

Preface

Ecological Integrity and the Inspiration of the Great Lakes Water Quality Agreement

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The first time I met Dr Laura Westra, the originator of the Global Ecological Integrity Project, in the early 1990s, we were at a meeting discussing the implementation – or lack thereof – of the Great Lakes Water Quality Agreement (GLWQA) between Canada and the US. At that time she had already begun to organize the forum of scientists and scholars that became the Global Ecological Integrity Group (GEIG). The GLWQA was widely regarded as a success, and, indeed, a model of an international environmental agreement, because of how the two governments had effectively responded to the lower lakes' eutrophication crisis, the excessive algal growth that fouled shores, reduced water clarity to historic lows and compromised the habitat of fish and other aquatic organisms. However, by the early 1990s the Great Lakes institutions were mired in controversy and inaction over how to address the significantly more complicated, and to some more urgent, policy challenge posed by a steady flow of new evidence linking a broad range of wildlife health effects and, increasingly, similar human health effects to exposure to toxic chemicals in the Great Lakes environment, most significantly PCBs, Dioxin and other chlorinated organic compounds either directly produced by or the by-products of industry and agriculture. Theo Colborn at the World Wide Fund for Nature was pulling together threads of evidence from wildlife and human health studies and making a compelling case that the common theme in the accumulating data was chemical disruption of endocrine functioning, the body's chemical messaging system, that was eroding the vitality, and in some cases the viability, of exposed organisms. This degradation of the health of whole populations was just as important as, and perhaps more important than, any cause-effect linkages between any specific exposure and individual illness. Arguably it was the very definition of a decline in biological integrity.

In Article II of the GLWQA, the Parties, the US and Canadian Governments, agreed that their purpose in signing the agreement was 'to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem'. Westra and her colleagues were asking important questions related to the substantive meaning of integrity and what an official

statement of purpose in the GLWQA (and a number of other legal and policy documents worldwide) demands of those who commit their governments or agencies to the restoration and maintenance of integrity. Inspired by my participation in the United Nations Conference on Environment and Development (the 1992 Earth Summit) in Brazil, I was particularly interested in the economic system dynamics that subverted environmental goals (see Chapter 17) and I joined GEIG and its cutting-edge transdisciplinary exploration of integrity by philosophers, legal scholars, ecologists, biologists, planners and others with a shared commitment to systems thinking.

At the time, it seemed critically important to clarify and defend the commitment to integrity as stated in the GLWQA. In 1992 the International Joint Commission (IJC), the binational organization established in 1909 by the Boundary Waters Treaty and given oversight responsibilities for the GLWQA, released its Sixth Biennial Report (IJC, 1992), its review of progress under the agreement. In it, spurred by activists from Greenpeace and supported by scientists like Dr Jack Vallentyne, the Canadian Co-Chair of the IJC's Science Advisory Board and the limnologist most often cited for clarifying the role of phosphorus pollution in eutrophication, the US and Canadian Commissioners made the remarkable recommendation that 'the Parties, in consultation with industry and other affected interests, develop timetables to sunset the use of chlorine and chlorine-containing compounds as industrial feedstock' (IJC, 1992). In so doing the commissioners were following the logic of the agreement's commitment to integrity. The regulatory processes in both countries, based as they were on a one-by-one, chemical-by-chemical assessment of potential exposure and harm and a presumption of safety, or innocence until proven guilty, had clearly failed to protect the lakes from what was appearing to be devastating and potentially irreversible pollution. Being highly reactive, chlorine forms powerful chemical bonds that tend to persist in the environment, and the use of elemental chlorine in manufacturing often leads to a variety of unintentional chlorinated by-products. Chlorinated organic compounds, such as PCB, Dioxin, DDT and Dieldrin, dominated the IJC's list of priority pollutants. While governments slowly dealt with the toxic chemicals they knew were present and harmful, new compounds were continually entering the Great Lakes environment untested, unregulated and unmonitored. All living things in the Great Lakes were sure to encounter and to ingest substances that their ancestors had never encountered. Stored in their genetic inheritance were no mechanisms evolved by selecting those least susceptible to this kind of chemical assault (DePinto and Manno, 1997).

Thomas Jorling drafted the US Clean Water Act and is often credited with the insertion of the statement that 'The objective of the Act is to restore and maintain the chemical, physical and biological integrity of the nation's waters.' Later, as assistant administrator for water at US Environmental Protection Agency (EPA) headquarters, Jorling served as the US Chair of the IJC Water

Quality Board. He wrote about integrity in his influential article 'Incorporating ecological principles into public policy':

The intellectual roots of this perspective are found in the study of evolution. The objective of this concept is the maximum patterning of human communities after biogeochemical cycles with a minimum departure from the geological or background rates of change in the biosphere. Framed another way the objective is to move from linear pathways in the movement of matter and energy to circular pathways. (Jorling, 1976, p142)

From this perspective, which is at the heart of the US Clean Water Act and the GLWQA, the widespread release into the environment of a stew of chlorinated organic compounds represents an assault on the chemical and biological integrity of the waters of the Great Lakes.

But politically the recommendation was a disaster. In his book *The Making of a Conservative Environmentalist*, Gordon Durnil, the US Co-Chair of the IJC at the time of the chlorine controversy, later wrote about his transformation from a political operative who helped deliver the state of Indiana for the campaign of the first President Bush to someone who recommended the most radical pollution prevention programme in the history of the commission. The chemical industry responded quickly and reached into the White House to influence incoming President Clinton to ensure that the 'next lot of commissioners will not be as green as the current bunch' (Durnil, 1995). The IJC never recovered. Following the 1987 amendments to the GLWQA, the US and Canadian government agencies created a Binational Executive Committee to coordinate the Great Lakes programme and began a long period of relative disengagement with the IJC. Much like with the US Clean Water Act, what still has not been effectively tackled, or not, in fact, even discussed, are the real policy implications of a governmental commitment to ecological integrity such as that made in the GLWQA. That was the question with which GEIG began.

Whatever the political or indeed the scientific merits of the IJC recommendation on chlorine, it represented an attempt to urge the Canadian and US Governments to seriously consider the implications of their commitment to integrity. As in the US Clean Water Act, the integrity-centred purpose of the GLWQA defined it as a responsibility-based agreement unlike entitlement-based water quality approaches of the past focused on protecting the most monetarily significant *uses*. Thomas Jorling wrote about how the new 1972 Clean Water Act marked a clear departure from earlier policy:

Under the earlier programme, the basic assumption was that the biosphere, and in particular the water component of the biosphere, was to be, and in fact existed to be, used ... The measure of water quality

under pre-1972 US law was to be its 'beneficial use'. The new programme has a different underpinning. It assumes that man is a component of the biosphere and that the relationship we seek to achieve with the environment is what some have called harmony. (Jorling, 1976)

Elsewhere he was quoted as saying:

The 1972 Act ... provides an opportunity, if we use it, to look at the structure and functioning of human communities as elements in the overall biosphere and make judgments about the life-support requirements of those human communities. This is a tall order. Yet it is the direction in which we must move; it is the legacy of the concept of ecological integrity. (Regier and France, 1990, p4).

The Great Lakes ecosystem is one of the great natural wonders of the world. It is hard to overstate its importance. Consider this. Of all the water in the world, 97.5 per cent is salt water; only 2.5 per cent is fresh. Nearly three-quarters of that 2.5 per cent is stored in glaciers and polar ice caps. Almost all the rest is deep underground, or locked in soils as moisture or permafrost. Only 0.3 per cent of the world's fresh water is surface water found in rivers or lakes. Thus only 0.007 per cent of the world's water is fresh surface water and nearly a fifth of that scarce and precious resource is stored in the Great Lakes of North America. One out of every three Canadians and one of every ten Americans takes their water from the Great Lakes.

By the late 1960s the degradation of the Great Lakes was obvious by sight and smell. Routine algal blooms choked the oxygen out of the central basin of Lake Erie. Populations of non-native prey fish, primarily alewife, exploded following the dramatic decline in large predator fish due to overfishing and bioconcentrated dioxin pollution. The fish washed up, rotted, and their dried and windblown carcasses collected into rows on the shore. The Cayahoga River caught fire. The resulting public outcry led to political pressure for environmental action. Among the results was the GLWQA.

The GLWQA, signed first in 1972, was a major milestone in the history of international environmental agreements. In its preamble it recognized the clear links between population and economic growth and water pollution. In 1978 it was renegotiated and revised to include a new emphasis on toxic chemical pollution and express its purpose to restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes basin ecosystem. It established clear, ecologically based principles and goals, promising to eventually virtually eliminate persistent toxic chemicals through zero discharge of persistent, bioaccumulative toxic substances. The agreement institutions were built on the principle and assumption that participants from both countries did not serve as

representatives of their nations' or agencies' interests but rather served the welfare of the ecosystem and the people in it. The IJC Water Quality and Science Advisory Boards were populated equally by Canadians and Americans. Appointees were expected to 'represent' not their agencies or their national interests but the interest of the lakes, using their best professional judgement. The agreement set goals and objectives, but the means to achieve these ends were left to each country.

Over the years, Great Lakes management has shifted away from the responsibility-based concepts embedded in the language of the GLWQA and its ecological purpose of integrity, and towards a much more rights- and entitlement-based implementation.

Once every two years during the first two decades of the GLWQA, the IJC held a public meeting during which the governments were expected to report on progress towards achieving the objectives of the agreement. By the mid-1980s, these meetings were drawing upwards of 2000 people, many of them citizen activists driven by concern over the growing evidence of chemical contamination and insisting that their governments carry out their responsibilities under the agreement. By the 1990s, the US and Canadian Governments had initiated a new biennial meeting, known as the State of Lakes Ecosystem Conference (SOLEC), outside the IJC and GLWQA institutional framework. For these conferences the governments commissioned a range of experts to report on the environmental status of the lakes using a broad range of indicators, most of which were use-related. The US EPA and Environment Canada resisted calls by the IJC and others to relate their indicators and reporting data directly to their commitments under the GLWQA.

These examples illustrate an ongoing trend of moving away from a responsibilities-based approach to water management to a use-based or entitlement-based approach. They also correspond to a move away from the objective of restoring and maintaining ecosystem integrity. GEIG began with the question of what responsibilities governments have when they commit to ecological integrity. The GLWQA was one of the inspirations for that question. Over the years we have expanded our question from the meaning of ecological integrity to questions of what kinds of laws, policies and international institutions will make it most likely to achieve the goal of restoring and maintaining ecological integrity in ecosystems around the world, including especially the global ecological systems that make planet Earth inhabitable.

The GLWQA is being reviewed, evaluated and, perhaps, renegotiated in the 2007–2010 period. There are a number of ways that will help return the framework to one built around a set of clear responsibilities with means for concerned citizens to hold governments accountable. These include:

- mechanisms for representation of First Nations and Native Communities on the IJC as sovereign partners along with the US and Canada;

- regular reporting on progress in achieving the objectives of the agreement, with indicators directly related to specific commitments;
- provisions for citizen petition for redress for harms to the environment;
- regular updating of key provisions, ecosystem objectives and priority pollutants; and
- indicators of ecological integrity developed for each lake and the connecting channels.

The US Clean Water Act of 1972, with its requirement that governments subject their actions to environmental impact assessment, a requirement too often ignored or made *pro forma*, assigns a particular and constant form of environmental responsibility to government. This language and the commitment to the 'chemical, physical and biological integrity of the nation's waters' asserted a trust responsibility based on ecological principles that 35 years later we are still, with increasing urgency, trying to fulfil. This has been part of the task of GEIG.

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Among the early origins of the concept of ecological integrity was a small monthly Christian farmers' journal, extolling the importance of the 'integrity of creation', and the obligation we all shared to respect it. To further explore this insight, Laura Westra received an original grant from The Social Sciences and Humanities Research Council of Canada (SSHRC). This grant was followed by subsequent grants in support of a small group that eventually evolved into a worldwide network of scientists, philosophers, social scientists, economists, and lawyers, united in their search for ecological integrity.

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We are delighted about the celebration of the first fifteen years of integrity scholarship and look forward to ongoing interaction. To continue to track our progress, we intend to design some guiding principles based on ecological integrity. These will eventually be available on the website at www.globalecointegrity.net. Other resources relevant to the group's research are: www.climateethics.org (Don Brown), www.ecohealth.net (Colin Soskolne), www.footprintnetwork.org (William Rees) and the Earth Charter (Ron Engel and Brendan Mackey).

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