

BUILDING INTERNATIONAL WATER MANAGEMENT INSTITUTIONS:
THE ROLE OF TREATIES AND OTHER LEGAL ARRANGEMENTS

by

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The challenge ahead for us is to transcend the self-interest of our respective nation-states . . . to embrace a broader self-interest--the survival of the human species in a threatened world.¹

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For nine years I have consulted on the Middle East Water Project, under the Direction of Dr. Thomas Naff, first at the Middle East Research Institute of the University of Pennsylvania and later with the Associates for Middle East Research, Inc. The project has already produced a single volume study, Water in the Middle East: Conflict or Cooperation? (Thomas Naff & Ruth Matson eds. 1984). The project is now preparing a series of volumes on specific aspects of the water in the Middle East to be entitled Water: the Middle East Imperative, publication to begin in 1990. I will contribute a volume to this series to be entitled Middle East Water: the Potential and Limits of Law, to be published in 1992. I have also consulted with the Portuguese Directory-General of Natural Resources (Direcçao-Geral dos Recursos Naturais) as a Fulbright grantee in the summer of 1990. The fruits of this work will appear in Joseph Dellapenna, Surface Water in the Iberian Peninsula: An Opportunity for Cooperation or a Source of Conflict?, 59 U. Tenn. L. Rev. 803 (1992). The analysis and conclusions are my own, and do not necessarily represent the views of the American or Portuguese governments or of the Associates for Middle East Research.

¹ Statement of Thomas McMillan, Canadian Minister of the Environment, before the World Commission on Environment & Development, Ottawa, Canada, May 26, 1986, quoted in Stephen McCaffrey, International Organizations and the Holistic Approach to Water Problems, 31 Nat. Resources J. 139, 139 (1991).

I. Introduction

At the beginning of this month, Israel and the Kingdom of Jordan announced a written agreement on a framework for a peace treaty between themselves and designed to lead to a comprehensive settlement of all Arab-Israeli issues.² Diplomatic sources confirmed that agreement over the sharing of water, along with the establishment of mutually agreeable land borders and the assurance of military security to the states for the states of the region, will be central to this peace treaty. This paper undertakes to consider some aspects of delineating the institutions necessary to the accomplishment of the goals of optimal utilization of the sparse water resources of the region with minimal conflict.³ This paper then focuses on bilateral or multilateral international agreements relating to water management. While effective cooperative management across international boundaries often requires significant institution building within particular states as well as across international boundaries, that is not the primary concern of either Israel or Jordan, or of most states in the Middle East.

Superficially, one might think that the impending shortages

² Clyde Haberman, Israel and Jordan Agree They Want Formal Treaty, N.Y. Times, Nov. 2, 1992, at A3, col. 1.

³ One could as well select the controversies between Iraq, Syria, and Turkey over the Euphrates and Tigris Rivers, or the potential conflict between Egypt and the Sudan, on the one hand, and the upper Nile states on the other. Such a transposition would not affect the overall analysis. For more on the Nile River, see infra § III(C) of this paper.

of water in the Jordan River Valley⁴ bode ill for the success of negotiations centering on sharing the waters in that small region. Indeed, the world over water's unique status as a resource has made it a frequent object of international controversy and conflict. Neighboring states that are otherwise cordially cooperative have found it difficult to achieve mutually acceptable arrangements to govern their transboundary surface waters.⁵ Even states within a single federal union have engaged in long drawn out and bitter political and legal struggles over the waters they share.⁶ All of this has taken place with the

⁴ See Water in the Middle East, supra note *, at 17-22; Samir Saliba, The Jordan River Dispute 32-45 (1968); Joseph Dellapenna, Water in the Jordan Valley: The Potential and Limits of Law, 5 Pal. Y.B. Int'l L. 15, 19-22 (1989).

⁵ For example, the United States and Canada, notwithstanding the highly successful operations of the International Joint Commission on Boundary Waters, have struggled with apparently endless disputes over the Great Lakes and other shared waters. See generally John Krutilla, The Columbia River Treaty: The Economics of an International River Basin Development (1967); Don Piper, The International Law of the Great Lakes (1967); Ralph Johnson, The Columbia Basin, in The Law of International Drainage Basins 167 (Albert Garretson, Robert Hayton, & Cecil Olmstead eds. 1967); Symposium, U.S.-Canadian Transboundary Resource Issues, 26 Nat. Resources J. 201-376 (1986); Albert Utton, Canadian International Waters, in 5 Waters and Water Rights ch. 50 (Robert Beck ed. 1991). For similar problems between other neighbors, see Stephen Gorove, Law and Politics of the Danube (1964); The Law of International Drainage Basins, supra; Norris Hundley, Dividing the Waters (1966); Jerry Mueller, The Restless River (1975); Ludwik Teclaff, The River Basin in History and Law 152-184 (1967); U.N. Dev. Auth'y, River Basin Development (1976); Albert Utton, Mexican International Waters, in 5 Waters and Water Rights, supra, ch. 51.

⁶ The struggle between various states of the United States, for example, have gone on in both political and legal fora for decades, often involving the interests of foreign nations, of the federal government, of tribes of American Indians, and of other public and private groups or entities. See Texas v. New Mexico, 482 U.S. 124 (1987); Kansas v. Colorado, 475 U.S. 1079 (1986);

problems of transboundary aquifers having hardly begun to be considered.⁷

Things are not so bad as this picture might suggest. Regardless of how violent conflicts between states sharing a common water source might have become, and especially when water itself has played a central role in the conflict, water itself has largely remained immune to direct conflict during the twentieth century. Conflicting states have kept water facilities off limits to combat,⁸ they have negotiated cooperative

Colorado v. New Mexico, 467 U.S. 310 (1984); Wisconsin v. Illinois, 388 U.S. 426 (1967); Arizona v. California, 373 U.S. 546 (1963); Texas v. New Mexico, 352 U.S. 991 (1957); New Jersey v. New York, 345 U.S. 369 (1953); Nebraska v. Wyoming, 325 U.S. 589 (1945); Colorado v. Kansas, 320 U.S. 383 (1943); Wyoming v. Colorado, 309 U.S. 572 (1940); Washington v. Oregon, 297 U.S. 517 (1936); Nebraska v. Wyoming, 295 U.S. 40 (1935); New Jersey v. New York, 283 U.S. 336 (1931); Connecticut v. Massachusetts, 282 U.S. 660 (1931); Wisconsin v. Illinois, 281 U.S. 179 (1930); Arizona v. California, 283 U.S. 423 (1931); Wyoming v. Colorado, 259 U.S. 419 (1922); Kansas v. Colorado, 206 U.S. 46 (1907); Missouri v. Illinois, 200 U.S. 496 (1906). See generally Douglas Grant, Interstate Water Allocation, in 4 Waters and Water Rights, supra note 5, chs. 43-48; Bashir Hussain, The Law of Interstate Rivers in India: Principles of Equitable Apportionment of River Waters, 17 Indian J. Int'l L. 41 (1977); A. Dan Tarlock, The Law of Equitable Apportionment Revisited, Updated, and Restated, 56 Colo. L. Rev. 381 (1985).

⁷ See generally International Groundwater Law (Ludwik Teclaff & Albert Utton eds. 1981); Julio Barberis, The Development of the International Law of Transboundary Groundwater, 31 Nat. Resources J. 167 (1991); Robert Hayton & Albert Utton, Transboundary Groundwaters: The Bellagio Draft Treaty, 29 Nat. Resources J. 663 (1989); International Law Ass'n, International Rules on Groundwater, Report of the Sixty-Second Conference 21, 231-85 (Seoul, 1986); Ann Berkley Rodgers & Albert Utton, The Ixtapa Draft Agreement Relating to the Use of Transboundary Groundwaters, in Transboundary Resources Law 151 (Albert Utton & Ludwik Teclaff eds. 1987).

⁸ The Draft Articles of the International Law Commission on the Law of Non-Navigational Use of International Watercourses attempts to codify the practice of placing water sources and facilities off-limits to combat. Int'l L. Comm'n, Draft Articles

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water arrangements, and they have continued to comply with pre-existing arrangements. For example, India and Pakistan have engaged in three full-scale, albeit limited, wars since 1948, as well as numerous other skirmishes and serious threats of war. Yet in each instance they did not target water facilities or interfere in the operations of a joint Indo-Pakistani water management administration.⁹ Even in the Middle East where, despite more than 60 years of virtually continuous low-level conflict and occasional full-scale wars between Israel (or the Jewish settlers before the establishment of Israel) and its (of their) neighbors, tacit cooperation over water actually has been the almost unbroken rule, particularly between Israel and Jordan.¹⁰

of the International Law Commission on the Law of Non-Navigational Use of International Watercourses, U.N. GAOR, 43d Sess., at 7, U.N. Doc. A/CN.4/L.463/Add.4, ch. III (1991), reprinted in 3 Colo. J. Int'l Env'tl. L. 1 (1992) ("Draft Articles"). Art. 29 reads: "International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and internal armed conflict and shall not be used in violation of those principles and rules."

⁹ See generally Brian Concannon, Note, The Indus Waters Treaty: Three Decades of Success, Yet, Will It Endure?, 1 Geo. Int'l Env'tl. L. Rev. 55 (1989). See also Teclaff, supra note 1, at 163-165, 183-184; Richard Baxter, The Indus Basin, in The Law of International Drainage Basins, supra note 5, at 443.

¹⁰ See generally Adam Garfinkle, Israel and Jordan in the Shadow of War 34-40, 79-83, 116, 162-73 (1992); Israel and Arab Waters: An International Symposium (Abdul Majid Farid & Hussein Sarriyeh eds. 1985); Dellapenna, supra note 4.

The observation in the text remains valid regardless of whether one accepts or rejects the claim some make that Israel's geopolitical strategy has followed an "hydraulic imperative." See, e.g., Leslie Schmida, Keys to Control--Israel's Pursuit of Arab Water Resources (1982); John Cooley, Behind the News: the Hydraulic Imperative, 205 Middle East Int'l 10 (July 22, 1983); John Cooley, The War over Water, 54 For. Aff. 3 (1984); Thomas

Water is simply too critical a resource to fight over. Each side even in intense conflict situations realizes that depriving the other side of the available water necessary for survival is one of the few steps that could make even a significantly weaker state desperate enough to fight against any odds and to target its enemies' water facilities, facilities that would be impossible to defend against a sufficiently determined foe. Only in the recent Gulf War did one side (the coalition) target the water facilities of the other side (Iraq), in large part precisely because the militarily dominant partner in the coalition did not fear reciprocal attacks on its own facilities.

What role did international law, in many respects a still primitive legal system,¹¹ play in all this? While practitioners of international law often have devised doctrinal schemes of considerable sophistication, they also often have not been able to translate those schemes into effective institutions for the management of transboundary relations. That task has fallen to diplomats and politicians with predictably mixed results. To be effective, institution builders must combine the sophisticated insights of international lawyers with the practical structures created by political actors. This paper, after briefly describing the limitations of customary international law in

Stauffer, The Lure of the Litani, Middle East Int'l (July 30, 1982); Symposium, Water Politics, The Middle East, Spec. Rep. No. 76 at 47-54 (1981).

¹¹ H.L.A. Hart, The Concept of Law 77-96 (1961); Water in the Middle East, supra note *, at 157-60; Yoram Dinstein, International Law as a Primitive Legal System, 19 Int'l L. & Politics 1 (1986).

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regulating the sharing of transboundary water resources, will explore some of the models that have resulted from the efforts of diplomats and international lawyers, describing their successes and failures, and suggesting how these models might be adapted to the problems of transboundary water management in the Middle East with a view toward building peaceful relations and trust within the region rather than fomenting suspicion and hostility.

II. The Customary International Law of Transboundary Rivers

Absent international agreement, international law operates through a body of customary international law consisting of the practices of states undertaken out of a sense of legal obligation (the opinio juris).¹² Customary international law (regional or general) develops through a process of claim and counterclaim between states.¹³ Practices that crystallize as customary international law can include treaties or other international

¹² J.L. Brierly, The Law of Nations 60 (Sir Humphrey Waldock ed. 1963). See generally Anthony D'Amato, The Concept of Custom in International Law (1971); Ian Brownlie, Principles of Public International Law 4-11 (1990); Mark Janis, An Introduction to International Law 35-46 (1988); Hersch Lauterpacht, The Development of International Law by the International Court 368-93 (1958); Restatement (Third) of Foreign Relations Law of the United States § 102 (Louis Henkin, Andrew Lowenfeld, & Detlev Vagts reporters 1987); G.I. Tunkin, Theory of International Law 89-203 (William Butler trans. 1974); 1 J.H.W. Verzijl, International Law in Historical Perspective 31-47 (1968).

¹³ Water in the Middle East, supra note *, 158-162, 167. The classic description of this process is found in Myres McDougal & Norbert Schlei, The Hydrogen Bomb Test in Perspective: Lawful Measures for Security, 64 Yale L.J. 648 (1955). See also Charles de Visser, Theory and Reality in International Law (1968).

agreements,¹⁴ decisions reflected in votes in international assemblies¹⁵ or decisions by international courts or international arbitrators,¹⁶ or even apparently unilateral actions of states.¹⁷ The writings of well-respected scholars of international law (termed "the most highly qualified publicists" in the Statute of the International Court of Justice)¹⁸ often contain the best evidence of what the practices are and whether the practices arise from a sense of legal obligation or from other motives unrelated to law.

Despite the continuing primitive state of customary

¹⁴ That treaties to which a particular state is not a party might be evidence of a custom binding on that state, see Brownlie, supra note 12, at 11-14; Janis, supra note 12, at 41-42; Myres McDougal, Harold Lasswell, & Ivan Vlasic, Law and Public Order in Space 82-82, 115-19 (1963); A.D. McNair, The Law of Treaties 216-18 (1961); Julius Stone, Legal Controls in International Law 135 (1954). But see Friedrich Berber, Rivers in International Law 128-37 (R.K. Bastone trans. 1959); Charles Hyde, 1 International Law 12 (2d ed. 1945).

¹⁵ Brownlie, supra note 12, at 14-15, 30-31; Christopher Joyner, U.N. General Assembly Resolutions and International Law: Rethinking the Contemporary Dynamics of Norm-Creation, 11 Cal. W. Int'l L.J. 445 (1981); Ignaz Seidl-Hohenveldern, International Economic "Soft-Law", 163 Hague Recueil des Cours 165, 194-213 (1979).

¹⁶ Brownlie, supra note 12, at 19-24; Janis, supra note 12, at 66-69; Lauterpacht, supra note 12; Shabtai Rosenne, 2 The Law and Practice of the International Court 611-13 (1965); Michael Akehurst, The Hierarchy of Sources in International Law, 47 Brit. Y.B. Int'l L. 273 (1975).

¹⁷ Brownlie, supra note 12, at 5; Janis, supra note 12, at 38-43.

¹⁸ Statute of the International Court of Justice, art. 38(1)(d), 59 Stat. 1055, T.S. 993 (1945). See generally Brownlie, supra note 12, at 24-25; Janis, supra note 12, at 66-69; Lauterpacht, supra note 12, at 23-25.

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international law,¹⁹ it is not wholly without utility. Customary international law both empowers international actors by legitimating their claims, and limits those actors by circumscribing the claims they are permitted to make. In the absence of a neutral enforcement mechanism, however, international law has nothing better to offer for sanctioning violations than the law of the vendetta.²⁰ These limitations must be kept squarely in mind when appraising the doctrinally well-developed customary law relating to transboundary resources; because of these problems, that customary law cannot of itself solve management problems relating to transboundary water resources.

A. The Customary International Law of Transboundary Waters

Space, and the knowledge that this conference has enjoyed more extended reviews of the relevant customary international law, particularly that dealing with shared surface watersources, permits only a summary description of that law.²¹ We can begin

¹⁹ Janis, supra note 12, at 45-46. See also the authorities collected supra at note 11.

²⁰ Water in the Middle East, supra note *, at 161. See also Richard Bilder, Some Limitations of Adjudication as an International Dispute Settlement Technique, 23 Va. J. Int'l L. 1 (1982); Richard Falk, The Beirut Raid and the International Law of Retaliation, 63 Am. J. Int'l L. 415 (1969).

²¹ For other illustrative works on the law of transboundary surface waters, see Draft Articles, supra note 8; Berber, supra note 14; Brij Chauhan, Settlement of Water Law Disputes in International Drainage Basins (1981); George Kaeckenbeeck, International Rivers (1919); Richard Bilder, International Law and Natural Resources Policies, 20 Nat. Resources J. 452 (1980); Jan Hostie, Problems of International Concerning Irrigation of

with the one point that all states apparently agree on: Only riparian states--states across which, or through which, a river flows--have any legal right, absent agreement, to use the water of a river.²² Beyond that point, however, the patterns of international claim and counterclaim initially diverge sharply according to the riparian status of the state making the claim.

The uppermost-riparian state initially base their claims on "absolute territorial sovereignty",²³ typically claiming the right to do whatever it chooses with the water regardless of its effect on other riparian states. Downstream states, on the other hand, generally begin with a claim to the "absolute integrity of the river",²⁴ claiming that upper-riparian states can do nothing that affects the quantity or quality of water that flows down the watercourse. The utter incompatibility of such claims guarantees that neither claim will prevail in the end, although the process of negotiating or otherwise arriving at a solution might require decades.

Arid Lands, 31 Int'l Affairs 61 (1955); Ludwik Teclaff, Water Law in Historical Perspective (1985); Albert Utton, International Streams and Lakes Generally, in 5 Waters and Water Rights, supra note 5, ch. 49.

²² Draft Articles, supra note 8, art. 4; Water in the Middle East, supra note *, at 166-167.

²³ Water in the Middle East, supra note *, at 164-165. This theory has one of its best known expressions in a published opinion by U.S. Attorney-General Harmon, 21 Op. Att'y Gen. 274, 281-282 (1898). The "Harmon Doctrine" has been disapproved by the U.S. State Department, Memorandum to the Legal Advisor, Nov. 23, 1942, in 3 Marjorie Whiteman, Digest of International Law 950-954 (1964).

²⁴ Water in the Middle East, supra note *, at 165; A.P. Lester, River Pollution in International Law, 57 Am. J. Int'l L. 828, 832 (1963).

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The usual solution is found in a concept of "restricted sovereignty".²⁵ States wedged along a river so as to be both upper and lower riparians on the same stream (usually relative to different states) often are first to come around to a theory of restricted sovereign rights under which each state recognizes the right of all riparian states to use some water from a common source and the obligation to manage their uses so as not to interfere with like uses in other riparian states. The quantities of water due each state under this theory often are defined according to some selected historic pattern of use, although occasionally some other more or less objective measure of need is advanced (population, area, arable land, etc.), or the theory might be no more developed than the vague notion that each state is entitled to a "reasonable share" of the water.²⁶

Restricted sovereignty has become the customary rule of international law as evidence by the many treaties based on the concept,²⁷ international judicial and arbitral awards,²⁸ and the

²⁵ Water in the Middle East, supra note *, at 165-166.

²⁶ Draft Articles, supra note 8, arts. 5-7.

²⁷ See, e.g., Berber, supra note 14; Report of the U.N. Commission for Europe, Legal Aspects of Hydro-Electric Development of Rivers and Lakes of Common Interest, 95-152 U.N. Doc. E/ECE/136 (1952); Herbert Smith, The Economic Uses of International Rivers (1931); Stephen Schwebel, The Law of Non-Navigational Uses of International Watercourses, U.N. Doc. A/CN.4/348, [1982] II Y.B. Int'l L. Comm'n 76-82, 88-90; Utton, supra note 21, § 49.03(a).

²⁸ See, e.g., Case of the Territorial Jurisdiction of the Int'l Comm'n of the Oder River, [1929] P.C.I.J., ser. A, No. 23 at 27; The Lake Lanoux Arbitration (France v. Spain), 24 I.L.R. 101, 139 (1957), digested in 53 Am. J. Int'l L. 156, 170 (1959); The Zarumilla River Arbitration (Ecuador v. Brazil), Informe de

near unanimous opinions of the most highly-qualified publicists.²⁹

Restricted sovereignty rests on the concept of an international drainage basin as a coherent juridical and managerial unit, a concept widely supported by naturalists, engineers, and economists, as well as jurists.³⁰ Ludwik Teclaff elaborated the concept in his well-known book, The River Basin in Law and History.³¹ Furthermore, every quasi-public and public international organization to consider the customary legal regime

las Relaciones Exteriores a la Nación 623 (Quito 1946), translated in William Griffin, The Use of Waters of International Drainage Basins under Customary International Law, 53 Am. J. Int'l L. 50, 61 (1959). See generally Utton, supra note 21, § 49.03(b).

²⁹ See generally International L. Assoc., The Helsinki Rules on the Uses of the Waters of International Rivers (Rep. of the 52d Conf., adopted at Helsinki, Aug. 20, 1966) ("Helsinki Rules"); Berber, supra note 14, at 25, 272-274; Daniel O'Connell, International Law 556-558 (2d ed. 1970); 1 Lassa Oppenheim, International Law 474-475 (Hersch Lauterpacht ed., 8th ed. 1955); Smith, supra note 27, at 150-51; Teclaff, supra note 5, at 152; Dominique Alheritiere, Settlement of Public International Disputes on Shared Resources: Elements of a Comparative Study of International Instruments, in Transboundary Resources Law, supra note 7, at 139-149; Juraj Andrassy, L'utilization des eaux des bassins fluviaux internationaux, 16 Revue Egyptienne de droit international ("Revue Egyptienne") 23 (1960); Dante Caponera, Patterns of Cooperation in International Water Law, in Transboundary Resources Law, supra note 7, at 1, 3-10; Aziza Fahmi, International River Law for Non-Navigable Rivers with Special Reference to the Nile, 23 Revue Egyptienne 39 (1967); Gretta Goldenman, Adapting to Climate Change: A Study of International Rivers and Their Legal Arrangements, 17 Ecol. L.O. 741 (1990); Schwebel, supra note 27, at 82-85, 87-88, 91-103; Utton, supra note 21, § 49.03(e).

³⁰ Johan Lammers, Pollution of International Watercourses 18 (1984); McCaffrey, supra note 1, at 143; Xue Hanqin, Relativity in International Water Law, 3 Colo. J. Int'l Envtl. L. & Pol'y 45, 46-48 (1992).

³¹ Teclaff, supra note 2.

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governing internationally shared water resources has embraced the concept of restricted sovereignty in one form or another.

B. Pronouncements of International Organizations

One of the best known quasi-public studies of the customary international law of transboundary water resources was by the International Law Association, a nongovernmental organization of legal experts which was founded in 1873.³² In 1954, the Association undertook to codify the law relating to the shared uses of international rivers.³³ The result was the "Helsinki Rules on the Uses of the Waters of International Rivers," adopted in 1966.³⁴ The Helsinki Rules, were the first attempt by any international organization to codify the entire law of international watercourses.³⁵

The Helsinki Rules center on the concept of international drainage basins (watersheds extending over two or more states) as an indivisible hydrologic unit on the basis of which planning must occur to assure the "maximum utilization and development of any portion of its waters."³⁶ The Helsinki Rules explicitly

³² McCaffrey, supra note 1, at 141.

³³ The first product of this effort was a report adopted at the Association's conference at New York in 1958. Int'l L. Ass'n, Research Project on the Law and Uses of International Rivers 197-98 (1959) (N.Y.U. Conference).

³⁴ Helsinki Rules, supra note 29.

³⁵ McCaffrey, supra note 1, at 141.

³⁶ Helsinki Rules, supra note 29, at 7-8 [art. II & comment (a)].

include within this concept all tributaries (including tributary groundwater), and not simply the primary international watercourse itself.³⁷ Within a drainage basin, the Helsinki Rules embraced the concept of restricted sovereignty through adoption of a rule of "equitable utilization."³⁸ The International Law Association has continued to draft rules relating to water-centered activities not addressed directly by the Helsinki rules, including flood control (1972), pollution (1972 & 1982), navigability (1974), the protection of water installations during armed conflicts (1976), joint administration (1976 & 1986), flowage regulation (1980), general environmental management concerns (1980), and groundwater (1986).³⁹

Other public and quasi-public international organizations have made similar pronouncements, including the Institut de Droit International⁴⁰ and the Inter-American Bar Association.⁴¹ The U.N. Economic Commission for Europe has adopted three instruments relative to international water management. The "Declaration of

³⁷ Id. at 7-8.

³⁸ Id., art. IV. The phrase "equitable utilization" is similar in both phrasing and in meaning to the rule of "equitable apportionment" applied by the Supreme Court of the United States to interstate disputes over surface waters shared between the disputing states--a system that has barely functioned in a society with a strong judicial structure to resolve disputes between users. See the sources collected supra at note 3.

³⁹ See generally McCaffrey, supra note 1, at 144-50.

⁴⁰ Institut de Droit International, Utilization of Non-Maritime International Waters (Except for Navigation), art. 2 (Sept. 4-13, 1961).

⁴¹ Inter-American Bar Ass'n, Resolution on Principles of Law Governing the Uses of International Rivers and Lakes (1957).

Policy on Prevention and Control of Water Pollution, Including Transboundary Pollution," merely indicates that "rational utilization of water resources" is a basic element of long-term water management.⁴² The "Declaration of Policy on the Rational Use of Water" recommended a "unified strategy" and "coordinated utilization."⁴³ The Commission's "Recommendations to ECE Governments on Long-Term Planning of Water Management" endorse basin-wide, cooperative management of shared water resources.⁴⁴

The International Law Association has developed what some see as a second principle governing the management of internationally shared water resources, that each nation not cause "substantial damage" to the environment or the natural condition of the waters beyond the limits of the nation's jurisdiction.⁴⁵ Section 601 of the Restatement (Third) of Foreign Relations Law also declares that states must "take such measures as may be necessary, to the extent practicable under the circumstances" to avoid injury to neighboring states.⁴⁶ The International Law Commission, an organ of the United Nations designed to promote the "progressive codification of customary

⁴² Decision B (XXXV), adopted at the 35th Sess. (1980), in Economic Comm'n for Europe, Two Decades of Co-Operation on Water, U.N. Doc. ECE/ENVWA/2, at 1, 3 (1988) ("ECE").

⁴³ Decision C (XXXIX), in ECE, supra note 42, at 12, 15.

⁴⁴ ECE, supra note 42, at 39, 41.

⁴⁵ See, e.g., International L. Ass'n, Rules on the Relationship between Water, Other Natural Resources and the Environment, art. I (adopted at Belgrade, 1980).

⁴⁶ Restatement (Third), supra note 12, § 601. See also N.Y.U. Conference, supra note 33, at 197.

international law," embraced both the principle of equitable apportionment and the obligation not to cause appreciable harm to other states in its Draft Articles submitted to the General Assembly in 1991.⁴⁷ The relevant Draft Articles read as follows:

Article 5

Equitable and reasonable utilization and participation

(1) Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse States with a view to attaining optimal utilization thereof and benefits therefrom consistent with adequate protection in the watercourse.

(2) Watercourse States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof, as provided in the present articles.

⁴⁷ On the structure and purposes of the International Law Commission, see The Work of the International Law Commission (4th ed. 1988); Ian Sinclair, The International Law Commission (1987). The law of international rivers has been on the agenda of the Commission since 1949, although work only began in earnest in 1971. Sinclair, supra, at 27, 40. For a summary history of the Commission's work on international rivers, see James Westcoat, jr., Beyond the River Basin: The Changing Geography of International Water Problems and International Watercourse Law, 3 Colo. J. Int'l Env'tl. L. & Pol'y 301 (1992).

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Article 7

Obligation not to cause appreciable harm

Watercourse States shall utilize an international watercourse in such a way as not to cause appreciable harm to other watercourse States.⁴⁸

The several Chief Rapporteurs for the project in 1981 and 1982 acknowledged the virtually unanimous recognition of the rule of "equitable utilization" as a general rule of international law,⁴⁹ yet Stephen McCaffrey, the final Rapporteur for the project, has concluded that the International Law Commission intended the rule of no appreciable harm as primary with the rule of equitable sharing subordinate to that rule.⁵⁰ Perhaps one can reach this conclusion based on comparing the categorical command in article 7 with to the more precatory language of article 5, but this ignores the express provisions of the Draft Articles:

⁴⁸ Draft Articles, supra note 8, arts. 5, 7.

⁴⁹ Jens Evanson, Third Report on the Law of Non-Navigational Watercourses, U.N. Doc. A/CN.4/348, [1983] II Y.B. Int'l L. Comm'n 80-81; Schwebel, supra note 27, at 85. See also Charles Bourne, Principles and Planned Measures, 3 Colo. J. Int'l Env'tl. L. & Pol'y 65, 73-77 (1992); McCaffrey, supra note 1, at 150-61.

⁵⁰ Stephen McCaffrey, The Law of International Watercourses: Some Recent Developments and Unanswered Questions, 17 Den. J. Int'l L. & Pol'y 505, 509-10 (1989). See also Bourne, supra note 49, at 77-82; Günther Handl, The International Law Commission's Draft Articles on the Law of International Watercourses (General Principles and Planned Measures): Progressive or Retrogressive Development of International Law?, 3 Colo. J. Int'l Env'tl. L. & Pol'y 123, 129-33 (1992); Charles Odidi Okidi, "Preservation and Protection" under the 1991 ILC Draft Articles on the Law of International Watercourses, 3 Colo. J. Int'l Env'tl. L. & Pol'y 143 (1992).

Article 10

Relationship between uses

1. In the absence of agreement or custom to the contrary, no use of an international water course enjoys priority over other uses.
2. In the event of a conflict between uses of an international water course, it shall be resolved with reference to the principles and factors set out in articles 5 to 7, with special regard being given to the requirements of vital human needs.⁵¹

The asserted absolute primacy of the rule of no appreciable harm also ignores the reality of water usage. Logically, the no appreciable harm principle prohibits any meaningful use by an upper-riparian state, turning the principle into merely a variant form of the absolute integrity claim. That position, while frequently advocated by lower-riparian states, has never been adopted by actual international decision-makers.⁵² Furthermore, as the state seeking to initiate a new use would generally be cast in the posture of the one creating the "injury," absolute integrity favors the more highly developed states at the expense of their less developed neighbors, particularly as the lower

⁵¹ Draft Articles, supra note 8, art. 10. Article 6 describes, in highly general terms, the factors to be considered in determining whether a use is reasonable and an apportionment is equitable.

⁵² See the text supra at note 24.

basin states tend to develop earlier and faster than upper basin states.⁵³ Such a posture is hardly conducive to achieving the developmental equity proclaimed under various banners at the United Nations.

One can reconcile the two rules by stressing that the no harm rule actually prohibits only "appreciable harm," "sensible harm," "significant harm," "substantial harm," or the like.⁵⁴ These standards require a determination whether a use represents a reasonable or equitable utilization.⁵⁵ As the German federal supreme court stated in The Danauversinkung Case (Württemberg v. Baden),⁵⁶ "[o]ne must consider not only the absolute injury caused to the neighboring State, but also the relation of the advantage gained by one to the injury caused to the other."⁵⁷ By

⁵³ Bourne, supra note 49, at 92; Albert Garretson, The Nile Basin, in The Law of International Drainage Basins, supra note 5, at 256, 264-65. See generally Westcoat, supra note 47.

The exceptions generally occur in situations where a region is colonized by a technologically more developed culture from outside the region. Perhaps the most notable example is the United States relative to Mexico. See Alberto Székely, "General Principles" and "Planned Measures" Provisions in the International Law Commission's Draft Articles on the Non-Navigational Uses of International Watercourses: A Mexican Point of View, 3 Colo. J. Int'l Env'tl. L. & Pol'y 93 (1992).

⁵⁴ Schwebel, supra note 27, at 98-100.

⁵⁵ Id., at 99-107; Helsinki Rules, supra note 29, at 19-20 [commentary to Art. X]; International L. Ass'n, supra note 45, art. 1. See generally McCaffrey, supra note 1, at 144-50; Utton, supra note 21, §§ 49.04, 49.10.

⁵⁶ Ann. Digest & Rep. of Pub. Int'l L. Cases 128 (RGst. 1927). See also Evenson, supra note 49, at 100; Schwebel, supra note 27, at 102.

⁵⁷ See generally Bourne, supra note 49, at 82-92; Utton, supra note 21, §§ 49.05, 49.06.

this view, the rule of no appreciable harm is really just a variant statement of the rule of equitable apportionment or equitable utilization under the principle of restricted sovereignty in the watersource.⁵⁸

C. Groundwater

The Helsinki Rules included only those groundwaters that formed part of a drainage basin, that is, that contributed to the principle streams, lakes, or other common terminus of the relevant watershed.⁵⁹ While there is far less experience regarding disputes over aquifer management, the same principles would no doubt be applied by analogy.⁶⁰ A gathering of experts on the law of international water recently confirmed this conclusion in a meeting at Bellagio, Italy, where they drafted a model treaty to assure the equitable utilization and management of shared groundwater basins.⁶¹

III. Treaties as Instruments for Managing Internationally-Shared Water Resources

Even if each interested state always agreed that the administration of shared waters requires the sovereignty of each riparian state to be limited relative to the water, states would

⁵⁸ See generally Ronald Coase, The Problem of Social Cost, 3 J.L. & Econ. 1 (1960).

⁵⁹ Helsinki Rules, supra note 29, at 8 [comment (b)].

⁶⁰ See the sources collected supra at note 7.

⁶¹ Hayton & Utton, supra note 7.

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still dispute what should be the common standard and the proper application of any agreed standard, disputes that would ultimately lead back to the law of the vendetta.⁶² Serious conflict in one form or another cannot be avoided under the restricted sovereignty theory without a peaceful mechanism for the orderly investigation and resolution of the disputes characteristic of the restricted sovereignty theory.⁶³ This has nearly always required the negotiation of some sort of treaty regime to settle the most salient aspects of the sharing of the transboundary water.

Most disputes over international river systems have eventually produced some modus vivendi on the basis of the notion of restricted sovereignty, with nearly 100 such treaties having entered into force by 1950 and more having followed.⁶⁴ Still, the needs of orderly and peaceful administration of the shared water resources has tended to push nations further toward a model

⁶² William Van Alstyne, The Justiciability of International River Disputes: A Study in the Case Method, 1964 Duke L.J. 307; Utton, supra note 21, § 49.05. See generally Richard Falk, International Jurisdiction: Horizontal and Vertical Conceptions of Legal Order, 32 Temple L.Q. 295 (1959).

⁶³ The concept of restricted sovereignty relating to transboundary water resources is essentially the same as the rule of equitable apportionment applied by the Supreme Court of the United States in disputes between states of the United States. That rule has barely functioned at all, and then only because of the existence of the Court as a final resort to compel recalcitrant states to conform their behavior to the vague strictures of the rule. See the authorities collected supra at note 6.

⁶⁴ Berber, supra note 14; Report of the U.N. Commission for Europe, Legal Aspects of Hydro-Electric Development of Rivers and Lakes of Common Interest, 95-152 U.N. Doc. E/ECE/136 (1952); Herbert Smith, supra note 24; Utton, supra note 21, § 49.03(a).

even more restrictive of their sovereignty than the basic restrictive sovereignty model already described. That model can be fairly described as based upon a "community of property" in the water source.⁶⁵

Under the community of property model, a waterbasin is jointly developed and managed as a unit without regard to international borders, with an agreed sharing of the benefits of, and equitable participation in, that development and management.⁶⁶ Although the full instantiation of such an approach are still rare,⁶⁷ there are good reasons for believing that the practice of nations will move in this direction. In fact, a number of international meetings recently have adopted the principle of community of property as the goal in settling disputes over shared water resources, culminating in the recently completed Draft Articles of the International Law Commission on the Law of the Non-Navigational Uses of International Watercourses.⁶⁸ The central provisions propounding the community of property model is found in articles 8 and 26 of the Draft Articles:

⁶⁵ See generally Ludwik Teclaff, Water Law in Historical Perspective ch. X (1985); Water in the Middle East, supra note *, at 171-173.

⁶⁶ L.F.E. Goldie, Equity and the International Management of Transboundary Resources, in Transboundary Resources Law, supra note 7, at 103-137; Utton, supra note 21, § 49.03.

⁶⁷ See, e.g., The Treaty for Amazonian Co-operation, art. I, reproduced in 17 Int'l Leg. Materials 1046 (1978); Evenson, supra note 48, at 44-45.

⁶⁸ Draft Articles, supra note 8, arts. 8-19, 26, 27. See generally Utton, supra note 18, § 49.09.

Article 8

General Obligation to Cooperate

Watercourse States shall cooperate on the basis of sovereign equality, territorial integrity and mutual benefit in order to obtain optimal utilization and adequate protection of an international watercourse.

Article 26

Management

1. Watercourse States shall, at the request of any of them, enter into consultations concerning the management of an international watercourse, which may include the establishment of a joint management mechanism.

2. For the purpose of this article, "management" refers, in particular to:

(a) planning the sustainable development of an international watercourse and providing for the implementation of any plans adopted, and

(b) otherwise promoting rational and optimal utilization, protection, and control of the watercourse.⁶⁹

⁶⁹ Draft Articles, supra note 8, arts. 8, 26.

In this section, I will describe the patterns of treaties that have been adopted over the years to coordinate the management of internationally-shared water resources. I will particular describe the agreements relating to the Nile River as the primary example of treaty management of Middle Eastern waters. Finally, I will describe an ideal pattern of water management derived from study of more or less fully developed community of property systems. Such a fully developed institutional framework is essential for a region facing increasingly desperate water shortages.⁷⁰

A. Measures Short of Allocating the Water between the States

The simplest arrangement recognizing the interrelationship of water uses in adjacent or successive states is the commitment to share information about the uses being made in the several states. Such an agreement, by enabling water users to consider the existing or planned uses elsewhere on an international watercourse, can serve to reduce direct conflicts. An early example is the Portuguese-Spanish convention of 1866 requiring consultations before either signatory would license a private hydraulic work on the international reaches of transboundary rivers.⁷¹

⁷⁰ See generally Dellapenna, supra note 4, at 40-45; Northcutt Ely & Abel Wolman, Administration, in The Law of International Drainage Basins, supra note 5, at 124; Teclaff, supra note 5, at 113-203.

⁷¹ Agreement on Regulations of Boundary Waters, November 20, 1866, as an Annex to the Convention on Boundaries between Spain and Portugal, signed on September 29, 1864, 129 Consol. T.S. 453.

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Such agreements are of extremely limited utility. Merely sharing information is only helpful when there is enough water available to satisfy all, or nearly all, potential users. When water is chronically short and there is no agreed arrangement for determining the uses that should prevail in the event of direct conflict, agreements providing for nothing more than the sharing of information must fail to prevent or resolve conflicts between users and their governments, and might even exacerbate conflict if one or the other party seeks to evade its obligations and thereby augmented distrust and its accompanying tension. Information sharing agreements have thus tended to give way to agreements designed, at the least, to prevent direct conflicts between competing hydraulic projects.

The next step forward is simply to agree that no hydraulic project can be undertaken in either state without the consent of the other if the proposed project would sensibly impair the watercourse, or at least sensibly interfere with uses in the other state. An early example is the 1905 agreement between Norway and Sweden regarding their shared watercourses.⁷² The agreement between the United States and Canada created a Joint Boundary Waters Commission to approve works in either state that

See also the Frontier Treaty between Austria and Czechoslovakia, Dec. 12, 1928, art. 28(3), 108 L.N.T.S. 57.

⁷² Convention concernant les lacs et cours de l'eau communs, signed Oct. 26, 1905, 34 Martens N.R.G. (2e ser.) 711. See also the Convention between Sweden and Norway on Certain Questions Relating to the Law of Watercourses, May 11, 1929, art. 12(1), 120 L.N.T.S. 277.

would likely affect persons in the other state.⁷³ A multilateral agreement binding the signatory states "to refrain from all measures likely to prejudice the navigability" of waterways was signed by 20 states in 1921, but ultimately was ratified by only five states (including the British Empire).⁷⁴ A similar principle was subsequently incorporated into a multilateral convention on hydroelectric works affecting more than one state.⁷⁵

Agreements not to permit new works without the consent of another interested state also serve to solve problems when water is fairly plentiful and both states have room to trade off consents. Such success is often signalled by a succession of agreements, each apparently of limited import but cumulatively representing a high degree of joint development of a basin's water resources.⁷⁶ When water is scarce relative to demand, the

⁷³ Treaty between Great Britain and the United States Relating to Boundary Waters and Questions Arising between the United States and Canada, Jan. 11, 1909, arts. III, IV, IX, X, 36 Stat. 2449, T.S. 548; United States-Canadian Treaty of Jan. 17, 1961, for the Co-Operative Development of the Columbia River Basin, arts. XIV, XVI, 15 U.S.T. 1555, T.I.A.S. 5638. See generally Utton, Canadian International Waters, supra note 2.

⁷⁴ General Convention Regulating Navigable Waterways of International Concern, Apr. 20, 1921, art. 10, 7 L.N.T.S. 35.

⁷⁵ General Convention Relating to the Development of Hydraulic Power Affecting More than One State, Dec. 9, 1923, art. 4, 36 L.N.T.S. 76.

⁷⁶ Such, for example, is the situation between Canada and the United States relative to the Great Lakes-St. Lawrence basin and the Columbia basin. See Teclaff, supra note 65, at 428-29, 438-43, 458-61; Utton, Canadian International Waters, supra note 5. A similar situation is found on the Rhine. Teclaff, supra, at 450-51 n.28. Consider also the evolution of the Mekong Committee, described in George Radosevich, Implementation: Joint

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need to secure consent to every significant change in water use can simply paralyze further development of the water. Unless, as in the Anglo-Italian agreement on the Atbara, that is the goal sought, such an agreement quickly ceases to be an acceptable solution and attempts to evade its strictures again will breed suspicion and hostility.

B. Allocating Water between States

The next arrangement to emerge has been agreements to divide the transboundary waters by volume. Such agreements have been made as successors to earlier agreements to inform, consult, or approve hydraulic works on transboundary waters, often when developing technology made the harnessing of a common river's hydroelectric potential increasingly attractive. Such agreements could either the waters available at one or more power sites or the power to be produced by a single facility or concessionaire.

For example, Portugal and Spain entered into a convention in 1927 to divide the international portion of the Duoro River into two parts, allowing Spain to exploit the hydroelectric potential of the first part and Portugal the hydroelectric potential of the second part.⁷⁷ This convention, still in effect also contains guarantees of minimum flows,⁷⁸ and establishes an International

Institutional Management and Remedies in Domestic Tribunals (Articles 26-28, 30-32), 3 Colo. J. Int'l Env'tl. L. & Pol'y 261, 263-66 (1992).

⁷⁷ Convention Between Spain and Portugal to Regulate the Hydro-Electric Development of the International Section of the River Duoro, Aug. 11, 1927, art. 2, 82 L.N.T.S. 133.

⁷⁸ Id., arts. 8, 18.

Joint Commission to share information about the development of the hydroelectric potential of the international reaches of the transboundary rivers.⁷⁹ The Spanish-Portuguese Convention on the Duoro also included a dispute settlement arrangement. The joint commission is empowered to decide whether proposed works are compatible with the convention's provisions; unanimous decisions are immediately binding on the parties, but majority decisions must be approved by the two governments, with approval presumed if neither government objects within 30 days of the communication of the decision to the governments.⁸⁰ The convention also provided, theoretically, for recourse to the International Court of Justice should the parties fail to agree;⁸¹ the agreement, however, makes no provision for the implementation of a judicial award.

Agreements allocating transboundary waters by volume or otherwise have become quite common as instantiations of the theory of restricted sovereignty, sometimes coupled with a requirement that works potentially interfering with the rights of the other party cannot be undertaken without the consent of the other. Some of these agreements seek to achieve the desired goal not by specifying the amount of water that might be diverted but

⁷⁹ Id., art. 14. Portugal and Spain agreed in 1964 extended the authority of the International Joint Commission over other sorts of hydraulic works and introduced a measure of flexibility in the sharing of the hydroelectric potential of the Duoro River. The powers of the International Joint Commission to guarantee minimum flows was extended to the Guadiana River in 1968.

⁸⁰ Id., art. 16.

⁸¹ Id., art. 21.

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by specifying the amount of water that must be left in the water source.⁸² The United States has largely resolved its long-standing disputes with Mexico by entering a series of agreements obligating the United States to deliver specified quantities of water to the Mexican border and by creating a International Joint Commission to construct hydraulic works on the international reaches of the shared rivers.⁸³

India and Pakistan used a version of this last approach as a means of avoiding both disputes and joint management by agreeing to divide the waters by source stream, giving each state the exclusive use of certain tributaries of the Indus River in an agreement made in 1961.⁸⁴ The effect of the Indus Waters Treaty was to require Pakistan to construct a new canal system to shift its reliance from the rivers assigned to India to rivers that had hitherto been less developed; the deal became possible both because India agreed to underwrite the expenses of Pakistan's new canals,⁸⁵ although in fact the money was provided by a

⁸² See, e.g., United States-Canadian Treaty Relating to Uses of the Waters of the Niagara River, Feb. 27, 1950, arts. 4, 6, 1 U.S.T. 694, T.I.A.S. No. 2130; Convention du Rhone pour l'aménagement de la puissance hydraulique entre la France et la Suisse, Oct. 4, 1913, art. 5, 5 Martens N.R.G. (3e ser.) 291; Convention concernant l'aménagement de la chute du Doubs pres de Chatelot, Nov. 19, 1930, art. 5, 26 Martens N.R.G. (3e ser.) 314.

⁸³ Convention with Mexico, May 21, 1906, 34 Stat. 2953, T.S. No. 455; Treaty Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944, 59 Stat. 1219, T.S. No. 994. See generally Teclaff, supra note 65, at 429-33; Utton, Mexican International Waters, supra note 2.

⁸⁴ Indus Waters Treaty, signed Sept. 19, 1960, art. 2, 419 U.N.T.S. 126.

⁸⁵ Id., art. 4.

development fund administered by the World Bank.⁸⁶ The Indus Waters Treaty also imposed duties to exchange information and provided for mutual inspection to assure compliance, subject to binding arbitration of technical questions.⁸⁷

As the brief review of agreements partitioning water resources suggests, creative use of such agreements can resolve many potential controversies over shared waters with a minimum of ongoing active cooperation. Such agreements ultimately remain unsatisfactory if only because the resultant unilateral activities by each party to the partition can only coincidentally optimize the utilization of the resource. As a panel of experts appointed by the Secretary-General of the United Nations concluded in 1957,

It is now widely recognized that individual water projects--whether single or multipurpose--cannot as a rule be undertaken with optimum benefit for the people affected before there is at least the broad outlines of a plan for the entire drainage area.⁸⁸

Often, such arrangements require frequent negotiation of new agreements to attempt at least temporary optimization of use of the resource. Such has ben true for developing the hydroelectric

⁸⁶ See generally Teclaff, supra note 1, at 163-165, 183-184; Teclaff, supra note 65, at 436-38; Baxter, supra note 9; Concannon, supra note 9.

⁸⁷ Indus Waters Treaty, supra note 84, arts. 8, 9.

⁸⁸ U.N. Dep't of Econ. & Soc. Aff., Integrated River Basin Development, U.N. Doc. E/3066, at 1 (1958).

potential of the Niagara and Columbia Rivers in the United States and Canada⁸⁹ and to resolve recurring disputes between the United States and Mexico over the quality of water delivered pursuant to the American treaty obligations.⁹⁰ The process of negotiating supplemental agreements, at best, consumes time and money; at worst, important projects might never be undertaken when a moment passes or the cost of reaching agreement is prohibitive. The resulting frustrations can fuel controversy rather than calm it.

C. The Nile River Regime⁹¹

The Nile River has brought life-giving waters through the heart of the north African desert for millennia, and has been relied on by farmers and others in Egypt and Nubia since time immemorial.⁹² The Nile has also been a significant limiting factor, with the longest length of any river in the world and yet the smallest average discharge at its mouth of the nine longest rivers of the world.⁹³ The Nile is the quintessential "exotic river," receiving no inflows of tributary water and negligible

⁸⁹ Krutilla, supra note 2; Teclaff, supra note 65, at 428-29, 438-43; Johnson, supra note 2; Symposium, supra note 2; Utton, Canadian International Waters, supra note 5.

⁹⁰ Teclaff, supra note 65, at 429-33; Utton, Mexican International Waters, supra note 2.

⁹¹ See generally Teclaff, supra note 5, at 105-08, 112-15; Teclaff, supra note 65, at 433-36; John Waterbury, Hydropolitics of the Nile Valley (1979); Dr. C.O. Okidi, Review of Treaties on Consumptive Utilization of Waters of Lake Victoria and Nile Drainage System, 22 Nat. Resources J. 161 (1982).

⁹² Waterbury, supra note 91, at 12-13, 25-32.

⁹³ Id. at 13, 21.

rainfall for the last 3,000 kilometers of its 6,825-kilometer length and steadily losing water as it cuts across the eastern Sahara to the Mediterranean Sea.⁹⁴

The technology for irrigation and other consumptive uses long remained undeveloped preventing any serious drawdown of the river;⁹⁵ in fact, on the Nile, the major form of irrigation remained the annual floods well into the present century.⁹⁶ With the advent in Egypt of low-level dams ("barrages") in the mid-nineteenth century⁹⁷ and of modern hydraulic works, most notably the Aswan High Dam,⁹⁸ in the twentieth century, attention inevitably turned to protecting the flow of water on which these facilities depended.

Controlling the upper reaches of the Nile was not so difficult in the nineteenth century than it would be today. The British, after gaining effective control of Egypt in 1882, struggled for nearly two decades to subdue the sparsely peopled Sudan and raced the other colonial powers to find and secure control of the headwaters of the Nile.⁹⁹ Although they did not quite succeed with the latter, they did secure the headwaters in

⁹⁴ Id. at 18-19.

⁹⁵ See generally Ludwik Teclaff, Fiat or Custom: The Checkered Development of International Water Law, 31 Nat. Resources J. 45, 63 (1991).

⁹⁶ Waterbury, supra note 91, at 19-32.

⁹⁷ Id. at 32-42; Garretson, supra note 53, at 264-67.

⁹⁸ Waterbury, supra note 91, at 87-89, 94-153; Garretson, supra note 53, at 274-76.

⁹⁹ Waterbury, supra note 91, at 43-47.

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Uganda, and obtained sovereign control over nearly the whole of the Nile valley. They then obtained, by treaty, the agreement of the Congo Free State, Ethiopia, and Italy (the other states controlling various sources of the Nile) not to change the flow of the waters of the Nile without British consent.¹⁰⁰

Thereafter, the British authorities undertook works to extend irrigation in the Sudan while attempting to assure water supplies in Egypt.¹⁰¹

Financial considerations precluded work on the Egyptian portions of the planned works even after the Sudanese works were finished in 1925; instead, Egyptian needs were secured by the British administration of the Sennar Dam in the Sudan.¹⁰² When the British Governor-General of the Sudan was murdered in Cairo in 1924 during nationalist unrest motivated in part by a demand for the incorporation of the Sudan into Egypt, the British

¹⁰⁰ Protocol Between Great Britain and Italy Delimiting Spheres of Influence in East Africa, Apr. 15, 1891, art. 3, 83 Brit. & For. State Papers 21; Treaties between the United Kingdom and Ethiopia and Between the United Kingdom, Italy, and Ethiopia, Relative to the Frontiers Between the Sudan, Ethiopia, and Eritrea, May 15, 1902, art. 3, Cmd. No. 1370 (T.S. No. 16 of 1902), 23 Hertslet, Comm. Treaties 344; Agreement Between Great Britain and the independent state of the Congo Relating to the Boundaries of the Sudan, May 9, 1906, ¶ 1, B.T.S. No. 4, Cmd. 2920. See generally R.K. Batstone, The Utilization of Nile Waters, 7 Int'l & Comp. L.Q. 523, 533-37 (1959); Garretson, supra note 53, at 277-78; Dr. Sayed Hosni, The Nile Regime, 17 Revue Egyptienne 70, 71-73 (1961); Okidi, supra note 91, at 167-70.

¹⁰¹ Nile Comm'n, 1925 Report, § 10-13, 21 Martens N.R.G. (3e ser.) 101; Teclaff, supra note 65, at 433-34; Garretson, supra note 53, at 267-70, 278-84; Hosni, supra note 100, at 73-80.

¹⁰² Smith, supra note 27, at 77; Teclaff, supra note 65, at 434; Garretson, supra note 53, at 282-83; Hosni, supra note 100, at 79.

reacted in part by threatening to permit unlimited Sudanese irrigation. Eventually, the British and Egyptian governments reached an agreement in 1929 assuring continued British control of the Sudan predicated on the Sudan's subordination to Egypt's dominant position on the Nile.¹⁰³

As soon as Sudanese independence was assured in 1953,¹⁰⁴ the Sudanese government demanded modification of the 1929 agreement as too restrictive of Sudanese development.¹⁰⁵ The Sudan particularly objected to the plans for the Aswan High Dam that would flood parts of the Sudan and also to the requirement of Egyptian approval before new works could be constructed in the Sudan.¹⁰⁶ The outcome was a new treaty ratified in 1959 that settled most outstanding questions between the two countries.¹⁰⁷

The 1959 Treaty included reciprocal consent to new dams in each country, the High Dam at Aswan in Egypt and a new dam on the

¹⁰³ Smith, supra note 27, at 70; Waterbury, supra note 91, at 63-67; Batstone, supra note 100, at 523-33; Garretson, supra note 53, at 270-74, 284-86; Hosni, supra note 100, at 80-87; Okidi, supra note 91, at 170-76.

¹⁰⁴ Agreement Between Egypt and Great Britain Concerning Self-Government and Self-Determination for the Sudan, Feb. 12, 1953, 161 U.N.T.S. 157. See generally Waterbury, supra note 91, at 48-55.

¹⁰⁵ Waterbury, supra note 91, at 67-77.

¹⁰⁶ Batstone, supra note 100, at 537, 547-50; Garretson, supra note 53, at 286-92; Hosni, supra note 100, at 91-99; Okidi, supra note 91, at 181-85.

¹⁰⁷ Agreement between the United Arab Republic and the Republic of the Sudan on the Full Utilization of the Nile Waters, Nov. 8, 1959, 453 U.N.T.S. 51, reprinted in 15 Revue Egyptienne 321 (1959).

Blue Nile in the Sudan.¹⁰⁸ More importantly, the Treaty allocated the flow of the Nile--48 billion cubic meters (BCM) to Egypt and 4 BCM to the Sudan, measured at Aswan.¹⁰⁹ "Surplus" water from the Sudd was allocated more favorably to the Sudan--up 14.5 BCM to the Sudan and only 7.5 BCM to Egypt.¹¹⁰ The Treaty further committed the Sudan to undertake additional reclamation works in the upper Sudan with the water reclaimed to be allocated equally to the two nations.¹¹¹ Finally, the two nations, which, after all, termed the Treaty as one for "the Full Utilization of the Nile Waters," sought to present a united front to other Nile basin states through the following remarkable clause:

[B]oth republics agree to study together [the claims of other Nile basin states] and adopt a unified view thereon. If such studies result in the possibility of allotting an amount of water to one or the other of these territories, then the value of this amount as Aswan shall be reduced in equal shares from the share of each of the two Republics.¹¹²

The treaty solved the problems of the two countries,

¹⁰⁸ Id., art. 2, §§ 1, 2.

¹⁰⁹ Id., art. 1.

¹¹⁰ Id., art. 2, § 4.

¹¹¹ Id., art. 3.

¹¹² Id., art. 5. Since then, the two states have taken further steps to integrate their economies and have made gestures towards integrating their governments.

although the Sudanese have complained about "shortages in the midst of plenty."¹¹³ Continuing population growth has made the problems of inadequate water supplies a pressing one even in Egypt,¹¹⁴ something unimagined when the 1959 Treaty was signed. The hydrogeology of Burundi, the Central African Republic, Kenya, Rwanda, Tanzania, Uganda, and Zaire, the uppermost states on the White Nile, is such that activities in there are unlikely to affect Egypt or the Sudan north of the Sudd.¹¹⁵ The Blue Nile presents a rather different picture.

The Blue Nile arises in the highlands of Ethiopia contributes the major, and highly variable, flow of the Nile in northern Sudan and Egypt (75-90%).¹¹⁶ Indeed, a good deal of the White Nile's flow in so far as it reaches the northern Sudan and

¹¹³ The phrase comes from Waterbury, supra note 91, at 210. See generally id. at 174-209, 231-41; Abdin Salih, The Nile inside the Sudan--Increasing Demands and Their Consequences, 10 Water Int'l 73 (1985); Bret Wallach, Irrigation in Sudan since Independence, 78 Geographical Rev. 417 (1988).

¹¹⁴ Waterbury, supra note 91, at 118-19, 151-53, 213-31; The Nile: A Grasping Serpent, The Economist, Feb. 27, 1988, at 74.

¹¹⁵ Waterbury, supra note 91, at 14-17, 23-24; Okidi, supra note 91, at 164-65, 189-98. Even when projects are designed that some hope can produce significant water out of the Sudd, the continuing civil disorder in the south of the Sudan prevent implementation. Kathryn Davies, Egypt, Sudan in Nile Talks, The Guardian, May 31, 1985, at 7; Okidi, supra, at 191-92. These realities have not prevented Egypt from attempting to control what development goes on in the states uppermost on the White Nile. Garretson, supra note 53, at 286; Hosni, supra note 100, at 87-89; Okidi, supra, at 176-81, 185-89.

¹¹⁶ Waterbury, supra note 91, at 17-19; Gamal Moursi Bard, The Nile Waters Question: Background and Recent Developments, 15 Revue Egyptienne 1, 2 (1959); Garretson, supra note 53, at 259; Okidi, supra note 91, at 164.

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Egypt, also arises in Ethiopia.¹¹⁷ Continuing political turmoil in Ethiopia has prevented that country from developing the Nile's waters before they leave the country. If the current regime succeeds in stabilizing the country and undertaking major development projects, however, that picture must change.¹¹⁸ Egypt and the Sudan, on the other hand, will insist that Ethiopia undertake no works that inflict "appreciable harm" on their existing activities, basing their claims on the customary international law as expressed in the Draft Articles published by the International Law Commission.¹¹⁹

The impending struggles over the waters of the Nile suggest several major patterns that in general are found in river basins worldwide. Development usually occurs in the lower basin earlier and faster than in the upper basin.¹²⁰ This creates a set of existing users who demand protection for their "prior rights" and a class of disadvantaged potential users upstream who demand developmental equity. Because of the developmental differential, the lower-basin users often have the military power to enforce

¹¹⁷ Garretson, supra note 53, at 259-60, 264.

¹¹⁸ See, e.g., Assem Abdul Mohsen, Egypt, Ethiopia Clash over the Nile, The Middle East, Sept. 1980, at 70. The early, inadequate agreements limiting Ethiopia's right to develop the waters of the Atbara and the Blue Nile are described in Batstone, supra note 100, at 551-55; Garretson, supra note 53, at 291-92; Hosni, supra note 100, at 89-91; Okidi, supra note 91, at 192-93.

¹¹⁹ Draft Articles, supra note 8, art. 7.

¹²⁰ The exceptions generally occur in situations where a region is colonized by a technologically more developed culture from outside the region. Perhaps the most notable example is the United States relative to Mexico.

their will if they feel free to use that power, but the upper basin users have the water and can cut it off or contaminate it with devastating results to the lower-basin users. The resulting tensions can be managed only if the water is managed in such a way as to assure the equitable participation of all states sharing the basin.¹²¹ As R.K. Batstone and others foresaw as early as 1959, the very year the present treaty was signed, only by reworking the Nile regime into a coordinated regional management authority can the basin's problems possibly be solved.¹²²

D. Communal Management

As the foregoing has shown, comprehensive management is necessary to achieve the optimum utilization of water, particularly in an arid region like the Middle East. Furthermore, for the Jordan valley, communal management presents an important opportunity for political benefits through the creation of institutions and experiences of cooperation rather than conflict.¹²³ Even if the only long-term solution for the needs of the people in the valley will require the importation of water from outside the Jordan Valley, several proposals for which

¹²¹ See generally Utton, supra note 21, § 49.09.

¹²² Batstone, supra note 100, at 555-58. See also Okidi, supra note 91, at 184-89, 198-99.

¹²³ See generally Garfinkle, supra note 10; Dellapenna, supra note 4.

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having been seriously entertained in recent years,¹²⁴ the optimum utilization of those imported waters, as well as locally available waters, can be handled more efficiently and less explosively through a regional mechanism than by each state acting on its own in competition with the others.

The essential elements of such a communal management arrangement are easy to describe in general terms, but remain difficult to negotiate in detail or to implement. The basic terms on such an agreement would be based on recognizing that the basin states form a community united by their common property in shared water resources (hence the term "community of property"). This concept is realized by:

- a. jointly developing and managing the waterbasin as a unit without regard to international borders, ideally through a transnational institutional structure;
- b. sharing of the benefits of that development and management according to some agreed formula; and
- c. a procedure for investigating and resolving the inevitable disputes in a constructive rather than conflictual manner.

Such principles have long been recognized by the United Nations, beginning even before the Committee of Experts in

¹²⁴ See, e.g., Joyce Starr & Daniel Stoll, U.S Foreign Policy on Water Resources in the Middle East (1987); Joyce Starr, Water Wars, 82 For. Aff. 17 (1991).

1957.¹²⁵ The conclusion continues to be promoted at virtually every opportunity that arises within United Nations activities. We have already seen that the goal of community of property has been endorsed in the Draft Articles on Non-Navigational Uses of International Watercourses prepared by the International Law Commission and presented to the General Assembly in 1991.¹²⁶ Perhaps the most succinct and emphatic statement of the conclusion within U.N.-sponsored activities was the opening statement in a working paper prepared by the U.N. Secretariat for the Fourth Regional Technical Conference on Water Resources Development in Asia and the Far East, held in Colombo in 1960: "River basin development projects are now necessarily multipurpose and lead to unified development."¹²⁷ The same approach was also endorsed in the final report of the U.N. Water Conference at Mar del Plata in 1977: "It is necessary for States to cooperate in the case of shared water resources in recognition of the growing economic, environmental and physical interdependencies across international frontiers. Such

¹²⁵ See Integrated River Basin Development. For earlier expressions of support for integrated management within the United Nations, going back to 1949, see Teclaff, supra note 65, at 427-28.

¹²⁶ Draft Articles, supra note 8, arts. 8, 26, quoted supra at note 69. See also id., §§ 20-24 (on the obligation of states to protect and preserve the ecosystems of international watercourses through collective and separate action). See generally Ved Nanda, The Law of Non-Navigational Uses of International Watercourses: Draft Articles on Protection and Preservation of Ecosystems, Harmful Conditions and Emergency Situations, and Protection of Water Installations, 3 Colo. J. Int'l Envtl. L. & Pol'y 175 (1992).

¹²⁷ U.N. Doc. No. St./ECAF/E/Ser.F/19, at 61 (1962).

cooperation . . . must be exercised on the basis of the equality, sovereignty and territorial integrity of all States."¹²⁸

The community approach has also found support in occasional arbitrations and mediations. One of the best expressions was in a report of the Rao Commission appointed to resolve the dispute between the Sind and the Punjab before the partition of India.

The report stated:

The most satisfactory settlement of disputes of this kind is by agreement, the parties adopting the same technical solution of each problem, as if they were a single unified community undivided by political or administrative frontiers. . . . If there is no . . . agreement, the rights of the several Provinces and States must be determined by applying the rule of "equitable apportionment," each unit getting a fair share of the water of the common river.¹²⁹

As the Rao Commission suggests, the problem with relying on the concept of a community of property, a right to equitable participation in the transnational management of a common resource, is that international law does not provide a ready-made blue print for the necessary institutional structures. The customary legal obligation can only be expressed as an obligation

¹²⁸ General Assembly, Report of the United Nations Water Conference, Mar del Plata, Argentina, U.N. Pub. E/77/II/A/12 (1977), at 53.

¹²⁹ The Indus River Basin Case (the Sind v. the Punjab), Report of the Indus (Rao) Commission 10-11 (1942).

to negotiate to create the necessary institutions. This obligation is expressed in some detail in the International Law Commission's Draft Articles,¹³⁰ but it remains an imperfect obligation as there is no procedure to compel the parties to succeed in the negotiations. Absent such success, the best that can be done, as the Rao Commission indicated, is to "partition" the water.

International practice does provide numerous examples to use as models for institution design.¹³¹ Perhaps the earliest is a joint commission to determine the optimum sites for building locks to enhance navigation on the Meuse, created by the Treaty of Fontainebleau between the Holy Roman Empire and the Netherlands.¹³² Throughout the nineteenth and twentieth centuries, more elaborate arrangements were created, often centering on a permanent commission responsible to inspect or restrain activities that could impair navigability.¹³³ Similarly

¹³⁰ Draft Articles, supra note 8, at arts. 9, 11-18, 21, 23, 26-28.

¹³¹ See generally Teclaff, supra note 65, at 443-48.

¹³² Traité d'accord définitif entre S.M. Imperiale et Royale Apostolique et L.H.P. les seigneurs états généraux des provinces unies, Nov. 8, 1785, art. 6, 4 Martens R.T. (2e ed.) 56.

¹³³ See, e.g., Congress of Vienna, Final Act, June 9, 1815, arts. 108, 109, 2 Martens N.R. 427; Traité de limites entre leur majestés le roi de Prusse et le roi des Pays Bas, Oct. 7, 1816, art. 29, 3 Martens N.R. 54; Peace Treaty Between the Allied and Associated Powers and Germany, June 28, 1919, art. 331, 13 U.S. For. Rel. 655-56; General Convention, supra note 74; Convention Instituting the Definitive Statute of the Danube, July 23, 1921, 26 L.N.T.S. 177; Convention Instituting the Statute of Navigation of the Elbe, Feb. 22, 1922, 26 L.N.T.S. 223; Exchange of Notes on the Rhine Commission, Nov. 5, 1945, 60 Stat. 1934, T.I.A.S. No.

single-purpose commissions, temporary or permanent, began to be created by the early twentieth century to coordinate the development of the hydroelectric potential of internationally shared waters, although many of these did not have final decision-making authority.¹³⁴

There are only a few examples of multipurpose commissions with considerable effective power. More commonly, as on the Nile or the Indus, the commissions are given authority only to gather and disseminate information.¹³⁵ One of the chief example of an international commission endowed with real decision-making authority is the International Boundary Waters Commission set up by the United States and Canada.¹³⁶ The Commission has the power to issue binding orders regulating the diversion or obstruction that affect boundary waters,¹³⁷ but even with this power the two nations have felt compelled to undertake considerable further negotiations to resolve many contentious issues.¹³⁸ In fact,

1571; Convention Regarding the Regime of Navigation of the Danube, Aug. 18, 1948, 33 U.N.T.S. 199.

¹³⁴ See, e.g., Agreement on Regulations of Boundary Waters, supra note 71; Convention concernant les lacs et cours de l'eau communs, supra note 72; the Rhone Convention, supra note 82; General Convention, supra note 75; the River Duoro Convention, supra note 77; Austro-Czechoslovak Frontier Treaty, supra note 71; Swedish-Norwegian Convention on the Law of Watercourses, supra note 72; the Doubs Convention, supra note 82.

¹³⁵ The Nile Treaty, supra note 107, art. 4; the Indus Treaty, supra note 84, arts. 8, 9.

¹³⁶ The Boundary Waters Treaty, supra note 73.

¹³⁷ Id., arts. 3, 4.

¹³⁸ See, e.g., the Columbia Basin Treaty, supra note 73. See generally Teclaff, supra note 65, at 428-29, 438-43, 458-61; Utton, Canadian International Waters, supra note 5.

Ludwik Teclaff has concluded that the Commission has shown little evidence of "a basin approach in issuing permits in construction in boundary waters."¹³⁹ On the other hand, the International Joint Commission established between the United States and Mexico was given the responsibility for planning, constructing, and operating dams and other works on the international reaches of the boundary waters.¹⁴⁰

As this brief survey suggests, the full instantiations of communal water management remains rare. Nations are seldom willing to compromise their sovereignty over a basic resource that is necessary to optimize integrated water management with a basin. Nations have found it easiest to agree to create institutions for gathering and sharing data, and not too much more difficult to agree to create institutions empowered to forbid or restrain alteration of a watercourse, particularly when the purpose of the institution (e.g., promoting navigation) is best served by preserving the watercourse more or less intact. Nations have, however, found it very difficult to agree to submit their futures to international institutions authorized to plan, construct, or operate single- or multi-purpose projects even when the benefits of such an institution would be considerable.

The goal of communal management remains largely unrealized. International organizations, such as the United Nations and the International Bank for Reconstruction and Development (the World

¹³⁹ Teclaff, supra note 65, at 446-47.

¹⁴⁰ The Colorado, Tijuana, and Rio Grande Treaty, supra note 83, art. 2.

Bank) bear considerable responsibility for this failure. Despite their consistent abstract support for communal management, they have done little actually to promote integrated management by communities of states sharing a particular basin. The World Bank, while rightly claiming considerable credit for the Indus Waters Treaty,¹⁴¹ has since taken a hands-off approach to integrated water management by declining to fund water project until every state riparian to the watercourse has approved the project. The policy plays directly into the hands of the more highly developed lower-basin states,¹⁴² functioning as a rule of absolute integrity denying every riparian state, except the lowest, the means to develop water resources within their borders. Yet, for international organizations to ignore the lower-basin interests in a rush to develop water resources in up-river states would not be more equitable or more satisfactory. International organizations begin to provide material incentives to communal management arrangements instead sacrificing the interests of some riparian states to the interests of other riparian states.

IV. Managing the Waters of the Jordan Valley

An agreement over sharing the water resources, on the surface and beneath the ground, is essential to any peace agreement between the states of the Jordan valley. Such an

¹⁴¹ Supra note 84.

¹⁴² See the text supra at note 53.

agreement will perhaps prove to be the most difficult aspect of the entire negotiating process, yet, if done properly, it could be the arrangement that most decisively assures that any ensuing peace will last. What options might be used to enhance the already considerable covert cooperation over water within the Jordan valley to best meet the needs of the burgeoning populations of the region without inducing conflict directly over water?

There are four states that physically share the Jordan valley, Israel, Jordan, Lebanon, and Syria, along with the Occupied Territories. No existing agreements apportion or otherwise control rights to use the waters found within the Jordan valley. France and the United Kingdom during their Mandates over Syria and Lebanon, on the one hand, and Palestine and Jordan, on the other, entered created certain arrangements for developing the waters of the Jordan, principally in order to create the Rutenberg Concession.¹⁴³ Israel has never accepted the applicability of those arrangements,¹⁴⁴ and in any event they

¹⁴³ Exchange of Notes Between the British and French Governments Respecting the Boundary Line Between Syria and Palestine from the Mediterranean to El Hamme, Mar. 7, 1923, 22 L.N.T.S. 364; Agreement of Good Neighborly Relations Between the British Government on Behalf of the Territories of Palestine and the French Government on Behalf of Syria and Great Lebanon, Feb. 2, 1926, 56 L.N.T.S. 79. See generally Water in the Middle East, *supra* note *, at 30; Abraham Hirsch, Utilization of International Rivers in the Middle East, 50 Am. J. Int'l L. 81, 91 n.40 (1956); Louis, Les eaux du Jourdain, [1965] Annuaire francais de droit international 832, 860-861.

¹⁴⁴ Statement of Aba Eban, Israeli Ambassador, to the Security Council, U.N. Security Council, Official Records, VIII/633, at 26 (1953).

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simply no longer address the needs of the peoples living in the valley. The Rutenberg Concession and the related Franco-British arrangements do not apply to the Kingdom of Jordan, at least not to any extent greater than they apply to Israel.¹⁴⁵ While one might argue that the Johnston Plan, developed in the 1950's, has become a special custom binding as law on the states of the valley,¹⁴⁶ that plan also no longer is adequate to the needs of the people of the valley. The arrangements in any event never went much beyond the vague notion of equitable apportionment.

Today, with burgeoning populations in all the areas of the Jordan valley, there simply is not adequate water to trust in a vague rule of equitable apportionment.¹⁴⁷ Given the depths of hostility within the valley, one is tempted to find some method of apportioning the waters of the valley in such a way as to preserve inviolate the autonomy of each state in managing its

¹⁴⁵ Jordan does have a treaty with Syria regarding the division of the waters of the Yarmuk. Agreement of the Hashemite Kingdom of Jordan and the Syrian Arab Republic for the Utilization of the Waters of the Yarmouk River, Sept. 3, 1987, 184 U.N.T.S. 15.

¹⁴⁶ Saliba, supra note 4, at 84-112; Water in the Middle East, supra note *, at 39-45, 168-69; Eric Johnston, Jordan River Valley Development, 29 Dep't State Bull. 892 (1953); Eric Johnston, Mission to the Middle East, 30 Dep't State Bull. 283 (1954); Eric Johnston, The Near East and the West, 30 Dep't State Bull. 790 (1954); David Wishart, The Breakdown of the Johnston Negotiations over the Jordan Waters, 26 Middle Eastern Stud. 536 (1990). See generally Louis Sohn, Unratified Treaties as a Source of Customary International Law, in Realism in Law-Making 231-289 (Adriaan Bos & H. Siblesz eds. 1986).

¹⁴⁷ For an analysis of the legal claims of the several states relative to the waters found in the Jordan valley, see Dellapenna, supra note 4, at 40-45.

share of the divided waters.¹⁴⁸ This does not appear possible.

One could easily imagine many partition schemes for the waters of the Jordan valley. The scheme that would most completely preserve the autonomy of the several competing political entities would be to assign all of selected to sources to a particular country in exchange for that country surrendering all claims to other waters. For example, the Jordan River could be assigned to Israel, the Yarmuk to Jordan, the groundwater between the Jordan and the Mediterranean to the Occupied Territories, leaving Lebanon and Syria to satisfy their needs from sources outside the valley. Any such scheme simply will not work because none of these arrangements would be adequate to the needs of any of the states, except Lebanon and (perhaps) Syria. Israel's water budget has been in deficit for years even with consuming virtually all of the Jordan water, most of the groundwater, some of the Yarmuk, and occasional supplements from the Litani in southern Lebanon.¹⁴⁹ The deficit has been made up by drawing fossil water from the Coastal Aquifer, made possible by depriving the Palestinians even of the water they have been using for centuries¹⁵⁰ and threatening permanent destruction of

¹⁴⁸ Compare the partition of the waters of the Indus valley between India and Pakistan. See the text supra at notes 84-87.

¹⁴⁹ Dellapenna, supra note 4, at 29-30.

¹⁵⁰ Meron Benvenisti, 1986 Report: Demographic, Economic, Legal, Social and Political Developments in the West Bank 8-10, 20-22 (1986); Meron Benvenisti, The West Bank Data Project 12-15 (1984); Meron Benvenisti, Ziyad abu-Zayed, & Danny Rubinstein, The West Bank Handbook 1, 223-25 (1986); David Kretzmer, The Legal Status of Arabs in Israel 48, 118-20 (1987); Royal Sci. Soc'y, West Bank Resources and its Significance to Israel 7-10

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the resource by salt water intrusion from the Mediterranean. Jordan's situation is even more difficult,¹⁵¹ while situation in the Occupied Territories can only be described as desperate.¹⁵² Lacking local oil, the states of the region cannot afford desalination. In sum, the water needs of the region can only be met through importing substantial water from outside the valley, perhaps from as far away as the Euphrates and the Nile.¹⁵³

A more far-reaching partition of the waters would allocate all the waters of the Jordan valley (and perhaps the Litani as well) to Israel, while providing imported water to Jordan and the Occupied Territories. Such an approach would have the virtues of not only possibly meeting the water needs of the valley but also of minimizing the need for overt cooperation between hostile political entities. For such an approach to be acceptable, at the least Israel would have to accept a major, perhaps the major share, of the cost of importing the water for Jordan and the Occupied Territories, although, like the Indus Waters agreement, this might be underwritten by a fund managed by the World Bank or some similar arrangement.¹⁵⁴ The inescapable downside of such an

(1979); Sara Roy, The Gaza Strip Survey 38-51 (1986); N. Selbat, Water Policy Alternatives for Israel (1981); Rami Khouri, Israel Drains West Bank Waters, 71 Middle East 38 (1979); Joe Stork, Water and Israel's Occupation Strategy, 13 Merip Rep. 19 (1983).

151 Dellapenna, supra note 4, at 30-31.

152 Id., at 32-35.

153 Starr & Stoll, supra note 124; Starr, supra note 124.

154 Indus Waters Treaty, supra note 84, art. 4. See Teclaff, supra note 1, at 163-165, 183-184; Teclaff, supra note 65, at 436-38; Baxter, supra note 9; Concannon, supra note 9.

arrangement is the inability of water users in the valley to make the most efficient use of all the water that becomes available, either locally or through importation. Furthermore, each state will be more or less permanently locked into such sources as are allocated to it even though it appears likely that Israel, at least, will, sooner rather than later, need access to imported water, especially if immigration returns to the levels of reached just prior to the Gulf War. Similar concerns should even more firmly preclude reliance on a apportionment scheme such as in the Johnston Plan whereby, rather than working a division of the sources, the waters of particular sources would be divided so that each state and the Occupied Territories would each have a share of the Jordan, and so on.¹⁵⁵

The communal management approach could offer the best alterative despite the seemingly never-ending hostilities of the region. Such an approach is rooted both in the practical needs of the region and long-standing local traditions relating to water management. Customary water law often was administered by a water master who performed functions similar to a magistrate, allocating community water among users and calling upon the water users from time to time to maintain the communal water system.¹⁵⁶ Under the hadith of the prophet, all could call upon even privately-owned water to slake their thirst so long as the water

¹⁵⁵ For the details of the Johnston Plan, see Waters in the Middle East, supra note *, at 39-42.

¹⁵⁶ Dante Caponera, Water Laws in Moslem Countries ___ - ___ (1973).

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was surplus to the needs of the owner, condemning to the most severe eternal punishment "the man who, having water in excess of his needs, refuses it to a traveler" ¹⁵⁷ The customary communal system found expression in the Ottoman Civil Code (the *Mejelle*), ¹⁵⁸ and has been carried forward into contemporary Jordanian laws. ¹⁵⁹ Israel has enacted similar laws. ¹⁶⁰

Jordan's need has reached a point where it now appears willing to consider regional water management. ¹⁶¹ The idea of sharing the management of important water resources is, of course, particularly alarming to Israel with its sense of itself as surrounded by mortal enemies. ¹⁶² Nonetheless, out of necessity, Israel has always cooperated to some significant extent with Jordan over managing the lower reaches of the Yarmuk river, ¹⁶³ and seems willing to expand this cooperation to at least some extent. ¹⁶⁴ The role of the Palestinians, however,

¹⁵⁷ Muhammad ibn Isma'il, al Bukhari, 2 Les traditions islamiques 104, 108. See also Yahya ibn Adam, Kitab al Kharadj: Le live de l'impot foncier 72.

¹⁵⁸ Arts. 1234, 1235.

¹⁵⁹ Law. No. 12 of 1968; Regulation No. 88 of 1966.

¹⁶⁰ Israeli Water Law, 13 Laws of the State of Israel 173 (5719--1959). See generally Meir Heth, The Legal Framework of Economic Activity in Israel 112 (1967).

¹⁶¹ With Major Water Shortages, Jordan Hopes Talks Can Help, *N.Y. Times*, Dec. 10, 1991, at A10, col. 1.

¹⁶² See, e.g., Tsomet Advertisement, *Jerusalem Post*, Sept. 30, 1989, at 6.

¹⁶³ Garfinkle, *supra* note 10, 34-40, 79-83, 116, 162-73.

¹⁶⁴ Haberman, *supra* note 3.

must be resolved.

Israel has long been understandably particularly reluctant to consider any role for any future Palestinian entity to have a role in managing the water on which Israel depends.¹⁶⁵ Still, the crisis over inadequate water that is already emerging in the valley, coupled with institutional arrangements that can adequately assure Israel that it is not simply surrendering its future to its enemies and appropriate incentives from outside the region (both in the form of material support for the necessary infrastructure and appropriate guarantees behind the regional institutional arrangements), makes it possible to convert the existing tacit cooperation over water in explicit institutions of cooperative management.¹⁶⁶ Perhaps these same incentives, along with the promise of their own state or at least self-government, will be enough to bring the Palestinians along as well.

Ideally, and perhaps necessarily, communal management of water would constitute a formal legal order in place of the present informal or customary legal order. Because of the need to import water into the Jordan valley, the institutional structure might well need to extend beyond the Jordan valley itself to include to some degree the states that would be the sources of the water to be imported. To be effective in managing water and precluding conflict, the institutional structure and

¹⁶⁵ See, e.g., David Ott, Palestine in Perspective: Politics, Human Rights & the West Bank 15-17 (1980).

¹⁶⁶ Samir Saliba, in a more extensive review of the options briefly addressed here, reached similar conclusions. Saliba, supra note 4, at 113-152.

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formal legal order would not only have to embody concepts of cooperative management, but it would have to be able:¹⁶⁷

- (1) to determine the facts of water use in each nation;
- (2) to resolve disputes across international boundaries;
- (3) to guide responses to unusual temporary water shortfalls;
- (4) to regulate or to design and implement long-term answers to the serious permanent shortages that exist in the region: and
- (5) to enforce its decisions.

Since ancient times, water has been a central political factor in the Middle East.¹⁶⁸ Water continues to be central today. Whether such a structure as I have outlined can be negotiated over such a vital resource between actors with such deeply entrenched distrust and hostility might seem unlikely, yet

¹⁶⁷ See, e.g., Panel of Experts on Legal & Institutional Aspects of Int'l Water Res. Dev., Management of International Water Resources (1975); Dellapenna, supra note 4, at 40-45; David Le Marquand, Politics of International River Basin Cooperation and Management, in Water in a Developing World 147 (Albert Utton & Ludwik Teclaff eds. 1978); Rodgers & Utton, supra note 7; Albert Utton, International Groundwater Management: the Case of the U.S.-Mexican Frontier, in International Groundwater Law, supra note 7, at 157-188.

¹⁶⁸ Teclaff, supra note 5, at 28-32, 42-47.

the alternatives seem even more unbearable. The very importance of water makes cooperation over water more likely than conflict.¹⁶⁹ As in ancient times, the shared need for optimum management of this scarce resource can become a source of regional unity rather than regional discord. Water can become the key to building peace in the region if the two sides are now prepared to exploit this possibility actively and effectively rather than to allow themselves to drift into mutually destructive competition.

¹⁶⁹ See the text supra at notes 4-10.