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Garrison Diversion: Constraints on Conflict Resolution[†]

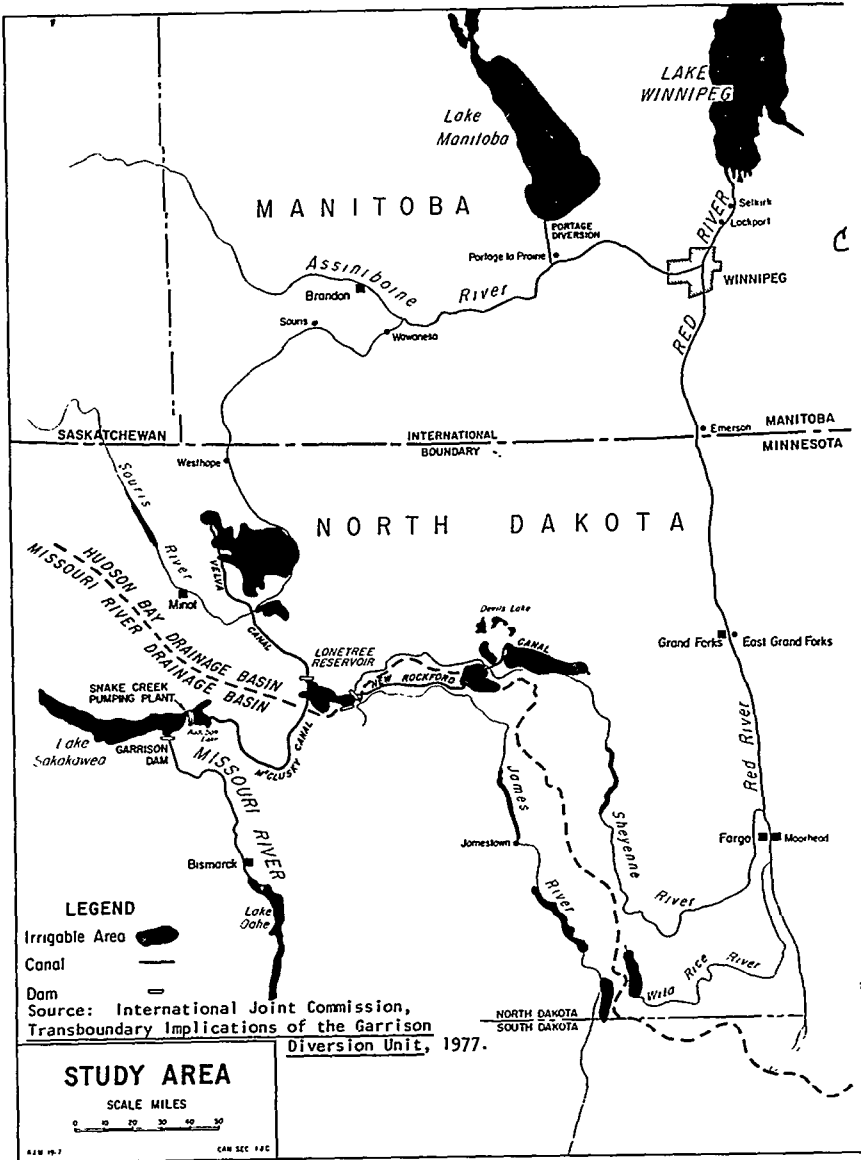
For two decades diversion of Missouri River water from the Garrison Dam to east-central North Dakota has generated controversies at local, state, national, and international levels. The major controversy has been international involving the federal governments of Canada and the United States, and the governments of the Province of Manitoba and the state of North Dakota. Within the United States conflicts have arisen between promoters of irrigation and protectors of waterfowl, and among farmers, fishermen, bankers, environmentalists, and American Indians. Yet these contentions need not have happened—or at least need not have been so difficult to resolve. The Garrison Diversion controversies have concerned ethics, values, and economic interests not susceptible to easy compromise. Nevertheless, the conflicts might have been lessened through more carefully considered design for the project, utilizing data and methods now customary in environmental impact analysis.

The Garrison Diversion project was unintentionally structured in a way that induced the conflicts that have frustrated its completion. A major constraint on the resolution of those conflicts was the absence of a mutually acceptable forum for conflict resolution. To the extent that resolution of the Garrison controversy has been approached, the primary factor has been scientific information. If future international controversies, such as Garrison, are to be avoided, an agreed-upon system or arrangement for conflict resolution using agreed-upon criteria for validated evidence will be necessary.

Possibly the fact-finding functions of the International Joint Commission (IJC) of Canada and the United States might be extended and developed for further resolution of Garrison-like conflicts, and for other transboundary disputes. The IJC has the advantage of being an institution in place, supported by precedent, wide transboundary acceptance and the Boundary Waters Treaty of 1909. Other institutional arrangements are possible, however, which would be preferable to avoid costly “trial by

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combat" in large public works and development projects. The following discussion considers the need for better institutional arrangements to clarify issues, forecast consequences, and identify alternative courses of action in transboundary environmental disputes.

THE GARRISON DIVERSION UNIT

The Garrison Diversion project was an outgrowth of the Pick-Sloan compromise between the Corps of Engineers and the Bureau of Reclamation for the multi-purpose development of the Missouri River, adopted by the Congress as part of the Omnibus Flood Control Act of 1944.¹ From an initial proposal to irrigate more than one million acres in the Dakotas, the modified authorization adopted in 1965 reduced the project to irrigate only 250,000 acres in North Dakota.² The state established the Garrison Diversion Conservancy District to cooperate with the federal Bureau of Reclamation in construction of the project.³

Unrecognized by the authors of the Pick-Sloan compromise, these plans were encumbered by major unforeseen problems. A substantial part of the return flows from the irrigated acres would discharge into rivers entering the Canadian Province of Manitoba and emptying into Lake Winnipeg in the Hudson Bay watershed. Thus Garrison Diversion, as authorized, entailed a massive inter-basin transfer of water, which was also an international transfer with environment-affecting consequences, thus potentially falling under provisions of the Canadian-American Boundary Waters Treaty of 1909.⁴ Failure of the sponsors of the project to appreciate

1. For a discussion of the Pick-Sloan plan, see HENRY C. HART, *THE DARK MISSOURI* (1957); MARIAN E. RIDGEWAY, *THE MISSOURI BASIN'S PICK-SLOAN PLAN: A CASE STUDY IN CONGRESSIONAL POLICY DETERMINATION* (1955). The Pick plan is printed in H.R. DOC. NO. 475, 78th Cong., 2d Sess. 19 (1944); the Sloan plan in S. DOC. NO. 191, 78th Cong., 2d Sess. 20 (1944). For the joint plan, see *Control and Use of the Water Resources of the Missouri River Basin: Hearings on S. 1915 Before the Senate Comm. on Irrigation and Reclamation*, 78th Cong., 2d Sess. 1 (1944); and Flood Control Act of Dec. 22, 1944, ch. 665, 58 Stat. 887 (1944).

2. For authorizing legislation, see Act of Aug. 5, 1965, Pub. L. No. 89-108, 79 Stat. 433 (1966).

3. For various accounts of the Garrison Diversion Project, see David L. Keys, *North Dakota's Garrison Diversion Unit: A Case Study of Domestic and International Environmental Values Conflict* (Aug., 1984) (Ph.D. dissertation, Indiana Univ.); *The Garrison Diversion Unit: Irrigator's Pipe Dream, Is Wildlife Nightmare: An Audubon Special Report*, 2 AUDUBON ACTION, 6-10 (1984); NANCY J. DOEMEL, *THE GARRISON DIVERSION UNIT: SCIENCE, TECHNOLOGY, POLITICS AND VALUES* (1979); JOHN E. CARROLL & RODERICK M. LOGAN, *THE GARRISON DIVERSION UNIT: A CASE STUDY IN CANADIAN-U.S. ENVIRONMENTAL RELATIONS* (1980); Carroll, *Prairie Water Issues*, in *ENVIRONMENTAL DIPLOMACY: AN EXAMINATION AND A PROSPECTIVE OF CANADIAN-U.S. TRANSBOUNDARY ENVIRONMENTAL RELATIONS* 313-22 (1983) [hereinafter cited as *Prairie Water*].

4. Treaty on Boundary Waters, Jan. 11, 1909, United States-United Kingdom, 36 Stat. 2448, T.I.A.S. No. 548. See also Comment, *The Boundary Waters Treaty of 1909: Does It Provide an Environmental Cause of Action?*, 20 S.D.L. REV. 147 (1975).

its ecological and international dimensions opened the way to a bitter international controversy that remains unresolved.

This lack of foresight may be explained in part by the relative absence of environmental awareness in both Canada and the United States at the time of authorization. Advancement in fresh water ecology and in general ecological sensitivity occurred during the 1960s and 1970s, bringing about a new set of circumstances. The planners of Garrison could not foresee the dawning of the "age of ecology." Moreover, as was common federal agency practice before passage of the National Environmental Policy Act and its environmental impact statement requirement, Bureau of Reclamation engineers were not obliged to tell the American public (and even less the Canadian public) all that they knew about the side effects of Garrison. Thus some of the opposition did not arise until people belatedly discovered how the project would affect their lives and property. As details of the diversion became more widely known, objections developed among some North Dakota farmers and among environmental protection groups, notably within the National Audubon Society. There were complaints over inequities but the principal objections related to the adverse effect of the project on migratory waterfowl. As awareness of the project gradually developed in Canada, opposition grew: first, to flooding along the Souris, Assiniboine, and Red Rivers; second, to degraded water quality from irrigation return water; and third, from unwanted biota transfers from the Missouri River basin.⁵ Intransigence of the project's sponsors and latent suspicions among many Canadians regarding the intentions of the United States government led to an escalation of anti-Garrison feeling in Manitoba which, by extension, came to assume proportions of a national issue in Canada, while being politically regarded as a local affair in the United States.

In August of 1983, through a legislative maneuver in a congressional conference committee, the Garrison Diversion obtained an appropriation of \$22 million toward completing what may have been euphemistically described in the state of North Dakota as Phase I of the project.⁶ No part of Phase I was to involve discharge of Missouri River water into the Hudson Bay watershed—which drains northeastern North Dakota and perhaps half of the project acreage as originally proposed. Construction under this appropriation would not exceed 85,000 acres which was much less than half of the 1965 authorization. The state and the Bureau have

5. See generally DOUGLAS H. BOYD, *THE IMPACTS OF THE GARRISON DIVERSION UNIT ON CANADA* (1975) (of special relevance is the discussion of reports issued by the IJC International Garrison Diversion Study Board and by The Manitoba Environmental Council).

6. *Energy and Water Development Appropriations for 1984: Hearings Before a Subcomm. of the House Comm. on Appropriations*, 98th Cong., 1st Sess. 2446-77 (1983); and *Congress OK's \$22.33 Million for Project*, 11 *DIVERSION DIG.* 1 (1983).

never publicly conceded that the entire 250,000 acres originally authorized will not be irrigated. They have, however, declared that Canadian waters will not be adversely affected because no Missouri basin water will be discharged into Canada so long as reasonable doubts exist regarding the effects of the discharge.

The Garrison Diversion project thus has an uncertain future. Is Phase I to be the final stage of the Diversion? American ambiguity as perceived by Canadians leaves room for doubt regarding the intentions and good faith of the government of the United States. One Congress does not bind another. Is the Bureau of Reclamation playing for time in the hope that further research may show Canadian fears to be groundless? Will the full 250,000 acre project be funded by some future Congress regardless of Canadian objections, or will the project ultimately be reauthorized at the Phase I level and the international controversy at last laid to rest?

THE RAMIFYING TENDENCIES OF LARGE PUBLIC WORKS

Scientific knowledge and associated technologies have vastly enlarged opportunities for enterprises that reshape natural environments to advance economic interests and political reputations. The costs of such projects are often inordinately large in relation to the number of persons actually benefited. The real cost-benefit ratios of large earth-shaping public enterprises are rarely attractive to private capital investment. Thus, extraordinary legal authority and fiscal arrangements are required to "develop" required resources of land and water and to distribute benefits with minimal regard to market forces. Consequently the proponents of massive economic development projects characteristically seek funding from public treasuries. Public works that benefit relatively few people are therefore often financed by levies on the taxable income of a much larger number who will not benefit and may be harmed by the projects.

The effects of large modern public works are not easily contained.⁷ Even when sited well within national boundaries, large environment-shaping enterprises, public or private, may have transboundary effects. Any large public works project today with adverse transnational impacts upon air, water, or migratory wildlife has potential for international political repercussions. A resulting conflict might be manageable, however, assuming an ability to control and mitigate the side effects of advanced technologies. But, in fact, the effects of large technological undertakings are seldom contained because they entail costs which their authors regard as external to their objectives and thus prefer to avoid. Historically, these costs have not been calculated or included in enterprise budgets and have

7. See, e.g., HAROLD FEIVESON, FRANK SINDEN & ROBERT SOCOLOW, *BOUNDARIES OF ANALYSIS: AN INQUIRY INTO THE TOCKS ISLAND DAM CONTROVERSY* (1976).

been treated, in the language of economists, as externalities. Cost-benefit calculations characteristically take account only of effects upon the jurisdictions and people directly affected by a project. Thus the fiscal calculus for Garrison was based on estimated effects in North Dakota, taking no account of effects in Manitoba for which the Bureau of Reclamation perceived no legal responsibility when the project was planned. The United States Congress authorized the Garrison Diversion upon the estimated ratio of benefits to costs in the United States. The Congress did not require the Bureau of Reclamation to provide comparable estimates for another country—e.g., Canada.

Science has extended the scope of external effects by enlarging technological capabilities. Science has also contributed greatly to public awareness of externalized costs in several ways: first, through enhanced and refined ability to identify, measure, and monitor environmental changes and, second, through the ability to communicate resulting information through news media and networks of concerned persons and organizations which increasingly transcend political jurisdictions. As a result, national and international environmental protection movements have been reinforced and extended.

Governments and international corporate enterprises are now beginning to consider these environmental protection movements when planning projects of multinational significance. Although the doctrine of national sovereignty and the limited means of international interposition in national undertakings restrain the influence of international environmental efforts upon national policies, the effects of environmental awareness may nevertheless be felt. Since the early 1970s an unprecedented number of international treaties, memoranda of intent, and other forms of agreement have been consummated that juridically and, to some degree, morally bind nations to act in accordance with agreed-upon principles of environmental conduct.⁸ Of course private promoters and the public officials with whom they develop symbiotic relationships seldom regard such obligations as binding. Moreover, officials of local, state, and provincial

8. For a compilation of environmental treaties, see *INTERNATIONAL PROTECTION OF THE ENVIRONMENT: TREATIES AND RELATED DOCUMENTS* (B. Ruster, B. Simma, & M. Bock ed. 1982). See also *SELECTED DOCUMENTS ON INTERNATIONAL ENVIRONMENTAL LAW: SELECTED AND ARRANGED BY THE BRITISH INSTITUTE OF INTERNATIONAL LAW AND COMPARATIVE LAW* (1975). For a continuing list of conventions and protocols, see *Register of International Conventions and Protocols in the Field of Environment*, U.N. Doc. UNEP/GC/Inf. 5 (1977 & Supp. V 1981). Information for the initial register was based largely on *INTERNATIONAL ENVIRONMENTAL LAW: MULTILATERAL TREATIES* (W. Burhenne ed. 1974). For the texts of fourteen environmental treaties negotiated prior to 1976, see B. JOHNSON, *INTERNATIONAL ENVIRONMENTAL LAW* 95-226 (1976).

jurisdictions and of national agencies seldom concern themselves with events occurring beyond their political boundaries.

Politicians everywhere have demonstrated capability for rationalizing localized short-term advantages into issues of national public interest. Thus water development projects of dubious economic merit and highly selective local benefit have been promoted in the Congress as building up the nation's economy—justifying national investment in projects actually benefiting relatively few people. The proposition that a nation may do as it pleases with its own natural resources reinforces the claim that national interests justify national funding. Thus foreign objections to the consequences of large scale national public works or major environment-shaping enterprises are often rejected as unwarranted interference in the internal affairs of the nation or its political subdivisions.

ISSUES IN CONTROVERSY

The controversy over the Garrison Diversion illustrates what can happen when a large government project gains scope and momentum, acquires the status of myth or promise, and is then caught in a cross-current of changing values. The change of values and the resulting opposition to the project occurred in an arena larger than its locale, which complicated the case of the Garrison Diversion. Environmental organizations, notably the National Audubon Society, organized a national effort to block the project. Congressmen from the eastern states and California voted against appropriations for Garrison. To many North Dakotans this opposition was unwarranted interference with concerns exclusively North Dakotan. Yet the magnitude of the project, its funding, and its physical effects could not be contained within the state of North Dakota or even within the United States. The return flow from a large percentage of the irrigation works would, under the project as authorized, be discharged into rivers flowing northward across the international boundary into Canada. Moreover, the money for realizing the implied promise of the project also came from congressional appropriations outside the locale and was directly subject to a shift in environmental values throughout the United States, again largely external to North Dakota.

The Garrison Diversion controversy involves four interrelating issues, each of which has its own peculiar complexities:

- (1) the propriety of public action when major conflict exists among the people affected;
- (2) the equity of allocating economic, social, and ecological burdens among the people affected;
- (3) the adequacy of criteria to evaluate the technical, economic, social, and ecological impacts of the Garrison project; and,

- (4) the obligations of the United States under the Boundary Waters Treaty of 1909 as related to the three foregoing issues.⁹

These issues and their substance and intensity have emerged over time and have changed with developing circumstances at different rates and in different directions. As a consequence, it has become increasingly difficult for the people concerned to agree upon the ethics and values that should be accorded primacy in the controversies and the legal principles that might mediate their differences. Even when there may be a common acceptance of statistical facts, differing perspectives have prevented agreement upon how they should be interpreted. A chain of controversy follows from differing value orientations. Diversities of viewpoint extend to the representatives of the institutions concerned, including the officials of local, state, provincial, and federal governments. The cumulative effect of these differences in attitudes, assumptions, and values, combined with client-patron commitments, locks adversaries into positions that severely constrain resolution of their conflicts. Reconciliation of differences requires time for alternative solutions to problems to be addressed and for the rationalization and acceptance of strategic retreats from earlier irreconcilable positions. Complex conflict resolution especially requires institutional arrangements sufficiently informed and authoritative to formulate acceptable solutions. In theory, arrangements for mediation and arbitration are available but, in fact, they have not been generally or politically acceptable.¹⁰

Conjectures for possible resolution of the Garrison conflict as presented by this article cannot go beyond provisional conclusions for several reasons. The controversy over the extent of the Garrison Diversion has not yet been resolved, and many of the effects of the project will become evident only in the future. The Garrison project's history to date serves to illustrate the risks of undertaking large environment-altering technological enterprises without sufficient scientific analysis and evaluation of possible hazards to successful completion. The history of Garrison demonstrates the need for an institutional means for effectively preventing a

9. INTERNATIONAL JOINT COMMISSION: UNITED STATES AND CANADA, RULES OF PROCEDURE AND TEXT OF TREATY (1965).

10. For a discussion of problems of conflict management, see Robins, *Conflict Management and Conflict Resolution Are Not Synonymous Terms*, 21 CAL. MGMT. REV. 67 (1978). A notable Canadian-U.S. environmental dispute was settled by arbitration, however. See *Trail Smelter Case* (U.S. v. Can.), Arbitral Tribunal, 3 R. Int'l Arb. Awards 1911 (1938) (interim decision); *Trail Smelter Case* (U.S. v. Can.), Arbitral Tribunal, 3 R. Int'l Arb. Awards 1938 (1941) (final decision); Kiss, *Trail Smelter Case*, in SURVEY OF CURRENT DEVELOPMENTS IN INTERNATIONAL ENVIRONMENTAL LAW 43-46 (1976); Rubin, *Pollution by Analogy: The Trail Smelter Arbitration*, 50 OR. L. REV. 259 (1971); Dinwoods, *The Politics of International Pollution Control: The Trail Smelter Case*, 27 INT'L J. 219 (1972). See also Goldberg, *The Garrison Diversion Project: New Solutions for Transboundary Disputes*, 11 MANITOBA L.J. 177 (1981).

conflict situation from arising or for mitigating a conflict when one has arisen.

Underlying the Garrison Diversion controversy is a question that perhaps none of the participants have asked: What considerations should determine how far society should go when replacing nature's systems with those managed by man? It may be that this question is seldom asked because to most people the answer has seemed obvious. Nature should be replaced by man-made systems so long as some human purpose is thereby advanced. From this answer a corollary question arises, also seldom asked: What advantages, if any, will people lose, in a particular circumstance, by managing nature? Rational consideration of these questions suggests the wisdom of true or extended cost-benefit and environmental impact analyses preceding any effort to supersede nature. What, in fact, has passed for cost-benefit analysis among too many economists and systems experts is a development-biased and incomplete exercise.¹¹ The calculation of the true costs and benefits of a large environment-shaping project like Garrison Diversion is at best an exercise in conjecture because too many unknowns and too many variables preclude certainty. Yet approximations in policymaking are preferable to untested, inadequately informed speculation or to uncritical assumptions.

Recognizing the limitations of cost-benefit analysis in policymaking, the method is nevertheless a logical element in rational planning, but with two equally essential provisos. First, the recognition that designated costs and benefits, as distinguished from unevaluated consequences, are value judgments and, secondly, there should be, prior to authorization, a comprehensive and unbiased investigation of the consequences that may follow implementation of the proposal. These consequences should include those effects occurring outside the project area where impacts may be felt and where opposition may arise, as well as those physical and social effects to be experienced within the geographic area over which the project promoters and sponsors have political control.

Cost-benefit analysis is not science. It is technique. Quantification of postulated costs and benefits does not make the analysis scientific. At best quantification may reveal relationships otherwise overlooked and may force a sharper and possibly more comprehensive consideration of values. Cost-benefit analysis characteristically occurs within a particular cultural and political milieu. Its investigators tend to view their subject matter from their own political perspectives which may be colored by particular cultural premises. Foreseeable effects of environment-altering

11. For a discussion of cost-benefit analysis, see generally EDWARD M. GRAMLICH, *BENEFIT-COST ANALYSIS OF GOVERNMENT PROGRAMS* (1981); Prest & Turvey, *Cost-Benefit Analysis: A Survey*, 75 *ECON. J.* 683 (1965).

undertakings should be accounted for before estimating the extent to which the consequences of the project may be considered costs or benefits. But possibilities of significant effects may be unknown, overlooked, evaded, or misinterpreted, and thus the basis for categorizing these effects as costs or benefits or as neutral or variable may be unreliable.

Without knowledge of the probabilities of certain effects inherent in a proposal, people are unable to consider what values may be at stake. People have been known to seek tangible short-term benefits which they might have declined had they understood that more fundamental long-term benefits were thereby sacrificed or that benefits might presently be diminished or denied by resulting opposition. If environmental impact assessment policies and techniques had been present in the 1960s, it seems likely that a very different Garrison Diversion project might have been proposed or, perhaps, no project whatever.¹²

Science may be able to help people get what they want, but science, per se, does not tell people what they ought to want. This statement serves as a corrective to the erroneous belief that science can solve all problems, but it tends to mislead because it does not credit the human mind with the ability to reassess values and purposes upon the basis of knowledge of cause-effect relationships. Science is not able to tell people what values to pursue or what projects to attempt, but science may be able to reveal what consequences may be expected to follow. An appropriate use of cost-benefit and environmental impact analyses should survey the broad human social environment and not merely that part of the environment categorized as "nature."

The four interrelated issues previously identified may now be examined with the foregoing considerations in mind. The considerable degree of uncertainty regarding the ultimate outcome of the Garrison Diversion project qualifies the significance attached to these issues. My analysis neither attacks nor defends the project and, with one important exception, should not be regarded as contributing to adversary proceedings. The exception is a very basic question that is in no way unique to Garrison: Is it wise for government to commit itself to large projects irreversibly impacting upon man and nature without prior thorough investigation of the consequences likely to follow? The question is not rhetorical, but the answer is not wholly a self-evident "no." A project may be ecologically and socially unwise by almost every relevant criterion but still be advantageous to its backers. A relativistic evaluation from the perspectives of the adversaries may lead to inconclusive results whereas a normative approach utilizing scientific information and considering general and long-

12. But see Pfeiffer, *Benefit-Cost Analysis of North Dakota's Garrison Diversion Unit: A Case Study of Conflicting Interest*, 3 W.J. AGRIC. ECON. 225 (1978).

range effects may lead to an unambiguous conclusion depending upon the accepted "norm." A normative designation of a particular state of the environment as "preferred" may be science-based without itself being a scientific judgment.

THE PROPRIETY OF PUBLIC ACTION WHEN CONFLICT EXISTS AMONG THE PEOPLE AFFECTED

A major circumstance characterizing the Garrison Diversion and a number of other environmental controversies arising since the 1960s is that they did not appear to be controversial, or not significantly so, when the commitments to the projects were made.¹³ Opposition developed as people who were hitherto uninformed, neutral, or even supportive, belatedly discovered that the projects entailed costs and consequences that they had not foreseen and did not like. Thus conflict arose between people who stood by the original commitment, and those previously unaware who now wanted the project to be reconsidered.

In almost every conflict of the Garrison type, the injection of scientific findings new to the issue has affected the balance of public opinion.¹⁴ In the Garrison Diversion case, North Dakota wildlife conservationists and the United States Fish and Wildlife Service shifted from early support to de facto opposition because of advances in fresh-water ecology and wildlife management, and a closer examination of environmental impacts. Unforeseen fears in the Province of Manitoba also arose because of these new developments. Thus the propriety of public action became questionable when it continued on assumptions that appeared to be invalidated by the best available scientific evidence. A question also arose as to the propriety of action by the United States that might violate treaty obligations in relation to Canada. Regardless of the validity of these allegations the political circumstances under which the Garrison project was conceived and launched had changed.

The newly available scientific data and the prospect of an international dispute did not change the minds of North Dakotans whose criteria for propriety were: (1) the federal "promise" to compensate North Dakota for lands flooded by the Garrison Dam; (2) the statutory authorization of the project by Congress; and (3) the pervasive assumption of an obligation of government to promote economic growth. To persons of the foregoing persuasions the ecological and international objections were come-lately, self-interested efforts to change the rules of the game in mid-course and

13. See generally *Prairie Water*, *supra* note 3.

14. See ROBERT V. BARTLETT, *THE RESERVE MINING CONTROVERSY: SCIENCE, TECHNOLOGY, AND ENVIRONMENTAL QUALITY* (1980). A notable case in point was the discovery midway in the Minnesota Reserve Mining controversy that the taconite fibers discharged into Lake Superior had asbestiform character and might possess carcinogenic properties.

were manifestly unfair. A dissenting but smaller group of North Dakotans were opposed to Garrison not only for ecological reasons, but more often because of misgivings concerning the way in which the project was implemented, especially in land purchase procedures, the allocation of water rights, and the equitable distribution of financial benefits.

THE EQUITY OF ALLOCATING ECONOMIC, SOCIAL, AND ECOLOGICAL BURDENS AMONG THE PEOPLE AFFECTED

Perhaps there is no public project in which all people can benefit equally. But in the Garrison case two types of inequity arose which appear to have been underevaluated by the backers of the project if they were identified at all. The first resulted from the alleged deviousness and unfairness of the federal government in the acquisition of land for reservoirs and rights of way. This inequity pertained not only to the Diversion project but to the original Garrison impoundment itself and the taking of Missouri River bottom land by the government of the United States to be permanently flooded.

Some farmers who were forced to sell land to the project saw themselves as ill-used because they were precluded from obtaining any benefit from the Diversion water. Compounding this resentment was the belief that federal agents resorted to threats and deception to purchase land at the lowest possible price. Timid, naive, or cooperative landowners in the Turtle Lake area were reported to have sold their acres at prices substantially below those obtained by tougher-minded neighbors. Is it right, they asked, for people to be so treated by their government?¹⁵

A question of equity also arose because some farmers who were involuntarily included in the irrigation district could not or did not wish to benefit from the Diversion water but were obligated to pay Conservancy District assessments. Similarly, charges of injustice arose from farmers outside the project boundaries, or even inside, who were threatened with loss of acreage for wildlife mitigation purposes. A case for inequity might also have been made on behalf of the Three Affiliated American Indian Tribes of the Fort Berthold Reservation, the Mandans, Arikaras and Hidatsa. Indian lands (about one-third of the total acreage) were taken for the Garrison reservoir but the tribes were denied access to Garrison water.¹⁶ Ironically the state of North Dakota and proponents of the Garrison Di-

15. See, e.g., Letter from Steven C. Lian to Editor, *Minot Daily News* (June 4, 1984). Many negative opinions were expressed by North Dakota farmers interviewed by the author and Nancy J. Doemel in early September 1978, notably in the Turtle Lake area. See also *Garrison Diversion: Rumblings on the Ditch*, N.D. UNION FARMER 1 (July 1972).

16. Shanks, *The American Indian and Missouri River Water Developments*, 10 WATER RES. BULL. 573 (1974); Shanks, *Missouri River Development Policy and Rural Community Development*, 13 WATER RES. BULL. 255 (1977); and MICHAEL L. LAWSON, *DAMMED INDIANS: THE PICK-SLOAN PLAN AND THE MISSOURI RIVER SIOUX, 1944-1980* (1982).

version project included these Indian lands in calculating the total acreage "lost" to the impoundment. The federal government, moreover, has been held morally obligated to compensate the state, but not the Indians, with equivalent acreage of irrigated land.

The North Dakota leadership in government and business saw Garrison Diversion as essentially a North Dakota development that was no one else's concern and that the federal government was honor-bound to support. The equity issues could not, however, be contained within the state's political boundaries. Specific objections to features of the Garrison were made in the neighboring downstream states of South Dakota and Minnesota.¹⁷ There were also spillovers into Canada. Degraded quality of return flows from the project into the Souris and Red Rivers was seen as imposing predictable burdens in excess of any speculative benefits from low-flow augmentation.

By the mid-1970s, opinion was beginning to turn against taxation for expensive water projects of dubious benefit to the nation as a whole. President Carter's effort to deny further funding for Garrison reflected not only this sentiment but the additional belief that the project was ecologically unsound as alleged by environmental organizations. Objections arose from Americans and Canadians who regarded the waterfowl breeding areas in the North Dakota pothole country as national and, by treaty, international assets. Environmentalists argued that migratory waterfowl were an international wildlife heritage that ought not be adversely affected merely for benefit of relatively few farmers and business enterprises of North Dakota. Thus issues of equity were compounded with the economic and ecological effects of Garrison that transcended state and national boundaries. This leads to the question of whether any general retrospective evaluation can be made regarding the Garrison Diversion project.

THE ADEQUACY OF CRITERIA TO EVALUATE THE TECHNICAL, ECONOMIC, SOCIAL, AND ECOLOGICAL IMPACT OF THE GARRISON PROJECT

This third issue in the Garrison case concerns the relationship between science and values. Although the criteria initially available for evaluating the consequences of the proposed action in the Garrison Diversion were inadequate, they were nonetheless substantially more adequate than the

17. At one point in the legislative history of Garrison, negative votes in Congress by Representative James Oberstar of Minnesota and Thomas A. Daschle of South Dakota reflected concern among their constituents primarily concerning degradation of water quality in the Red and James Rivers.

bases for decision actually used.¹⁸ The way in which science was used and not used in the Garrison case suggests certain propositions regarding a reciprocal relationship between science and values, and those conditions under which science may more effectively inform and guide public policy. From a public policy perspective science per se makes an inappropriate master and an unreliable servant, but a useful teacher. There is little likelihood of Americans adopting public policies solely upon the basis of the existing state of science. The common attitude has been to regard science as a servant—as a handmaid to technology. Public policies are usually adopted with little or superficial recourse to scientific information, and thereafter science is invoked selectively to reinforce a prior decision. Used this way, scientific methods are unreliable servants of truth.

It is almost axiomatic that when governments launch massive public works a high degree of supportive rationalization will be invoked. Project sponsors will not diligently pursue inquiries that might cast doubt upon the wisdom of the project. And if unforeseen evidence subsequently arises government officials almost invariably defend the authorized project on grounds of legal obligation, if no other, and attempt to refute or put down opposition. Although facts alone are insufficient to reverse the course of public policy, organized and activated public opinion may do so if the support of key decisionmakers can be won or the course of the project obstructed. In recent years litigation under one or more federal environmental statutes has been the commonly elected way to block public works projects.

Most of the active public that questioned and opposed the Garrison project resided outside the state of North Dakota. Removed from the social and political constraints within North Dakota, the opposition was more impressed by scientific evidence than by legal rights or solemn promises. Environmental impact analyses by the Institute of Ecology and the University of Manitoba could raise questions regarding the consequences of the Garrison project without being charged with disloyalty to the state of North Dakota.¹⁹ The Institute and the Canadian University could not, however, avoid the charge of "outside interference." It is difficult to say how much positive or negative influence their findings had on opinion in North Dakota.

There is some reason to believe, although it would be difficult to demonstrate, that there has been much more opposition or indifference to the Garrison project in North Dakota than has been apparent. Support for Garrison, as originally authorized, has been a bi-partisan test of po-

18. THE INSTITUTE OF ECOLOGY, A SCIENTIFIC AND POLICY REVIEW OF THE FINAL ENVIRONMENTAL STATEMENT FOR THE INITIAL STAGE, GARRISON DIVERSION UNIT, NORTH DAKOTA (1975).

19. *Id.*; BOYD, *supra* note 5.

litical orthodoxy. It is plausible that fulfillment of the federal promise and the project as authorized means much more to older politicians, newspaper editors, bankers, and businessmen than to other North Dakotans. Yet with the North Dakota political system locked into support of Garrison, only mavericks can be expected to dissent from the orthodox viewpoint. The narrow perspective of official orthodoxy in North Dakota prevented public consideration of alternatives to the authorized Garrison project other than, and (for the most orthodox) even including, the six alternative versions of the project drafted by the U.S. Department of the Interior.²⁰

In the Garrison controversy scientists produced evidence that supported conjectures regarding questions such as the risks and consequences of interbasin biota transfer that were inconsistent with official opinion in the United States.²¹ It was this use of scientific knowledge and method to assess the probable impact of official action that was sought through the National Environmental Policy Act in the United States (1970) and subsequently through the Federal Environmental Assessment and Review Process (1974) in Canada.²² But for this analytic use of science the Garrison project might have moved forward to completion as first planned. Economics may be the ultimate modifier of Garrison, but science provided the delay that has given economic rationality an opportunity to prevail. The findings of technical studies sponsored by the International Joint Commission had a quality of disinterestedness and objectivity that gave them sufficient weight to influence the United States to delay implementation of the project. Although the official Garrison Diversion Unit project still includes discharge of Missouri River waters into Canada, that part of the plan affecting Canada may be permanently suspended. The indefinite suspension provides time to seek alternative solutions to the impasse. In this respect evaluative criteria provided by the IJC and other studies clearly had an influence upon policy decisions.

Only in retrospect will it be possible to determine the adequacy of the criteria used to evaluate the multiple impacts of the Garrison Diversion Project. That the project as authorized will never be completed seems highly probable in view of an amendment to the Energy and Water Development Appropriations bill for fiscal year 1985 (No. 3291), introduced

20. See BUREAU OF RECLAMATION, U.S. DEPARTMENT OF THE INTERIOR, FINAL COMPREHENSIVE SUPPLEMENTARY ENVIRONMENTAL IMPACT STATEMENT (1979); BUREAU OF RECLAMATION, U.S. DEPARTMENT OF THE INTERIOR, SPECIAL REPORT ON REEVALUATION AND MODIFICATION OF THE GARRISON DIVERSION UNIT (1979).

21. See, e.g., BOYD, *supra* note 5, INSTITUTE OF ECOLOGY, *supra* note 18; INTERNATIONAL JOINT COMMISSION, TRANSBOUNDARY IMPLICATIONS OF THE GARRISON DIVERSION UNIT (1977).

22. LYNTON K. CALDWELL, SCIENCE AND THE NATIONAL ENVIRONMENTAL POLICY ACT: REDIRECTING POLICY THROUGH PROCEDURAL REFORM (1982).

on June 21, 1984 by North Dakota Senators Andrews and Burdick. The amendment "To establish a commission to develop modifications to the Garrison Diversion Unit of the Pick-Sloan Missouri Basin program as presently authorized" may mark the beginning of the final chapter of this long and complicated controversy. Whether the criteria for project evaluation used by project opponents to stall earlier completion were scientifically defensible may be regarded as politically moot. The only definitive test of their validity would have been for the project to have proceeded as authorized and its consequences thereafter ascertained. The adequacy of the criteria and the scientific conjectures would then be known, but if the consequences proved to be adverse, as predicted, science would be vindicated but environmental values would have been lost.

In actuality, whatever the scientific validity of findings by the IJC investigators and the scientists of the U.S. federal agencies, the criteria employed proved adequate to the political objectives that involved the use of science. The project was stalled. The bi-national IJC science teams raised doubts about the environmental effects of the discharge of Garrison water into Canada which the Bureau of Reclamation experts were unable to dispel. The criteria employed in the IJC reference developed findings that helped to solidify Canadian opposition to Garrison and reinforced the arguments of opponents in the United States. The practical test of adequacy was political, not scientific.

THE OBLIGATIONS OF THE UNITED STATES UNDER THE BOUNDARY WATERS TREATY

Under the Boundary Waters Treaty of 1909 between the United Kingdom for Canada and the United States:

It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of the health or property of the other.²³

The United States government has never denied its obligation to honor this agreement but there have been ambiguities and differences between the parties to the treaty over the interpretation of the phrase "polluted on either side to the injury of the health or property of the other." What constitutes pollution and who determines when health or property have been injured and by what criteria? The prohibitory factor in the provision is "injury," not the mere presence of pollution if found to be non-injurious. Inherent in the terms of the treaty are potential conflicts over the

23. For text of the treaty, and a chronology of antecedent events, see *Prairie Water*, *supra* note 3, at 313-22.

criteria for determining "injury" to health or property. Is any degree of pollution to some extent injurious and how is the fact of injury established?

The parties to the treaty have a common agent in the IJC which, acting through investigators, may make findings and even recommendations regarding boundary waters controversies.²⁴ The IJC is, however, unable to make a politically authoritative determination of action to be taken by the respective governments. Nevertheless, in 1975 the federal governments of Canada and the United States agreed to refer certain problems concerning the probable effects of the Garrison Diversion upon Canadian waters to the International Joint Commission.

The IJC established the International Garrison Diversion Study Board (IGDSB) which established a number of technical committees to study the following six uncertainties: (1) the present state of water quality in the Souris and Red Rivers, their tributaries and other downstream waters; (2) the present uses and reasonably anticipated future uses of the affected waters; (3) the effects of present water quality upon uses of water; (4) the nature, extent, and location of impacts on the quantity and quality of these rivers because of the completion and operation of the Garrison project; (5) the nature, extent, and economic costs of such impacts; and (6) the nature and extent of the impact on commercial and recreational fisheries in Manitoba resulting from the possible introduction of fish, fish diseases, and fish parasites from the Missouri River system through the Garrison project.

After extensive public hearings and wide distribution of the technical reports of the IGDSB, the IJC on August 12, 1977 issued its recommendations. The Commission, summarizing its view of the obligations of the United States under the Treaty of 1909, recommended that:

. . . [t]hose portions of the Garrison Diversion Unit which could affect waters flowing into Canada not be built at this time . . .

That, if and when the Governments of Canada and the United States agree that methods have been proven that will eliminate the risks of biota transfer, or if the question of biota transfer is agreed to be no longer a matter of concern, then the construction of that portion of the Garrison Diversion Unit which would affect waters flowing into Canada may be undertaken (subject to certain conditions).

24. See Note, *A Primer on the Boundary Water Treaty and the International Joint Commission*, 51 N.D.L. REV. 493 (1974); Callum, *The International Joint Commission*, 72 CAN. GEOGRAPHICAL J. 76 (1966); Dwivedi, *The International Joint Commission: Its Role in United States-Canada Boundary Pollution Control*, 40 INT'L REV. AD. SCI. 369 (1974); Welsh, *The Work of International Joint Commission*, DEP'T ST. BULL. 311 (Sept. 1968); Wex, *The Legal Status of the International Joint Commission Under International and Municipal Law*, 16 CAN. Y.B. INT'L L. 276 (1978).

[T]hat the two Governments negotiate appropriate water quality agreements for the Souris and Red Rivers.²⁵

The involvement of the IJC, as a bi-national neutral party with a reputation for objectivity, was the critical event in bringing the controversy to a point of tentative agreement although not to ultimate resolution. The IJC clarified the obligation of the United States in relation to biota transfer. The IJC, however, did not and could not go farther in view of the uncertain prospect of biota transfer or of the uncertain effects of the transfer. Nor could the IJC anticipate the conditions that would reassure the Canadian government that no serious ecological or economic risks would follow from the inter-basin transfer. In effect, the position taken by the IJC was that the United States risked violation of the Boundary Waters Treaty and of international law should it proceed with the 1965 authorization of the Garrison Diversion project and the effects of the return flow into Canada be found to be adverse. The ramifications of the Garrison Diversion had extended beyond the foresight of its sponsors, and consequently the full project as authorized appeared to be indefinitely blocked.

The suspension of the Garrison project dismayed project backers in North Dakota. The sponsors of the project felt that a solemn promise of the federal government to the state was being subverted by external forces indifferent to the state's future. They could disparage Manitoban fears regarding degraded water and biota transfer but could not exorcise the belief that these risks might be real. The Province of Manitoba conversely was not in an entirely irreproachable position to complain about water quality; Canadian farms and cities in Manitoba were polluting the Red River and, unavoidably, Lake Winnipeg.

As of August 1984, and the appointment by Secretary of the Interior Clark of a twelve member "blue ribbon" commission to develop modifications to the project as authorized, it appeared unlikely that the legitimacy of the original authorization in relation to the Boundary Waters Treaty of 1909 would be brought to test. The mere fact of pollution of

25. INTERNATIONAL JOINT COMMISSION, TRANSBOUNDARY IMPLICATIONS OF THE GARRISON DIVERSION UNIT 121-22 (1977). For example, the Congress, however, is less inclined to be bound by GAO opinions; in 1957 the General Accounting Office recommended against authorization of the revised Garrison Diversion Unit Plan. See *Garrison Diversion Unit, Missouri River Basin Project: Hearing on H.R. 7068 Before the House Comm. on Interior and Insular Affairs*, 85th Cong., 1st Sess. (1957). See also U.S. COMPTROLLER GENERAL, CONGRESS NEEDS MORE INFORMATION ON PLANS FOR CONSTRUCTING THE GARRISON DIVERSION UNIT IN NORTH DAKOTA, REPORT TO THE CONSERVATION AND NATURAL RESOURCES SUBCOMMITTEE, COMMITTEE ON GOVERNMENT OPERATIONS, HOUSE OF REPRESENTATIVES (NOV. 25, 1974); U.S. COMPTROLLER GENERAL, BUREAU OF RECLAMATION'S PROCEDURES AND PRACTICES FOR COMPUTING AUTHORIZED COST CEILINGS AND PROJECT COST ESTIMATES NEED IMPROVEMENTS (1975). See also *Garrison Diversion Unit, Missouri River Basin: Hearings Before the Subcomm. on Irrigation and Reclamation of the House Comm. on Interior and Insular Affairs*, 86th Cong., 2d Sess. (1960).

Canadian waters by discharge from the Garrison project would have been insufficient to establish a violation of treaty obligations by the United States. As previously noted, Article IV of the Treaty declares "that the waters—flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." The Treaty does not define "injury" thus leaving its determination to the judgment of the respective sovereign parties. The IJC findings identified threats of injury but actual physical injury could not have been established prior to actual occurrence. Whether threat to the fisheries on Lake Winnipeg or to food processing enterprise in Portage la Prairie could be found to constitute injury to health or property is uncertain. In any event the legal obligations of the United States under the Boundary Waters Treaty were not put to test by Garrison.²⁶

THE ETHICS AND POLITICS OF INTERNATIONAL ENVIRONMENTAL RELATIONSHIPS

The foregoing considerations suggest two propositions regarding the relationship between ethics and values and science and technology and the political consequences of the relationships. First, if persons knew the probable consequences of their actions, it is conceivable that some might reconsider their objectives. There are, of course, those whose commitment to an ethic or value is so unquestionable that any evidence which might raise doubt regarding the validity of the value would be resisted. But ethics, values, and the uses of technology in principle are susceptible to clarification by honest uses of science. In other words, the sciences and the humanities need not be opposing cultures. Until recently, no modern society has seriously attempted to use science instructively prior to the decision which science is asked to serve. A partial exception is the use of science in environmental impact analysis and in technology assessment. Currently science is invoked to ascertain the probable consequences of environment-shaping programs and projects, as well as to test food and drug products prior to public sale or distribution. Yet such forecasting efforts are conspicuously rare in large public works enterprises. Could the timely and unbiased application of scientific knowledge and methodology diminish the likelihood of costly and frustrating controversies such as the Garrison Diversion case?

A second relationship between politics, technology, and values emerges from the timing of events. Had the IJC studies on Garrison been made prior to congressional authorization, the project design might have been different. No formal arrangement encompassing ethics, values, science,

26. For an analysis of the legal issues relating to Boundary Waters Treaty, see Gaines, *The International Law Aspects of the Garrison Diversion Project*, 4 ENVTL. L. REP. 50085 (1974).

technology, and politics can guarantee against errors in judgment and none is immune to manipulation or to various degrees of disregard. Nevertheless, arrangements can influence outcomes, and there is more to be gained and less to be lost if this value-based scientific influence on making policy comes early rather than late. Authoritative knowledge joined to official authority is difficult to disregard. Study of the Garrison case and others of similar origin suggests the wisdom of an objective scientific pre-audit of earth-shaping projects of the magnitude and impact of the Garrison Diversion. There are persuasive reasons for extending this science pre-audit to projects of comparable environmental significance in the private as well as the public sector.

The idea of a pre-audit is not without precedent. It is consistent with the functions of the multi-disciplinary panels convened by the government in Canada to determine the need for an environmental assessment of a proposed project. A scientific review resembles the interagency-interdisciplinary "scoping" exercises undertaken in the United States pursuant to the National Environmental Policy Act. It would have been a function of earlier proposals for federally-sponsored environmental science institutes, one of which received presidential endorsement during the Nixon administration but foundered in disputations among White House staff.²⁷ The independence of a science pre-audit from effective political or bureaucratic pressure would be essential to its credibility. No institution with such a mission could be free from attempts to influence its output. But, so far as feasible, provisions should be made to protect it from readily identifiable sources of bias and pressure. A science pre-audit, moreover, should have an open and public character that, for example, the foundation-funded policy research institutions clustered in and around the District of Columbia currently do not possess.

The need for an international institutional arrangement for bi-national issues is a logical inference from the history of Garrison Diversion. The bi-national character of the IJC Garrison studies gave them an acceptability that probably would not have been accorded to investigations by wholly American or Canadian research institutions. The sponsorship, status, and cost of an international institution would raise practical problems. Its principal hazard would probably be bureaucratic territoriality. Nonetheless, the only power that national decisionmakers could lose through such an arrangement would be the power to make uninformed, premature, or politically biased judgments with impunity. Judgments, if

27. See JOHN C. WHITAKER, *STRIKING A BALANCE: ENVIRONMENT AND NATURAL RESOURCE POLICY IN THE NIXON-FORD YEARS* 333-34 (1976); *Special Message to the Congress Proposing the 1971 Environmental Program, Feb. 8, 1971*, in *PUBLIC PAPERS OF THE PRESIDENTS, NIXON*, 1971, 125 (1972).

made in the face of strong negative evidence, would be less likely to prevail. Citizens might regard this curb on official decisionmaking as desirable and consistent with the objective of responsible decisionmaking in government. International bodies, however, are not directly politically accountable to popular constituencies. Removal from national domestic politics is paradoxically a source of strength and weakness and is reconciled only if the quality and objectivity of the scientific inquiry overcomes a lack of conventional political influences. As to the cost of pre-audit research, a substantial savings should be anticipated because futile post-facto research would be less necessary. Moreover, a vast institutional network already exists with the capability to contribute to analysis of the broadest conceivable range of scientific problems. The organized and interrelating structure of universities and research institutes fulfills this purpose. A great variety of cooperative research arrangements has already been successfully instituted and this experience could be applied to new arrangements. The science pre-audit is not the kind of activity for which national academies of sciences would seem appropriate except in particular and exceptional instances.

The propositions that emerge from a review of the Garrison Diversion case are not new or utopian. International scientific review is, in fact, required if repetitions of the Garrison experience are to be avoided. Pre-authorization inquiry and audit would replace, rather than duplicate, those kinds of research that have been done too late to influence policy. The science pre-audit would not duplicate but might substitute for or supplement the environmental impact analysis which federal agencies in the United States are required to make under Section 102 (2) (c) of the National Environmental Policy Act.

Given the constraints of energy, materials, economic considerations, and claims on space, our society in the future may not be as profligate as it has been in the past when launching vast enterprises with minimal regard to possible consequences. Certainly a more careful and broader-based pre-authorization review will be required for great projects in the future to avoid major national mistakes and corresponding international controversies. At this stage in political development, however, it seems safe to predict that many controversies will not be avoided. Nevertheless, there are some positive indications that social learning is occurring and political systems are responding to advancing understanding of the environmental implications of development projects. In the twelve years since the United Nations Conference on the Human Environment international environmental policy has developed at an unprecedented rate. An interrelating structure of treaties, programs, and institutional arrangements has been put together both within and outside of the United Nations

system.²⁸ In North America, the bilateral International Joint Commission, established pursuant to the Boundary Waters Treaty of 1909, has gradually acquired enlarged responsibility and authority. The IJC's fact-finding functions were invoked in the Garrison Diversion controversy to a greater extent than they had been in other environmental issues arising between Canada and the United States.

In the early 1970s a number of proposals were advanced to establish research and fact-finding institutions for environmental policymaking. None, with the partial exception of the nongovernmental Institute of Ecology (TIE), materialized and it ceased operation in 1984.²⁹ The arguments for these proposals and the reasons for their failure deserve investigation. There is no "proof" that the TIE review of the Garrison Diversion Environmental Impact Statement and the reports of the International Garrison Diversion Study Board were decisive factors in suspending construction of the Garrison project although the circumstantial evidence is very persuasive. The fiscal rationality of the project was a more important consideration to many of Garrison's opponents in the Congress.

The investigations of the effects and implications of Garrison were after the fact of congressional authorization of and after extensive design work and land acquisition for the Garrison project had been undertaken. No institution presently exists with the capability of providing an adequate and objective analysis of large-scale project proposals having significant international environmental implications in advance of official authorization. In the early 1970s, a proposal to establish an international research center for the environment was considered by ICSU's Scientific Committee on Problems of the Environment (SCOPE), and a bill to establish a world environment institute was proposed in the Senate of the United States.³⁰ The prevailing opinion was, however, that the tasks of research on global environmental problems would exceed the capabilities of any single agency.

Real as the hazards confronting international research may be, there nevertheless remain needs for scientific inquiry unmet by any existing

28. See generally LYNTON K. CALDWELL, *INTERNATIONAL ENVIRONMENTAL POLICY: EMERGENCE AND DIMENSIONS* (1984); *ENVIRONMENTAL PROTECTION: THE INTERNATIONAL DIMENSION* (D. Kay & H. Jacobson ed. 1983); JAN SCHNEIDER, *WORLD PUBLIC ORDER OF THE ENVIRONMENT: TOWARDS AN INTERNATIONAL ECOLOGICAL LAW AND ORGANIZATION* (1979); *ENVIRONMENTAL POLICY: CONCEPTS AND INTERNATIONAL IMPLICATIONS* (A. Utton & D. Henning ed. 1973); *INTERNATIONAL ENVIRONMENTAL LAW* (L. Teclaff & A. Utton ed. 1974).

29. See CALDWELL, *supra* note 22, at 116-17.

30. See STAFF OF SENATE COMM. ON COMMERCE, 92nd CONG. 2D SESS., *THE NEED FOR A WORLD ENVIRONMENT INSTITUTE* (Comm. Print 1972). On the proposal for an International Environmental Center (ICE), see *id.* pp. 19-20.

institutions. Perhaps the world needs an international research institution of broad competence to which cases may be referred that exceed the capabilities of other institutions and that have proved to be irreconcilable by the adversarial processes. The development of such an institution, which would certainly require time, could make a significant contribution to international conflict resolution. Equally important, it might prevent or mitigate some of the more environmentally damaging enterprises to which modern governments and multinational corporations are too often susceptible.

The most plausible prospect for such an international research capability would be a bi-national arrangement between Canada and the United States. The IJC investigations have already provided precedent. The need for bi-national cooperation and decisionmaking on a large number of transboundary issues, especially affecting the Great Lakes, is growing. Feasibility of some form of bi-national monitoring and assessment of transboundary environmental effects was the focus of a bi-national workshop sponsored by the IJC and held in Philadelphia, October 9–11, 1984. Whether the legacy of mistrust that has resulted from previous environmental and natural resources controversies can be allayed sufficiently to build a bi-national cooperative monitoring and forecasting system acceptable to both Canada and the United States remains to be seen.

By mid-summer 1984³¹ the constraints on resolution of the Garrison Diversion conflict had led to frustration for all parties concerned. Canadians were apprehensive over the 1983 appropriation of \$22.3 million for work on Garrison "Phase I," providing for construction that could be justified only on an assumption that the project would be completed as authorized including discharge of "return flows" into Canada. Project proponents had been thwarted by litigation initiated by the National Audubon Society and by growing disaffection for the project in the House of Representatives. The IJC recommendations and Canadian diplomatic pressure in Washington made completion as authorized highly doubtful, with the invocation of the Boundary Waters Treaty as an ultimate possibility. The uncertain future of the Garrison Project hurt morale in the Bureau of Reclamation and did not help its image in the Congress or in the nation's news media. Opponents of Garrison were dissatisfied; they had stalled the project but could not kill it. The tendency of incremental funding to slip through the appropriations process nourished the fear that Garrison might one day be completed through a piece by piece project creep.

By 1984, all adversaries appeared to be weary of the conflict and ready at last for some reasonable form of compromise. The National Audubon

31. See *Death of a Dinosaur*, N.Y. Times, July 11, 1984 at 22 (nat'l ed.).

Society employed the Wright-Water Engineering firm to explore the possibility of environmentally acceptable alternatives. On June 1, 1984 the President and the Chairman of the Board of the National Audubon Society in a letter to the congressional representatives and the Governor of North Dakota proposed a compromise entailing withdrawal of Audubon's opposition and a redesigning of the Project to meet North Dakota's water needs without incurring the environmental and international objections to the original authorization. Following negotiations involving the North Dakota authorities and the Audubon Society, Senators Andrews and Burdick, on June 21, 1984, introduced an amendment (3291) to the FY 85 Energy and Water Appropriations Bill that looked to a final resolution of the conflict. The Secretary of the Interior was authorized to appoint a 12 member commission "to review the contemporary water needs of the State of North Dakota and propose modifications to the Garrison Diversion Unit consistent with the existing authorization."³²

The commission, as appointed by Secretary William Clark and chaired by former governor of Louisiana David C. Treen, was broadly representative of interests and concerns in the project and, in addition to the chairman, included members from outside the State of North Dakota. Secretary Clark described the commission as "the entity, the institution, if you will, to resolve the remaining issues."³³ Prospects for a final resolution of differences over the project appeared bright, and yet there were costs incurred during its earlier years that could not be redeemed. Losses to displaced farmers, Indians, and wildlife could not be offset by subsequent benefits to other groups. Controversy over Garrison had been long and costly and in retrospect a better way to have managed the conflict would have been in everyone's interest. In the end, an institutional arrangement with non-partisan participation became necessary to overcome the constraints to conflict resolution. Had such an arrangement existed at the time of project authorization, the history of the Garrison Diversion Unit might have been very different.

The Canadian Federal Environmental Assessment and Review Process (EARP) established in 1974 and strengthened in 1984 provides an initial environmental screening and assessment of projects that, if applied in principle to Garrison at the outset and before final authorization, could have identified many of the obstacles that subsequently arose to block project completion. Such a review in the Garrison case would logically have been bi-national. The IJC reference was the nearest approach to such an arrangement, but was belated and unable to provide a positive

32. See CONG. REC. S7922-29 (daily ed. June 21, 1984). See also 49 Fed. Reg. 32,687 (1984) and Holden, *Day of Reckoning for the Garrison Project*, 225 SCIENCE 904-06 (Aug. 1984).

33. 12 DIVERSION DIGEST 1, 6 (1984).

resolution of the issues in dispute. The inference to be drawn from the Garrison case is that the IJC, or some comparable bi-national body yet to be created, should be authorized to make preliminary assessments of proposals with transboundary implications prior to actual authorization and funding. It seems plausible to believe that bi-national environmental issues crossing the Canadian-American border will continue to arise, and that it would be sensible to make provision for institutional arrangements to cope with them in preference to the costly trial-by-combat that characterized the long history of the Garrison Diversion Unit.