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TRANSBOUNDARY WATER MANAGEMENT: AN INSTITUTIONAL COMPARISON AMONG CANADA, THE UNITED STATES AND MEXICO

*Richard Kyle Paisley, Cuauhtemoc Leon, Boris Graizbord and
Eugene C. Bricklemyer, Jr.**

I. INTRODUCTION

Canada, the United States and Mexico are adjacent coastal nations. They share numerous important transboundary natural resources, including a significant number of international fresh water drainage basins. Bilateral institutions have been established over the years to deal with the conservation and management of these international drainage basins. Prominent among these have been the International Joint Commission (IJC) between Canada and the United States, and the International Boundary and Water Commission (IBWC) between the United States and Mexico.

The geographic scopes of the IJC and the IBWC are enormous. "Canada and the United States share a 6,400 km boundary between the main portions of their provinces and states, and an additional 2,400 km between the Canadian Northwest Territories and Alaska."¹ Crossing these boundaries are some of the richest and most prolific waterways in the world, not least of which are the vast water resources of the five Great Lakes.

* This is the first in a series of six related papers appearing in this volume. For biographies of the individual authors of this paper, please see 9 OCEAN & COASTAL L.J. 174 (2004).

1. Aaron T. Wolf, *Transboundary Waters: Sharing Benefits, Lessons Learned*, 32 available at http://www.water-2001.de/co_doc/transboundary_waters.pdf (last visited Feb. 25, 2004) [hereinafter Wolf].

In comparison, the United States and Mexico share a 3,141 km long boundary not including maritime areas.² The United States/Mexico boundary

follows the middle of the Rio Grande from its mouth on the Gulf of Mexico a distance of 1,254 miles (2,019 km) to a point just upstream of El Paso, Texas and Ciudad Juárez, Chihuahua; then it follows an alignment westward overland and marked by monuments a distance of 533 miles (858 km) to the Colorado River; thence it follows the middle of that river northward a distance of 24 miles (38 km); and then it again follows an alignment westward overland and marked by monuments a distance of 141 miles (226 km) to the Pacific Ocean.³

The region along the boundary is characterized by deserts, rugged mountains and abundant sunshine. The two main rivers, the Colorado River and the Rio Grande, provide life-giving waters to the largely arid but fertile lands along the rivers in both countries. Although sparsely settled, the region rapidly developed, beginning with the coming of the railroads in the 1880s and the development of irrigated agriculture after the turn of the century. In 1981, more than 810,000 hectares were irrigated in the border area with waters of the boundary rivers.

Today, the United States/Mexico boundary is singularly characterized by fourteen pairs of sister cities sustained by agriculture, import-export trade, service and tourism, and, in recent years, a growing manufacturing sector. The borderlands population has grown to over eleven million people and is expected to reach 19.4 million by 2020.⁴ A high projection for 2000 is estimated to be 12.4 million and a low projection for that year is estimated at 11.5 million.⁵ The objectives of this paper are to: (1) introduce the subject of international drainage basins and the laws that govern their utilization; (2) describe the origins and operation of the ICJ and the IBWC; (3) make observations regarding the operation of the IJC and IBWC; and (4) assess the IJC and the IBWC as models for the sustainable management of international shared natural resources.

2. The International Boundary and Water Commission, *Its Mission, Organization and Procedures for Solution of Boundary and Water Problems*, available at http://www.ibwc.state.gov/ORGANIZA/about_us.htm (last visited Feb. 25, 2004).

3. *Id.*

4. *U.S.-Mexico Border Environmental Program: Border 2012*, available at <http://www.epa.gov/usmexicoborder/index.htm#mission> (last visited Feb. 25, 2004).

5. J. Peach & J. Williams, *Population and Economy on the U.S.-Mexico Border: Past, Present and Future in The U.S.-Mexican Border Environment: A Road Map to a Sustainable 2020*, available at www.scerp.org (last visited Mar. 17, 2004).

II. THE LAW OF INTERNATIONAL DRAINAGE BASINS⁶

The Helsinki Rules define an "international drainage basin" as "a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus."⁷ There are currently over 260 international drainage basins in the world that are shared between two or more sovereign nations.⁸

International law governs the utilization of international drainage basins.⁹ It is "composed of decisions about events that have effects across national boundaries or on more than one nation, state or entity," and it provides expectations about behavior in particular circumstances.¹⁰ There are two principal means of creating international law. The first is by explicit agreement, such as the express concurrence of the position of states or international bodies in international treaty obligations (international treaty law). These international treaty obligations can be multilateral¹¹ or bilateral. Both the IJC and the IBWC are examples of international legal institutions created by bilateral international treaties.¹²

The second principal means of creating international law is by custom, such as the practices of states or international bodies that are relatively uniform, generally accepted and enforced by a relevant community of states (customary international law).¹³ Customary international law, in comparison to international treaty law, deals in broader concepts, is more difficult

6. See Richard Kyle Paisley & Timothy L. McDaniels, *International Water Law, Acceptable Pollution Risk and the Tatshenshini River*, 35 NAT. RESOURCES J. 111 (1995) [hereinafter Paisley].

7. *The Helsinki Rules on the Uses of the Waters of International Rivers*, available at http://www.internationalwaterlaw.org/IntlDocs/Helsinki_Rules.htm (last visited Jan. 22, 2004).

8. The number of international drainage basins throughout the world varies somewhat over time as the number of sovereign nations in the world that share international drainage basins rises and falls when either existing countries break up (e.g., the former Soviet Union and Czechoslovakia) or new countries are formed (e.g., the countries surrounding the Aral Sea: Uzbekistan, Turkmenistan, Kyrgistan, and Kazakhstan).

9. See Paisley, *supra* note 6.

10. *Id.* at 117.

11. An example of a multilateral international water law treaty would be the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses [Adopted by the United Nations General Assembly and Opened to Signature, May 21, 1997] 36 I.L.M. 700 (1997), in which Article 2 defines a "watercourse" as "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus" and an "international watercourse" as "a watercourse, parts of which are situated in different states." *Id.* at 704.

12. See Paisley, *supra* note 6.

13. *Id.*

to determine and more difficult to enforce.¹⁴ The relatively more difficult nature of customary international law flows, in part, from the disparate components of international custom. These include "the duration of practice, uniformity of practice, consistency of practice, generality of application and, arguably, the presence of a requisite sense of legal obligation."¹⁵

The dominant principle of customary international law currently governing the utilization of shared transboundary water resources throughout the world is the "equitable utilization principle," originally enunciated by the International Law Association (ILA) in its 1966 Helsinki Rules.¹⁶ The genius of the Helsinki Rules is that they leave room for varying application by prescribing a "reasonability" test for determining what is lawful or unlawful conduct in connection with international water resources.¹⁷ The principle of equitable utilization requires states that share

14. *Id.*

15. Paisley, *supra* note 6, at 118.

16. *Id.* at 119.

17. *Id.* n.41. The statement of the principle of equitable utilization in the Helsinki Rules is as follows:

Article IV. Each basin State is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin.

Article V. (1) What is a reasonable and equitable share within the meaning of Article IV is to be determined in the light of all the relevant factors in each particular case.

(2) Relevant factors which are to be considered include, but are not limited to:

(a) the geography of the basin, including in particular the extent of the drainage area in the territory of each basin State;

(b) the hydrology of the basin, including in particular the contribution of water by each basin State;

(c) the climate affecting the basin;

(d) the past utilization of the waters of the basin, including in particular existing utilization;

(e) the economic and social needs of each basin state;

(f) the population dependent on the waters of the basin in each basin State;

(g) the comparative costs of alternative means of satisfying the economic and social needs of each basin State;

(h) the availability of other resources;

(i) the avoidance of unnecessary waste in the utilization of waters of the basin;

(j) the practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among uses; and

(k) the degree to which the needs of a basin State may be satisfied, without causing substantial injury to a co-basin State.

Article VI. A use of category of uses is not entitled to any inherent preference over any other use or category of uses.

Article VII. A basin State may not be denied the present reasonable use of the waters of an international drainage basin to reserve for a co-basin State a future use of such waters.

an international drainage basin to act reasonably in their utilization of its waters, and directs that the reasonableness of any utilization be determined by weighing all relevant factors and by comparing the benefit that would follow from the utilization with the injury it might do to the interests of another basin state.¹⁸

The general principles and rules of the customary international law of fresh water resources, including the Helsinki Rules, continue to play a very important role even when there is an agreement governing the relations of states sharing an international drainage basin. This is because international drainage basin treaties do not stand alone, but are supported by, limited by, and tested against a set of general international law standards, the content and validity of which are determined in part by international law and not entirely by the agreement in question.¹⁹

III. ORIGINS AND OPERATION OF THE ICJ AND THE IBWC

A. IJC

By the beginning of the twentieth century, water quality had deteriorated along the United States/Canadian border, particularly on the east coast, to such an extent that both countries felt it was in their interest to deal with the issue.²⁰ Until this point, water issues had been dealt with by *ad hoc* commissions (such as the International Waterways Commission established in 1905); however, these were not sufficient to handle the growing water related disputes between Canada and the United States.²¹ Both countries recognized the need for a more permanent body to address their transboundary water related issues.²²

Both Canada and the United States brought their concerns to the negotiating table.²³ The main issue for the United States was sovereignty—it did not want to lose any political independence in the joint management of transboundary waters. It wanted “absolute territorial sovereignty ... over the waters within its territory—tributaries should not be included in the Commission’s authority.”²⁴ Further, the United States did not want

18. Paisley, *supra* note 6, at 119–20.

19. Dante A. Caponero, *The Role of Customary International Water Law, WATER RESOURCES POLICY FOR ASIA* (Regional Symposium on Water Resource Policy in Agro-Socio-Economic Development, Dhaka, Bangladesh), Aug. 4–8, 1985, at 365.

20. See Wolf, *supra* note 1.

21. *Id.* at 32.

22. *Id.*

23. *Id.*

24. *Id.*

the new body to have too much power.²⁵ It thus favored a more *ad hoc* nature for the Commission.²⁶

In comparison, Canada's principal concern was the establishment of a more "egalitarian" relationship with the United States.²⁷ Not only was Canada's relative size and level of development smaller at the time, but Canada also had the difficulty of having its foreign policy under the control of the United Kingdom. It could not negotiate on its own with the United States. As a result, "negotiations had to be carried out between Ottawa, Washington, and London."²⁸ In addition to a more equal relationship, and contrary to the U.S. position, Canada wanted the agreement to include tributaries and more authority for the Commission.²⁹

Negotiations finally concluded in 1909 when the United States and the United Kingdom signed the "Treaty Relating to Boundary Waters between the United States and Canada" (Boundary Waters Treaty). The Treaty represents a compromise of both Canadian and American interests. For example, "boundary waters" were defined therein as

the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.³⁰

Thus, tributaries were not included; however, the United States allowed the Commission to have greater authority and also accepted its arbitration function.³¹ In addition, open and free navigation was accepted for all boundary waters, as well as for Lake Michigan (the only Great Lake not defined as a boundary water).³² Each country also reserved the right to control the use of waters within its jurisdiction while maintaining that boundary waters were subject to equal and similar rights.³³

25. Wolf, *supra* note 1, at 32.

26. *Id.*

27. *Id.*

28. *Id.*

29. *Id.*

30. International Joint Commission, *Boundary Waters Treaty*, Preliminary Art., available at <http://www.ijc.org/rel/agree/water.html> (last visited Jan. 20, 2004) [hereinafter IJC, *Boundary Waters*].

31. Wolf, *supra* note 1, at 32.

32. *Id.* at 32-33.

33. A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES*, § 11:14, at 25 (2003).

[A]ny interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs³⁴

Thus, if a downstream country should suffer damage, that country is entitled to the same rights as a resident of the offending country.

The Treaty also established an important mechanism called the International Joint Commission (IJC) by which bilateral disputes could be resolved within a treaty framework.³⁵ The IJC is composed of six Commissioners. There are three from each country. The President of the United States, on the advice of the Senate, appoints the American delegation, while the Governor in Council of Canada appoints the Canadian delegation upon the advice of the Prime Minister.³⁶ The Commissioners must then follow the Treaty. However, the Commissioners are supposed to act impartially, rather than simply represent their respective governments.³⁷ "This independence is confirmed by Article XII of the Treaty, which requires Commissioners to make a solemn declaration, in writing, that they will faithfully and impartially perform their duties under the Treaty."³⁸ This independence is further established through immunity from judicial process for both the Commission and the Commissioners in both countries.³⁹ In addition, the Commission's decisions are not subject to appeal to the courts of either country. In practice, they can only be reversed by an agreement between the two countries.⁴⁰

The IJC has three main functions:

1. The IJC can make binding decisions and appoint boards of control to oversee its decisions and recommendations with respect to "new uses, obstructions or diversions of boundary waters in either country that affect the natural level or flow of waters in the

34. See IJC, *Boundary Waters*, *supra* note 29, at Art. 2.

35. See, IJC, *Boundary Waters*, *supra* note 29.

36. International Joint Commission, *The International Joint Commission—What it is, How it Works*, available at http://www.ijc.org/en/background/ijc_cmi_nature.htm (last visited Feb. 26, 2004) [hereinafter IJC, *What it is*].

37. *Id.*

38. L.H. Legault, *The Roles of Law and Diplomacy in Dispute Resolution: The IJC as a Possible Model*, Address before the Canada–United States Law Institute (Apr. 14, 2000), available at http://www.ijc.org/php/publications/html/legault_april.html (last visited Feb. 20, 2004).

39. *Id.*

40. *Id.*

other country, [as well as] ... the construction of any works, dams or other obstructions in rivers that flow from boundary waters, or rivers that flow across the border, if these projects will raise the natural level on the other side of the boundary in the upstream country."⁴¹

2. The IJC can investigate and advise the governments on transboundary issues referred to it. The conclusions and recommendations brought forth from these fact-finding cases are not legally binding.⁴²

3. The IJC can act as an arbiter for disagreements jointly submitted to it. The United States must have approval from the Senate to submit such a case.⁴³

Despite having both a Canadian and an American section, the IJC generally works as a single unified body to fulfill its functions towards the common interests of the two countries.⁴⁴ Decisions of the IJC must have the concurrence of at least four Commissioners, though in practice most decisions are made by consensus.⁴⁵ To help it with its responsibilities, the IJC has also established more than twenty expert boards (*e.g.*, the Great Lakes Science Advisory Board, the Great Lakes Water Quality Board, and the International Columbia River Board of Control) to advise it on certain issues.⁴⁶ For example, the IJC has been called upon to advise Canada and the United States on issues such as constructing dams or canals, and has investigated water and pollution in the boundary regions. The Boards are composed of an equal number of members from each country, whose 'experts' are drawn from various governmental sources as well as the private sector.⁴⁷

The IJC is guided by a number of principles, which include the following:

- The Commission tries to maintain strict impartiality in the performance of its duties.

41. *Id.*

42. *Id.*

43. Legault, *supra* note 38. According to Legault, there has never yet been a case submitted under this Article. *Id.*

44. *Id.*

45. *Id.* The IJC has been split among national lines only twice in its over ninety year history, and most decisions have been unanimous. *Id.*

46. See IJC, *Boundary Waters*, *supra* note 30.

47. Legault, *supra* note 38.

- The Commission seeks to achieve consensus wherever possible, both in its own deliberations and those of its boards or similar bodies. The Commission employs joint fact-finding as a foundation for building consensus and determining appropriate action.
- The Commission is supposed to afford all parties interested in any matter before it a convenient opportunity to be heard and promote the engagement of state, provincial and municipal governments and other authorities in the resolution of these matters.
- In environmental matters, the Commission affirms the concept of sustainable development, the ecosystem approach and the virtual elimination and zero discharge of persistent toxic substances.
- While emphasizing the importance of a sound scientific basis for its conclusions and recommendations, the Commission also recognizes that it may sometimes be necessary to adopt a precautionary approach and to act even in the absence of a scientific consensus where prudence is essential to protect the public welfare.⁴⁸

The IJC's mandate covers the entire border region. For example, in 1931 it made recommendations concerning the reduction of emissions from a smelter in Trail, British Columbia, that threatened to become a serious conflict as a result of airborne pollution reaching the United States.⁴⁹ In 1944 and again in 1959, the IJC investigated and made recommendations concerning the apportionment of downstream benefits with respect to the Columbia River. The IJC's involvement ultimately helped the two countries reach the 1961 Columbia River Development Treaty.⁵⁰

Most of the efforts of the IJC have recently been concentrated in the Great Lakes region.⁵¹ In 1972, Canada and the United States signed the Great Lakes Water Quality Agreement. The aim of the agreement was to control pollution and clean up waste waters. The IJC was mandated to assist the governments in their tasks. In 1978, the scope of the agreement was enlarged to include "persistent toxic chemicals."⁵² In 1987, a Protocol called on the IJC to review "Remedial Action Plans" in forty-three areas of concern.

48. IJC, *What it is*, *supra* note 36.

49. Legault, *supra* note 38.

50. *Id.*

51. IJC, *What it is*, *supra* note 36.

52. *Id.*

The 1987 Protocol implemented an “eco-system” approach to pollution control, and called for the development of “lakewide management plans” to combat some critical pollutants. It also included new emphasis on nonpoint source pollution, groundwater contamination, contaminated sediment, and airborne toxics.⁵³

In 1997, the governments of Canada and the United States asked the IJC to provide a report outlining how the IJC could assist the two governments in facing the environmental challenges of the twenty-first century.⁵⁴ In this report, the IJC outlined five key challenges for the next century:

- Population growth and urbanization;
- Climate change;
- Economic expansion, energy demands and waste generation;
- Technological development; and
- Environmental awareness.⁵⁵

To meet these concerns, the Commission proposed that transboundary watershed boards be established that would “focus on the overall environmental integrity of each watershed—water, land and air—and monitor and report on all relevant concerns, including questions of habitat, biodiversity, exotic species and pollution from all sources.”⁵⁶ While the two federal governments have agreed in principle to the concept, state and provincial reactions have ranged from cautious to negative.⁵⁷ The Commission is still pursuing this concept.

In the St. Croix River, Rainy River and Souris River basins, the IJC has also attempted to merge the pollution advisory boards with the existing control boards and to develop an integrated ecosystem approach to transboundary watershed management. For example, the International Souris-Red River Engineering Board has been merged with the Red River Pollution Board to form a new International Red River Board. The Board will be a forum for transboundary watershed ecosystem issues, such as water quality, development and ecosystem health.

Over the years, the IJC has faced its share of criticism, which has included questioning of its authority and whether or not the limits to that

53. Wolf, *supra* note 1, at 33.

54. IJC, *The IJC and the 21st Century*, available at <http://www.ijc.org/php/publications/html/21ste.htm> (last visited Feb. 20, 2004).

55. *Id.*

56. L.H. Legault, Address at WATERSHED 2000 Conference (July 9–12, 2000), available at http://www.ijc.org/php/publications/html/legault_july2000.html (last visited Feb. 20, 2004).

57. *Id.*

authority are a hindrance to the ecosystem approach called for in 1987.⁵⁸ Some feel that further powers, "supra-legal powers,"⁵⁹ are needed. The Commission's commitment to public participation has also been questioned.⁶⁰

Nevertheless, given the vast number of water resources under its authority and the myriad layers of government to which it must be responsible, the Commission is thought to stand out as an institution that has effectively and peacefully managed the boundary waters of two nations over ninety years, reconciling or averting more than 130 disputes in the process.⁶¹

B. IBWC⁶²

The IBWC operates between Mexico and the United States and was established by two primary legal instruments: the Convention of 1889, which created the International Boundary Commission (IBC), and the 1944 Water Treaty, which changed the name of the IBC to the IBWC.

The 1944 Water Treaty provided that:

58. See Wolf, *supra* note 1.

59. See *id.* at 35.

60. See *id.* The IJC officially states it is committed to public participation:

The Boundary Waters Treaty requires that the Commission give all interested parties a 'convenient opportunity to be heard' on matters under consideration. The Commission invites public participation and advice when it undertakes studies under References, when it deals with Orders of Approval, and when it prepares reports to Governments.

In many instances, citizens, both specialists and non-specialists, also serve on Commission boards and task forces.

The Commission is specifically authorized to develop a public information program under the Great Lakes Water Quality Agreement.

Informing the public of boundary water issues before the Commission is an important aspect of the work and ways to enhance the Commission's role in this area are continually explored.

IJC, *What is the Boundary Waters Treaty?* available at <http://www.ijc.org/rel/agree/water.html> (last visited Mar. 17, 2004).

61. See Wolf, *supra* note 1, at 35.

62. See Viviane Bennett & Lawrence A. Herzog, *U.S.-Mexico Borderland Water Conflicts and Institutional Change: A Commentary*, 40 NAT. RESOURCES J. 973 (2000); IBWC, *The IBWC, Its Mission, Organization and Procedures for Solution of Boundary and Water Problems*, available at http://www.ibwc.state.gov/html/about_us.html (last visited March 16, 2004); Stephen P. Mumme, *Reinventing the International Boundary and Water Commission*, 9 BORDERLINES 79, No. 6, (2001), available at http://www.americaspolicy.org/borderlines/2001/b179ibwc_body.html (last visited Mar. 16, 2004) [hereinafter Mumme].

- [T]he IBWC shall in all respects have the status of an international body;
- [T]he head of both the American and the Mexican sections must be an Engineer Commissioner;
- [W]herever Treaty provisions call for joint action or joint agreement by the two Governments, such matters shall be handled by or through the Department of State of the United States and the Secretariat of Foreign Relations of Mexico; and,
- [T]he Commissioner for both the American and the Mexican section functions under the foreign policy supervision of the Foreign Office of his or her host Government.⁶³

The mission of the IBWC is:

to apply the rights and obligations which the Governments of the United States and Mexico assume under the numerous boundary and water treaties and related agreements, and to do so in a way that benefits the social and economic welfare of the peoples on the two sides of the boundary and improves relations between the two countries.⁶⁴

Those rights and obligations include:

distribution between the two countries of the waters of the Rio Grande and of the Colorado River; regulation and conservation of the waters of the Rio Grande for their use by the two countries by joint construction, operation and maintenance of international storage dams and reservoirs and plants for generating hydroelectric energy at the dams; regulation of the Colorado River waters allocated to Mexico; protection of lands along the river from floods by levee and floodway projects; solution of border sanitation and other border water quality problems; preservation of the Rio Grande and Colorado River as the international boundary; and demarcation of the land boundary [between the United States and Mexico].⁶⁵

63. Bennett & Herzog, *supra* note 62.

64. *Id.* Some of the other treaties and agreements that are important in a trans-boundary sense include: the North America Free Trade Agreement (NAFTA); the 1993 North American Agreement of Environmental Cooperation to the NAFTA; the La Paz Agreement; the Border XXI Program; and the NAFTA-created Border Environmental Cooperation Commission / North American Development Bank.

65. Bennett & Herzog, *supra* note 61.

While each country maintains separate headquarters with its own staff on each respective side of the border, the Commissioners meet weekly and are in almost daily contact with each other.⁶⁶ Cooperative projects carried out by the IBWC originate in different ways. The IBWC is required to implement the provisions found in existing treaties and international agreements. Any joint work done by the IBWC to fulfill these requirements necessitates negotiation of specific agreements. These agreements, made up of decisions or recommendations, are in the form of Minutes signed by each Commissioner.⁶⁷ Once approved by each country, the Minutes are binding on both governments.⁶⁸

"[A] cooperative project may [also] originate with the emergence of a new boundary or water problem that requires agreement and the cooperation of the two Governments for its solution."⁶⁹ Once such a problem has been brought to the attention of the Commission and an investigation shows that an international project is warranted, the project may be recommended to both governments. If the project is approved and funded, each Section carries out its duties under the supervision of the IBWC as outlined in the agreement.

The mandate of the IBWC is thus a balancing act of treaty obligations and operational responsibilities.⁷⁰ The result has been described as "a bureaucratic hybrid, a diplomatic body overseen by engineers, officially the servant of the two foreign ministries but politically dominated by the U.S. Congress."⁷¹

IV. OBSERVATIONS / LESSONS

The history and practice of the IJC and the IBWC provide a rich body of work to review. The two Commissions are similar in many respects. However, they are also quite different. Are there lessons that the IJC and the IBWC can learn from each other to better equip themselves to deal with transboundary water issues in the next millenium? Are there "lessons" that can be learned from the history and practice of the IJC and the IBWC to help create model institutions for the sustainable management of international shared natural resources and transfrontier ecosystems (*i.e.* eco-regions housing millions of inhabitants that sprawl across international

66. *Id.* The U.S. headquarters are located in El Paso, Texas, and the Mexican headquarters are located in Ciudad Juárez, Chihuahua. *Id.* The U.S. Section receives its authorization and funding from Congress. *Id.*

67. Bennet & Herzog, *supra* note 62.

68. *Id.*

69. *Id.*

70. Mumme, *supra* note 62.

71. Mumme, *supra* note 62, at 1.

boundaries, most notably in western Europe and North America) throughout the world?

Some observations on these points, including some criticisms of how the IJC and the IBWC currently operate, follow. First, there are many important differences between the boundary regions of the United States and Canada, and those of the United States and Mexico.⁷² The reasons for these differences are fundamental and include history, climate, culture, language and, not unimportantly, the way that U.S. citizens appear to have been trained to think about Mexico and Mexicans.⁷³ On the southern boundary, the climate is relatively harsh and arid, cultural differences are marked, and Mexican law and land tenure contrast with the common law system inherited by the United States and Canada from England.⁷⁴ According to at least one critic of the IBWC, the Treaty of 1848, which established the IBWC, also established a preoccupation with allocation and a pattern of inequality between the two countries, and this lopsided relationship has shadowed Mexican/American relationships ever since.⁷⁵ On the northern boundary, Canada and the United States share more of a common climate, culture and language.⁷⁶ The result seems to be that the IJC and the Boundary Waters Treaty of 1909 are thought to have been more respected than the IBWC, both in law and in spirit.⁷⁷

There are a number of important differences in the way that the IJC and the IBWC appear to function.⁷⁸ First, a number of the functions of the IBWC find no counterpart in the IJC (*i.e.*, functions such as planning, design, construction and operation of water storage and related facilities for the allocation of water between the two countries under specific treaties for different water bodies, and for drinking water and sanitation). Second, there is much more specificity of assignments and tasks within the IBWC in contrast to the flexibility associated with the IJC for assigning tasks, which is widely variable in subject, scope and time. Third, the IJC, unlike the IBWC, has the ability to appoint boards of investigation and implemen-

72. See Leonard B. Dworsky & Albert E. Utton, *Assessing North America's Management of Its Transboundary Waters*, 33 NAT. RESOURCES J. 413 (1993) (summarizing the results and recommendations of "The North American Experience Managing International Transboundary Water Resources: International Joint Commission and the International Boundary and Water Commission" project) [hereinafter Dworsky & Utton].

73. *Id.* at 440.

74. *Id.* at 441.

75. *Id.*

76. *Id.* at 440.

77. Dworsky & Utton, *supra* note 72, at 440.

78. *Id.* See also S.J. Toope & J. Brunnee, *Symposium: Law and Civil Society Part V: Interrelationships Through the Lens of Regime Theory: Freshwater Regimes: The Mandate of the International Joint Commission*, 15 ARIZ. J. INT'L & COMP. L. 273 (1998); Bennett & Herzog, *supra* note 62.

tation, including representatives of general public interest, over an unlimited time period to ensure that solutions to problems are sought out and actually implemented.

Both the IJC and the IBWC are currently facing major challenges such as: increasing risks to water quality and quantity; the linking of border environments to binational trade agreements; new stresses on public health and national economies; changes due to population growth and industrialization; greater demands on jointly owned resources; greater demands for public participation in environmental decision making; greater value being placed on non traditional water uses (*i.e.*, in stream flows for ecological, aesthetic and outdoor recreation purposes); and the imperative to establish more of an "ecosystem approach" to resource management.⁷⁹

Both the IJC and the IBWC continue to be criticized. For example, according to one commentator, the IBWC is an "institutional dinosaur; a stodgy brick-and-mortar agency dominated by engineers; intractable, defensive; the agent of a central government during a time of decentralized solutions."⁸⁰ Put another way, the IBWC is arguably currently not mandated to deal with all the conflicts now facing water supply in the United States/Mexico borderland, including toxic waste dumping, sewage spills, pesticide contamination, conflicts over groundwater, and the politics of scarce water supply among competing users, including farmers, tourism developers, industrialists, residents and different levels of government.

[S]ince NAFTA the IBWC's role in managing border water has been increasingly hemmed in by newer binational commitments and agencies whose functions overlap its own. Products partly of frustration with the IBWC's limitations and its failure to respond to broader environmental concerns in the 1970s and 80s these new programs and agencies address a wide range of health and environmental problem, many of which transcend the IBWC's treaty mandated functions.⁸¹

Both the IJC and the IBWC have seen changes in their constituencies. For example, until the 1970s, the IBWC's clientele in the United States and Mexico was almost wholly composed of traditional stakeholders concerned with defending water endowments and water entitlements to the almost complete exclusion of other interests.⁸² However, environmentalists, economic justice advocates and other constituencies for sustainable development are today increasingly influential in the border community.

79. *Id.*

80. Mumme, *supra* note 62.

81. *Id.*

82. *Id.* at 4.

These new constituents are increasingly concerned with such issues as drought management, groundwater management and ecological preservation. According to one critic, the IBWC is handicapped in responding to these new constituents by an IBWC treaty that either failed to anticipate many of these problems or underestimated their magnitude.⁸³ Among the IBWC's more glaring omissions are groundwater allocation, mechanisms for sharing water from lesser streams and rivers, consideration of ecologically-based water needs, and lack of an ecosystem-based orientation.⁸⁴

The IJC appears to have a stronger and more powerful institutional structure than the IBWC. However, according to at least one critic, the relatively strong institutional structure of the IJC is somewhat misleading, and while the procedural evolution of the IJC suggests a capacity for the generation of progressive substantive norms, the constrained scope of the IJC's mandate practically precludes normative innovation.⁸⁵

Although the IJC has yet to evolve into a producer of substantive norms, this does not mean that the IJC is irrelevant or ineffective.⁸⁶ In actual fact, the IJC appears to have helped to resolve a large number of potential disputes concerning the diversion of waters.⁸⁷ Even more importantly, it has served as the focus for significant fact-finding and investigation into important environmental issues, including those affecting the Great Lakes basin.⁸⁸ The IJC is also not without influence.⁸⁹ According to two observers

various IJC reports contain references to emerging principles of international environmental law; its public fora allow for the active participation of NGOs in decision making; and, the publicity generated by all of this work helps to create political pressure upon governments that may counterbalance the interests of industry and organized labor. Ultimately, such pressures may prompt the negotiation of harder regimes of substantive norms focussed upon ecosystem sustainability. At the very least they help to shape the attitudes of actors within the bureaucracy and government as they consider the policy options available in any given context. The IJC is also a useful monitoring agency, and a source of information

83. *Id.* at 4-5.

84. *Id.*

85. See Toope and Brunnee, *supra* note 78, at 285-86.

86. *Id.* at 286.

87. See Wolf, *supra* note 1, at 35.

88. See Toope and Brunnee, *supra* note 78, at 286.

89. *Id.*

which can support public lobbying efforts to influence governmental decision-making.⁹⁰

Proposals to turn the IJC into a full fledged adjudicatory agency with independent powers of enforcement are thought, by at least one IJC critic, to be misconceived, or at best, premature.

[T]hey are likely to result in a lessening of the actual influence of the Commission, for the United States and Canada will simply ensure that important issues engaging multifaceted interests are reserved for a political track. Any reforms to the IJC should focus upon improvements at a procedural level, to expedite the fact-finding function. In the longer term, if a political commitment to ecosystem protection grows, the IJC may evolve into a more autonomous institution with powers of norm-generation. But any such development is a long way off. Meanwhile, the IJC is useful and modestly influential. Turning it into a pseudo-judicial entity would undermine, not enhance, its effectiveness.⁹¹

Analysis of the IJC and the IBWC suggests that designing institutions for transboundary water resource management is a perilous undertaking and that the result must necessarily vary widely based on the facts and circumstances of each individual case. However, there is a great deal to be said for trying to design institutions for transboundary natural resources management in an adaptive way.

Adaptive institutions are those institutions, like the IJC, that end up following the principles of active adaptive management. Active adaptive management involves learning by doing, and when done right, it provides a foundation to improve the basis for action through experimentation. It incorporates five basic principles:

- Protecting and restoring living resources as a common objective of everyone involved;
- Treating and administering “projects” as experiments;
- Acting instead of deferring action until we “know enough”;
- Valuing information as a basis for action and a product of action; and
- Managing ecosystems for as long as mankind exists, but realizing the unlikelihood of developing ultimate solutions.

90. *Id.* at 287.

91. *Id.*

The great advantage of active adaptive management is that it not only is conducive to the application of the "precautionary approach," but that it allows for action in the face of scientific uncertainty and keeps the powerful problem solving characteristics of the scientific method continuously engaged in the service of policy development.