report on issues both discursively and quantitatively.

Given the location and region of potential impacts of the power plant controversy, it was decided to seek Canadian panelists from the eastern portion of the Fraser Lowland, and Americans from northeastern Whatcom County on a transect that ran from Chilliwack, BC, through the border crossing of Abbotsford, BC, and Sumas, WA, southwest to Bellingham, WA (refer back to Map 1). Eighteen panelists were recruited for the study seven Canadians and eleven Americans. One American dropped out after the first Round and a second American skipped the third round resulting in 16 to 18 valid responses per round, split between the two nations. Panelists included political leaders, planners and academics, business people, and environmentalists (Table 1). All of this information was kept confidential during the study to prevent bias.

<i>Category</i>	<i>number of panelists</i>
Academics and Planners	8
Elected Officials, past and present	5
Environmentalists	3
Businessmen	2
TOTAL	18

4 RESULTS

Three types of results are reported here: major issues facing the region, suggested institutional means for addressing them, and perception of a cross-border consciousness by the general public. In each case panelists had two or more rounds within which to make evaluations, discuss them, and score them. The advantage of multiple rounds is that in later rounds panelists are anonymously informed of the earlier responses and thoughts of their colleagues and given the opportunity to defend their own response as well as to change them if they desire. Note also that panelists did not have to respond to each item. Hence, the number of responses can vary.

Issues: In round one each panelist was asked to identify, describe, and discuss up to three of the most pressing environmental issues facing the study area. The researchers reviewed all responses and identified nine major issues underlying the panelist's responses. In rounds two and three panelists evaluated, discussed, and scored these. To create a relative score indicating

the relative importance of each issue panelists were instructed to first rank the issues from most important to least and then assign a maximum value to 1,000 to the issue they ranked as most important. Next, they were to proceed through the full list in declining order comparing each issue to the most important one and assign a relative score ranging from 999 down to 0 based on how important each issue was relative to the top issue, ties were allowed. The results provided a scoring system of greater depth and comparability than a simple ordinal ranking. Second, it insured that all panelists began at the same maximum point 1,000 and provided ample room to differentiate between issues.

Table 2 lists the issues in order of declining importance from round three and reports on each issue's mean, median, standard deviation, as well as minimum and maximum value for each and number of responses. In addition, Figure 1 provides histograms for the first six of these (the last three were not included in interests of space, but also because their distributions were quite flat thus not adding much to the understanding).

Round 3 Results							
<i>Issue</i>	<i>Variable Code</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>	<i>Cases</i>
Shared Water Resources	R3 Water	883.4	930	156.0	375	1000	17
Shared Air Shed Management	R3 Airshed	876.3	900	225.8	300	1000	17
Population Growth	R3 Pop Growth	785.0	830	289.5	200	1000	17
Open Space	R3 Open Space	763.8	775	235.5	300	1000	17
Economic Growth	R3 Econ Growth	671.9	740	231.2	275	1000	17
Spillover of Environment Impacts	R3 Spillover	604.7	600	318.7	0	1000	17
Pandemic Diseases	R3 Disease	595.3	600	289.5	75	1000	17
Border Security	R3 Border Security	556.6	550	306.6	100	1000	17
Impact 2010 Winter Olympics	R3 2010	349.1	210	339.1	0	1000	17

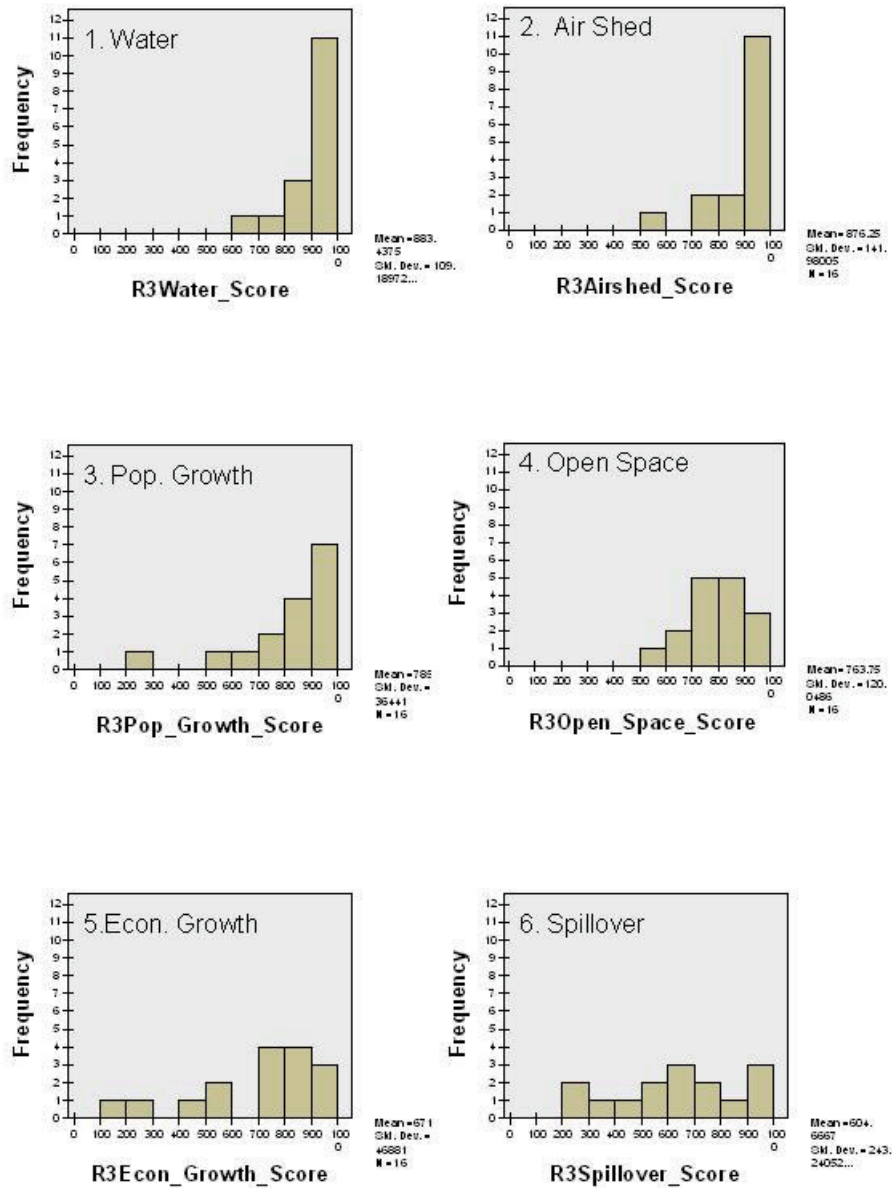


Figure 1: Top Six Cross-Border Issues

Means of Addressing: In rounds three and four panelists were asked to consider, discuss, and rate three facets of addressing the issues with the rating based on a Likert scale ranging from 1 to 10 (see Table 3). The

results include mean, median, standard deviation and are presented in Table 4 and graphed as histograms in Figure 2.

<i>Variable</i>	<i>Question</i>	<i>Answer Range</i>
R4 Existing vs New	1. To what degree should existing versus new organizations be used to address the issue?	1= New, 5= combination, 10= Existing
R4 Public vs Private	2. To what degree should public versus private organizations be used to address the problem? Or do we need a public-private partnership?	1= Public, 5= Partnership, 10= Private.
R4 Voluntary vs Informal	3. To what degree should the organization be informal and voluntary versus formal (such as a government agency, business associations, national environmental group...)?	1= Voluntary, 5= Combination of actors, 10= Formal.

Round 4 Results						
<i>Variable</i>	<i>Mean</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>	<i>Std. Dev.</i>	<i>Cases</i>
R4 Existing vs New	7.06	8	2	9	2.048	16
R4 Public vs Private	5.73	6	3	9	1.944	15
R4 Voluntary vs Formal	7.56	8	5	10	1.548	16

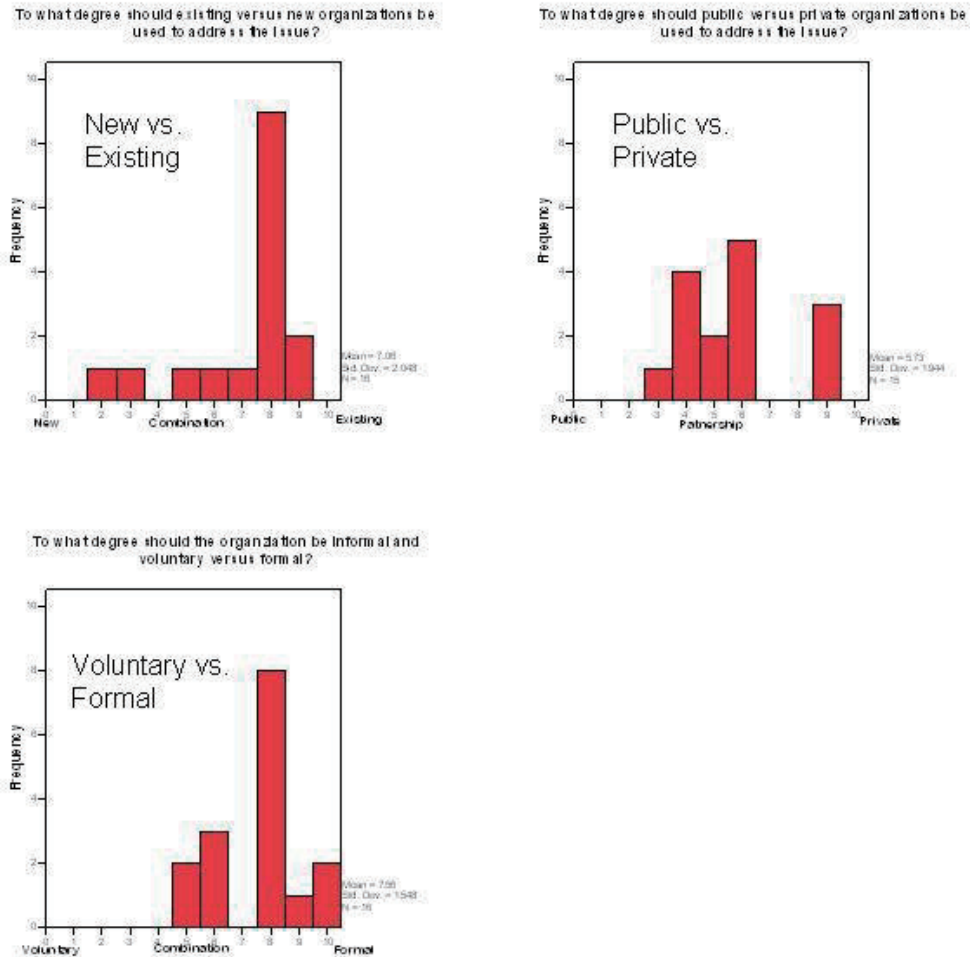


Figure 2: How to address the issues

Level of Public Consensus: In rounds one and two panelists were asked to judge and discuss the current and expected future (ten years hence) degree of cross border identity or consciousness of the general public

in the study area. This data was collected on a Likert scale with the number 1 being the maximum of very high and 10 being little to none. The results are reported in Table 5 and Figure 3.

Table 5. Level of Public Consciousness						
<i>What is the current degree of cross border identity or consciousness among people living in our local cross border region?</i>						
PERCEPTIONS	<i>Mean</i>	<i>Median</i>	<i>Min.</i>	<i>Max.</i>	<i>Std. Dev.</i>	<i>Cases</i>
Present Time -- 2006	5.7	5	2	9	2.47	17
Future Time -- 2016	5.3	5	1	9	2.89	16

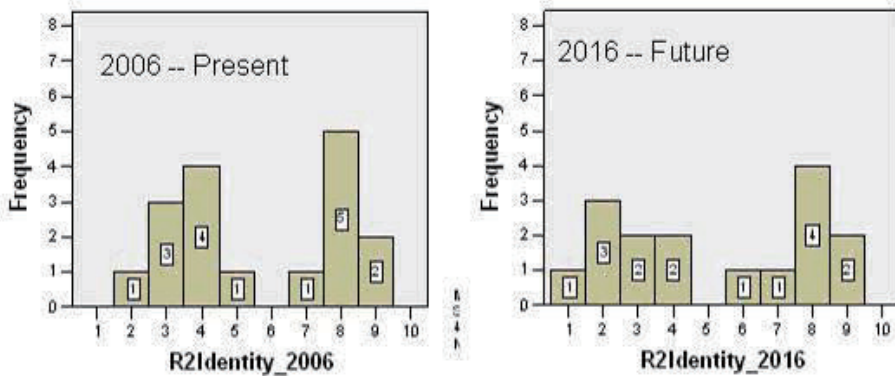


Figure 3: Level of Public Consciousness

5 DISCUSSION

5. 1 Analysis

Issues: The nine critical environmental issues proposed in round one were given to the panelists in alphabetic order: border security, conversion of open space and more impervious surfaces, economic growth, pandemic diseases, population growth, spill over of issues, stressed air shed, water resources, and winter Olympics 2010. Sorting and clustering them based on their assigned importance after round three results in the following listed in decreasing order:

- **Issues one and two:** The shared physical resources of water and air are highest in the minds of local actors, with means in the very high 800’s on a 1,000 point scale.
- **Issues three and four:** Population growth, a prime mechanism for stress, and the physical resource of open space, a resource impacted by such stress as more people congregate in a confined area,

represent the second cluster of issues with means in the very high 700’s.

- **Issue five:** Economic growth, a key precursor and resultant of population growth as well as an issue that produces an impact on the physical environment, follows the above in the high 600’s. Much of the discussion surrounding this issue by the panelists focused not on growth itself but on type of growth and its footprint.
- **Issue six and seven:** The impact of cross border spill-over of environmental impacts in general and pandemic disease in particular (such as recent outbreaks of avian flu in poultry flocks) clustered together around the value of 600. This seems to show a lower level of concern that events on either side of the border will inordinately spread across. However,

it does indicate that such issues are important and cannot be ignored.

- **Issue eight:** Border security, perhaps a surprising issue to raise in the context of the environment, demonstrates that the border itself remains an important factor in searching for solutions. However, it has a fairly low mean of roughly 550, indicates that this is hardly the most critical area the local actors feel they face, but it cannot be completely ignored.
- **Issue nine:** Finally the very low value assigned to the 2010 Winter Olympics, at less than 350, indicates that this one time

event, although not inconsequential, is dwarfed by far more pressing and longer term issues in the region.

A more complete discussion of each of these issues and why they were chosen is provided elsewhere (Buckley and Belec, 2007). However, in this research the focus is on the question of how similarly or differently the panelists scored these issues as a measure of a developing cross-border common vision, at least at the level of the issues that need addressing. To evaluate this question a Mann-Whitney U exact test was used, given the small sample size and lack of normality, to explore for any significant difference between the scoring of importance for each issue by American versus Canadian Panelists (Table 6).

Table 6. Test for Independence between American and Canadian Panelists -- Cross Border Environmental Issues Scores									
Scores									
Round 3	R3 Water Score	R3 Airshed Score	R3 Pop Growth Score	R3 Open Space Score	R3 Econ Growth Score	R3 Spillover Score	R3 Disease Score	R3 Border Security Score	R3 2010 Score
<i>Mann-Whitney U</i>	30.5	20.0	13.5	30.5	28.5	27.0	24.0	18.0	17.5
<i>Exact Sig. (2-tailed)</i>	0.940	0.234	0.056	0.939	0.781	0.933	0.663	0.165	0.243

A quick look at the significance levels for issues clearly demonstrate that none of the issues were scored significantly different based upon nationality of the panelists. The only one that even comes close is a significance level of 0.056 for population growth which might reflect the considerably different growth mechanisms on each side of the border. In Canada the growth is heavily fueled by a very aggressive federal pro-immigration policy, one in which British Columbia in recent years has been among the strongest proponents to overcome labor shortages. On the American side the population growth has been primarily internal migration from other American states. However, some so-called “drawbridgers” have attempted to dissuade further in-migration on the grounds that what makes a place like Washington State so attractive, especially environmentally, will be damaged by a higher population base. Nevertheless, these results demonstrate a great similarity of thought among decision makers on both sides of the border.

Means of Addressing: When asked how to address the issues, generally, panelists favor the use of existing,

formal organizations that combine public and private representatives. As one panelist stated:

“It should be ‘agreement-based’ where objectives and obligations are well-defined and focused. Existing organizations are preferred, as new organizations tend to be detached from the existing bureaucracy. Most likely, the latter will be the one to implement adopted (international) agreements and a ‘two solitudes’ situation will only lead to inertia, incommunication (sic), or worse, power struggle. A ‘culture of new solutions’ or ‘new era’ must start with the existing bureaucracy, which also happens to be where the resources and expertise are readily available.”

A Mann-Whitney U analysis of American versus Canadian responses (Table 7) demonstrates no significant difference between these two groups’ responses. So, not only are they favoring building on current institutions, partnerships, and formality but both sides envision this approach equally.

Table 7. Test for Independence between Canadian and American Panelists -- Means of Addressing Issues			
Round 4			
	R4 Existing_vs_New_ Organizations	R4 Public_vs_Private_ Organizations	R4 Voluntary_vs_Formal_ Organizations
<i>Mann-Whitney U</i>	28	26	22
<i>Exact Sig. (2-tailed)</i>	0.758	0.867	0.351

Level of Public Consensus: Based on statistical averages, cross border consciousness falls at the center of the range indicating it is rather moderate today (5.7 mean and 5.0 median) with not much expectation of change a decade from today (5.3 and 5.0). However, bi-modality is evident in both “consciousness” histograms (i.e., 2006 and 2016). There are clearly two groups of respondents, with nearly equal clusters between those perceiving a fairly high level of cross border consciousness and a nearly equal number answering that the consciousness is fairly low. A decade in the future, the year 2016, the spread of results increases slightly while migrating slightly towards an increasing cross border identity. The histograms

indicate a much more complex situation than was apparent in the descriptive statistics alone.

When tested for significant difference between American and Canadian respondents, none is found (Table 8). This indicates that it is not nationality that is causing these two distinct clusters of responses, but something else. Additional attempts were made to categorize the data by panelists’ background or profession (results not provided here in the interests of brevity), but none of these showed significant difference. Hence, we conclude that there are two views among our panelists regarding the general public; and, views that are not currently undergoing much change.

Table 8. Test for Independence between Canadian and American Panelists -- Public Cross Border Consciousness		
Round 2 – Score		
	R2 Identity 2006 Score	R2 Identity 2016 Score
<i>Mann-Whitney</i>	27.5	23
<i>Exact Sig. (2-tailed)</i>	0.49	0.471

5. 2 Relationship to an IWI model and CBR theory

The major premises of the IWI approach are that local actors are better positioned to address local issues and that such issues are best addressed at the eco-regional level. CBR theory goes a bit beyond this in anticipating that local actors will actually be the driving

force that demonstrates how much better issues can be addressed locally, and that issues create their own geographies. Hence, if it is a watershed that best addresses an issue, then it will be addressed at that level both institutionally and physically.

The clear difference between the IWI model and CBR theory is that the IWI is a top down applied experiment by an existing cross-border institution with the full support of the national governments. On the other hand, CBR theory is an attempt to explain what has occurred or hopefully could occur independent of a centralized stimulus. What we wish to suggest is that both dynamics are part of a continuum. In some instances local actors will demonstrate enough cohesion, commitment, and foresight to start the process and then seek the necessary support to carry through a mission. In others, a centralized organization will willingly recruit and/or designate such actors through material incentives and support, shared assistance and expertise, and the promise of more targeted and localized solutions. In either case the outcome is perceived as beneficial to all parties. Much like private-public partnerships have become the rage for more flexibly and completely addressing issues, some combination of top-down and bottom-up is what is being suggested here. Local areas should not be shy about suggesting cross-border solutions and upper level institutions should not be afraid to spin off and assist solution building through the active recruiting of local groups.

We find the Abbotsford-Sumas region at a critical juncture, what is described by Leresche and Saez as the era of *crisis in governability*. Given the fact that the power plant issue was fought to a standstill not to a long term solution by involving more and more distant actors (the plant was only stopped after local actors made appeals for intervention by a variety of state, provincial, and national institutions) and also by simply delaying construction (as time passed economic conditions changed making the project look less profitable), there is the need for a more formal way to address this type of issue. Clearly the major decision makers and actors in this region recognize a common set of issues and subscribe to a similar manner for addressing them; and, it should be noted, in a manner that fits well within an IWI/ CBR type of approach. However, the local actors seem unprepared to currently initiate these cross-border issues by themselves, as was demonstrated by the power plant dispute and its failure to define new policy. Likewise, regional and national institutions were rather reluctantly drawn into this battle (Buckley and Belec, 2009). Finally, for the general public, it is not clear what their level of cross-border consciousness is, Two distinctly different viewpoints are expressed here.

So where do we go from here? The evidence presented in this study suggests the leadership is primed and ready to address a wide variety of cross-border resource management issues. The general public, on the other hand, may still require some educating before they are fully on board. Based on the results here we would suggest a three pronged approach: (1) Local institutions

and organizations should encourage the broadening, widening, and thickening of cross-border synaptic networks and paradiplomacy, as a means of both more completely understanding the issues as well as a way of developing common visions and the structures for addressing them. (2) At the national or state/provincial scale, more experiments like the IWI should be encouraged. For example air sheds provide another ideal spatial structure around which to fashion a management team, however as noted from CBR theory an issue itself could suggest the bounds. So flexibility of geography is valuable. One problem with such experiments is that there are few, if any, comparable cross-border organizations to the IJC to address things like cross-border air shed issues. Even the IJC itself has looked at air shed issues as ancillary to water quality. Nonetheless, finding ways to channel resources and expertise to local cross-border actors and encouraging their direct participation could be extremely valuable. (3) For the general public a little education is never a bad investment. Even if the more optimistic assessment of their level of cross-border consciousness is correct (the higher cluster), it still is only about a 3.5 with a value of 1 as the perfect score. Thus, there is undoubtedly plenty of room for improvement here.

6 CONCLUSIONS

Three broad conclusions can be drawn from the results in this study:

1. There is a consensus between American and Canadian panelists concerning the important issues to be addressed.
2. The manner in which to address these issues, also consensus based, favors the use of existing institutions, a public-private partnership, and in a formal rather than voluntary fashion.
3. Two different opinions are expressed concerning the emergence of a cross-border consensus by the general public. Half see a robust consensus existing, half see it as modest to weak, and neither sees much change over the near-term. However, this split is not related to the nationality of the panelist.

The first two of these points resoundingly respond to our research question of whether local decision makers on both sides of the border are coming to a common consensus over joint resource management. They identify with the same issues, all of which have cross-border consequences, and they suggest similar means to address them. Further, these means resonate well with an IWI type of approach, by suggesting that a solution draw upon existing structures open to participation from both the public and private sector and formalized.

Given the range of issues raised, panelists demonstrate the need to take a holistic approach to resource management which recognizes socio-economic aspects to issues as well as environmental ones. Also, each of the issues has its own geographic extent, showing the need to expand beyond the rigid boundaries of the IWI approach and be more flexible as suggested by CBR theory.

One final point is raised, are the publics on each side of the border ready for a more holistic cross-border approach to resource management? Here the experts are clearly split. Half sees it as already existing, half don't, and nationality has nothing to do with this difference in opinion. This area clearly cries out for further research and definition. How can such clearly different opinions exist? Are they interpreting the question in slightly different ways or do the facts stand for themselves? Only additional research can shed light on this, certainly an important question to be addressed prior to attempting any IWI type of solution. Thus, the next logical steps in this research are several. One is to conduct a broad based survey of the general public and determine how closely their opinions match those of the expert panel and whether or not they are coming to a common consensus. Second could be a similar Delphi exploration based on a panel of local, regional, and national decision makers and actors to determine if there is broad based support for IWI/CBR methods of addressing local cross-border issues, thus preventing future disputes in the Abbotsford-Sumas region.

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REFERENCES

- (1) Adler, Michael and Erio Ziglio (1996) *Gazing into the Oracle: The Delphi Methods and Its Application to Social Policy and Public Health*. Jessica Kingsley Publishers: London.
- (2) Buckley, Patrick H. and John Belec (2007) "Imagining the Future of Cross Border Resource Management within the Fraser Lowland: A Delphi Analysis of Environmental Issues", Presented at the 19th Association of Canadian Studies in the United States (ACSUS) Biennial Conference; Toronto, Canada, November 14 to 18, 2007.
- (3) Buckley, Patrick and Belec, John. forthcoming 2009. "Cascadia Reconsidered: Questioning Micro-Scale Cross-Border Integration in the Fraser Lowland". *University of the Fraser Valley Research Review*, vol. 3, no. 1.
- (4) Dalkey, Norman C. (1972) *Studies in the Quality of Life*. Lexington Books: Lexington, MA.
- (5) Duchacek, Ivo D. (1990) *Perforated Sovereignities: Towards a Typology of New Actors in International Relations*. In Michelmann, Hans and Soldatos, Panayotis. *Federalism and International Relations*, (pp. 1-33). Clarendon Press: Oxford.
- (6) Gupta, Uma and Clarke, Robert (1996) "Theory and Applications of the Delphi Technique: A Bibliography (1975-1994)". *Technological Forecasting and Social Change*. 53[2], 185- 213.
- (7) International Joint Commission (IJC) (2005) "A Discussion Paper on: The International Watershed Initiative – Second Report to the Governments of Canada and the United States Under the Reference of November 19, 1998 With Respect to International Watershed Boards", International Joint Commission, Canada and United States. Accessed at: www.ijc.org September 15, 2009
- (8) International Joint Commission (IJC) (2009) "The International Watershed Initiative: Implementing a New Paradigm for Transboundary Basins January 2009 November 19, 1998 With Respect to International Watershed Boards", International Joint Commission, Canada and United States. Accessed at: www.ijc.org September 15, 2009
- (9) Jessop, Bob (2002). *The Political Economy of Scale*. In Perkmann, Markus and Sum Ngai-Ling. *Globalization, Regionalization and Cross-Border Regions*, (pp. 25-49). Palgrave Macmillan: New York.
- (10) Jessop, Bob (2005). *The Political Economy of Scale and European Governance*. *Tijdschrift voor Economische en Sociale Geografie*. 96[2], 225-230.
- (11) Knotter, Ad (2002-2003). "The border paradox. Uneven development, cross-border mobility and the comparative history of the Euregio Meuse-Rhine". *Federalisme Regionalisme*. 3[2002-2003]. Accessed at: <http://popups.ulg.ac.be/federalisme/document.php?id=237> September 15, 2009.
- (12) Leresche, Jean-Philippe and Saez, Guy (2002). *Political Frontier Regimes: Towards Cross-Border Governance*. In Perkmann, Markus and Sum Ngai-Ling. *Globalization, Regionalization and Cross-Border Regions*, (pp. 77-102). Palgrave Macmillan: New York.
- (13) Perkmann, Markus and Sum Ngai-Ling (2002). *Globalization, Regionalization and Cross-Border Regions: Scales, Discourses and Governance*. In Perkmann, Markus and Sum Ngai-Ling. *Globalization, Regionalization and Cross-Border Regions*, (pp. 3-24).
- (14) Sackman, Harold (1975) *Delphi Critique: Expert Opinions, Forecasting, and Group Process*. Lexington: Lexington Book.
- (15) Scott James W. 1998. "Inducing Co-operation: Can Euroregions Function as Bridges Between Complex Boundaries?", in Brednikova, Olga, Voronkov, Viktor (eds.). *Nomadic Borders*, CISR Working Papers no. 7, St.Petersburg, 1999. 160 p. Center for Independent Social Research: St. Petersburg, Russia. Accessed at http://www.indepsocres.spb.ru/engl.htm#Working_Papers September 15, 2009.
- (16) Scott, James W. (1999) "European and North American contexts for cross-border regionalism," *Regional Studies*. 33[7], 605-617.
- (17) Scott, James W. (2002). "On the Political Economy of Cross-Border Regionalism: Regional Development and Cooperation on the US-Mexican Border. In Perkmann, Markus and Sum Ngai-Ling. *Globalization, Regionalization and Cross-Border Regions*, (pp. 191-211). New York: Palgrave Macmillan.