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**WATER, WATER EVERYWHERE, BUT TOO FEW
DROPS TO DRINK: THE COMING FRESH WATER
CRISIS AND INTERNATIONAL ENVIRONMENTAL
LAW***

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*1999 Sutton Colloquium and McDougal Lecture***

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INTRODUCTION

I am delighted and highly honored to deliver the McDougal Lecture here at the University of Denver College of Law. I must also say that I feel quite humbled. I could never hope to do justice to the work of the late Professor Myres S. McDougal, after whom this lecture is named. Professor McDougal was one of the great legal minds of the past century, and probably the century's most original thinker in the field of international law. Anyone who tries for the first time to understand Professor McDougal's terminology and approach – an approach that has come to be known as the "Yale School" – should be prepared to come away with a headache. Or, at least with that feeling that comes from thinking about something, viewing something, in a radically different way – like seeing a Picasso for the first time.

Now, I never felt that I fully comprehended McDougal's approach, even by the time I had the great fortune of becoming a member of the International Law Commission of the United Nations. You can imagine my surprise, therefore, when the member of the Commission from Sudan, Chief Justice El-Rasheed, in commenting upon a statement I had made, called it a "McDougalian analysis." I wasn't sure whether he was complementing me on the incisiveness of my remarks, or suggesting

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that they were impenetrable! (He later assured me that he was an admirer of McDougal.)

But today my subject is quite down-to-earth. I want to talk to you about the global fresh water shortage, which in all probability will reach crisis proportions in the first decades of the next century. This subject is convenient, not only because it is near and dear to my heart, but also because it ties together the great state of Colorado and international environmental law, the theme of this colloquium.

THE HARMON DOCTRINE

I start this story in the last century, just over one hundred years ago, in the Rockies not too far west of here. It was there that actions of farmers and ranchers in the 1880s and 1890s touched off a controversy between the United States and Mexico that produced a legal theory which has become famous—or, more accurately, infamous—throughout the world. In a nutshell,¹ these Colorado farmers and ranchers began diverting so much water from the headwaters of the Rio Grande to irrigate the San Luis Valley that their counterparts in Mexico noticed a substantial drop in the flow of the river; a drop that was so great, that they feared their communities would be “annihilated,” in the words of the Mexican Minister in Washington at the time, Matías Romero.² Indeed, a U.S. Army general responsible for Texas reported that the Colorado diversions had left the Rio Grande a dry bed for five hundred miles.³

After a series of diplomatic communications on the issue between the two countries, the American Secretary of State, Richard Olney, referred the matter to Attorney General Judson Harmon. As an aside, you may think it rather odd that the State Department would ask the Justice Department for advice on international law. But at that time, the State Department did not yet have its own legal adviser's office - it was not established until 1931.⁴ Specifically, Secretary Olney asked whether Mexico's claims to Rio Grande water are supported by international law.

The views expressed in the Attorney General's response have be-

1. For a detailed discussion, see Stephen McCaffrey, *The Harmon Doctrine One Hundred Years Later: Buried, Not Praised*, 36 NAT. RESOURCES J. 965 (1996).

2. Letter from Minister Romero to Secretary Gresham (Oct. 12, 1894), reprinted in FOREIGN REL. OF THE U.S. 395 (1894).

3. Report of General Stanley to Secretary of War, Sept. 12, 1889, quoted in “Irrigation of Arid Lands—International Boundary—Mexican Relations,” H.R. REP. NO. 490A-51, 1st Sess. 3 (1890).

4. An Act for the grading and classification of clerks in the Foreign Service of the United States of America, and providing compensation therefor, of 23 Feb. 1931, Pub. L. No. 71-715, 46 Stat. 1214 (codified as amended at 22 U.S.C. § 2654 (1988)).

come known as the “Harmon Doctrine.” In essence, what Harmon said was that we could do anything we wanted within our territory, irrespective of any consequences that may befall others, because of what Professor Louis Henkin has called “the ‘S’ word”: *sovereignty*.⁵ (Does this sound familiar?) Specifically, Harmon declared, “[t]he fundamental principle of international law is the *absolute sovereignty* of every nation, as against all others, within its own territory.”⁶ As support for this proposition he relied on an opinion by none other than Chief Justice John Marshall, in which the great jurist intoned: “The jurisdiction of the nation within its own territory is necessarily exclusive and absolute. It is susceptible of no limitation not imposed by itself.”⁷ This led Harmon to conclude that while “considerations of comity” may lead to a different answer, “the rules, principles, and precedents of international law impose no liability or obligation upon the United States.”⁸

Now, whenever you hear someone make a statement about the law that is this, well, absolute, you tend to want to examine its foundations a little more closely. And in fact, when you do so, you find that Harmon’s conclusions were not supported, much less compelled, by the law as it existed at the time.⁹ Take, for example, Chief Justice Marshall’s ringing declaration about the exclusivity and absoluteness of territorial sovereignty. This dictum was uttered in a case involving, not an international river, but whether a ship, the schooner *Exchange*, was entitled to sovereign immunity. Far from deciding that the vessel could not enjoy immunity because it was in an American port, and thus under the exclusive, absolute jurisdiction of the United States, the Court concluded that the *Exchange* was, in fact, entitled to immunity. The justices, under Marshall’s wise guidance, thus recognized that there are limitations to the concept of “absolute” sovereignty—limitations that apparently escaped Attorney General Harmon.

You are probably asking yourselves, what does all this have to do with international environmental law, or even with the subject of my remarks? The answer is, everything. Because if a country really is absolutely sovereign, in the sense that it is not responsible for the consequences outside its territory of actions within it, the countries affected by those consequences would have no legal recourse—they would have to try to persuade the source state to *agree* to abate the interference. Thus, the only binding source of international environmental law would

5. Louis Henkin, *The Mythology of Sovereignty*, 1 ASIL NEWSL., Mar.-May 1993, at 7.

6. 21 Op. Att’y Gen. 274, 281 (1895) (emphasis added) [hereinafter Harmon Doctrine].

7. *Schooner Exchange v. McFadden*, 7 Cranch 116, 136 (1812), quoted in 21 Op. Att’y Gen. 274, 281.

8. Harmon Doctrine, *supra* note 6, at 283.

9. See McCaffrey, *supra* note 1, at 973-985.

be treaties, and even those would be very difficult to negotiate, given that the point of departure for negotiations would be the freedom of states to impose externalities on other states and on areas beyond the limits of national jurisdiction.

In fact, Harmon's opinion has a certain resonance with the first clause of what perhaps today may be described as the "venerable" Principle 21 of the 1972 Stockholm Declaration on the Human Environment.¹⁰ That clause tells us that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies." Fortunately, in a clear repudiation of the Harmon Doctrine, the second clause of Principle 21 tells us that this "sovereign right" of states is tempered by "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." Thus, the United States does have to be mindful of the effects in other countries—such as Mexico—of acts within its territory. Because like the United States, Mexico is also sovereign over its territory, its sovereignty too must be respected.

This principle does not apply only to rivers, of course. It applies much more broadly, to everything from desertification and biological diversity to climate change and depletion of the stratospheric ozone layer. Though now nearly thirty years old, Principle 21's continued vitality is demonstrated by its inclusion, virtually verbatim, in the 1992 Rio Declaration on Environment and Development as Principle 2, and by its recitation in a variety of recent treaties and other instruments.¹¹

But what of the dispute between the United States and Mexico in the 1890s? Were Mexico's polite entreaties met with all the subtlety of a sledgehammer in the form of Harmon's stark dictum? Initially, yes. But the controversy ultimately was resolved in a 1906 treaty entitled the Convention Concerning the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes.¹² This was in fact the very first treaty concluded by the United States dealing exclusively with interna-

10. *Report of the U.N. Conference on the Human Environment*, U.N. Doc. A/CONF.48/14/Rev.1 at 3 (1973), *reprinted in* 11 I.L.M. 1416 (1972).

11. *See, e.g., The Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*, June 17, 1994, pmbl., U.N. Doc. A/AC.241/15/Rev.3, *reprinted in* 33 I.L.M. 1332 (1994) (referring to Principle 2 of the Rio Declaration); *Convention on Biological Diversity*, June 5, 1992, *reprinted in* 31 I.L.M. 818 (1992); *The Framework Convention on Climate Change*, May 9, 1992, pmbl., *reprinted in* 31 I.L.M. 849 (1992); and *Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests*, princ. 1(a), *reprinted in* 31 I.L.M. 881 (1992).

12. *The Convention Concerning the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes*, May 21, 1906, T.S. No. 455 (emphasis added).

tional watercourses. The agreement essentially allocated half of the flow of the Rio Grande to each country—an allocation, which, though rather crude by today's standards, was evidently accepted as being "equitable" by both of them. That the two countries were able to reach this agreement shows that no matter what states may say—perhaps in order to stake out a negotiating position—they tend ultimately to resolve actual controversies in a way that takes the interests of other affected states into account, as is counseled by the second clause of Principle 21.

The next question, then, is what bearing does this have on the scarcity of fresh water? To answer that question, let's first review a few facts about the global water supply.

THE GLOBAL WATER SUPPLY

The absolute quantity of water on Earth does not change appreciably. It is thought to have been about the same for billions of years.¹³ But ninety-seven percent of all water is salt water. It is undrinkable unless passed through expensive and energy-intensive desalination facilities. That leaves only three percent of all the water on Earth as fresh water. But there's a catch here, too, because most of that three percent is locked in polar ice caps, glaciers, and deep underground aquifers. It is effectively beyond human reach.¹⁴ What this means is that of the total fresh water reserves on Earth, only three-tenths of one percent is found in rivers and lakes. Rivers, which have been the focus of international legal regulation, contain a scant .004 percent (four-thousandths of one percent) of the world's fresh water. The largest share of fresh water that is available to humans is not on the surface at all, but underground. Groundwater constitutes about thirty percent of global fresh water reserves – and yet nearly all of the rules of international law concerning shared freshwater resources were developed to govern surface water, the veritable tip of the iceberg of the world's freshwater supply.

Now, I have said that the quantity of fresh water on Earth does not change on an absolute basis. How then, can I maintain at the same time that there is growing scarcity? The answer is that the amount available to each individual changes with the growth of the human population. It is now a commonplace that while it took all of human

13. It was only recently discovered that Earth has been bombarded, for millennia, by small balls of ice from space. N.Y. TIMES, 29 May 1997, at 1. These "space snowballs" may add an inch of water to Earth's surface every ten to twenty thousand years. This is not an insignificant amount, but offers little hope to humans in the next several centuries. *Id.*

14. Peter Gleick, *An Introduction to Global Fresh Water Issues*, in WATER IN CRISIS, 3 (P. Gleick ed., 1993) [hereinafter *Global Fresh Water*.].

history up to the year 1950 for Earth's population to reach two and a half billion, it took less than forty years for it to double, to five billion. And by the year 2000—next year—it will have topped the six billion mark. If present trends continue, the United Nations estimates that after 2100 the world's human population will stabilize at around twelve billion.¹⁵ And, "[o]ver 90% of all future population increases will occur in the developing world."¹⁶

What does this mean in terms of the availability of fresh water? "In 1850, the average amount of water available per person worldwide was 43,000 cubic meters per year; today it is under 9,000—a change brought about only by increases in population."¹⁷ Experts believe that, solely because of population growth, in thirty years over thirty countries will be under water "stress," defined as between 1,000 and 17,000 cubic meters of available fresh water per capita; and that more than thirty countries will be under conditions of water "scarcity," meaning that they will be unable to provide one thousand cubic meters of water per person per year.¹⁸ In some countries the situation is much worse. In 1990 there were twelve countries in which water availability was less than five hundred cubic meters per person per year; this number is projected to increase to nineteen countries by 2025.¹⁹ Put another way, by the year 2025, thirty-five percent of the global population will live in some fifty-two countries suffering from water stress or chronic water scarcity.²⁰ By contrast, in 1990 a mere six percent of the world's population were living under these conditions.²¹

UNEVEN DISTRIBUTION

But the mushrooming human population does not by itself mean there is insufficient fresh water to go around. If you took the total

15. UNITED NATIONS POPULATION DIVISION, LONG-RANGE WORLD POPULATION PROJECTIONS: TWO CENTURIES OF POPULATION GROWTH, 1950-2150 (United Nations, New York 1991).

16. Peter Gleick, *Water in the 21st Century*, in *WATER IN CRISIS*, *supra* note 14, at 105 [hereinafter *Water in the 21st Century*].

17. Peter Gleick, *Water Resources: A Long-Range Global Evaluation*, 20 *ECOLOGY L.Q.* 141, at 143 (1993) (footnote omitted).

18. *Water in the 21st Century*, *supra* note 16, at 105-106.

19. *Ibid.*, 106. Most of these countries are in Africa and Asia. Gleick notes that 500 m³ per person per year "might suffice in a semi-arid society with extremely sophisticated water management, as in Israel, but even here water resources scarcity is already causing political and social stresses." *Ibid.*

20. ISMAIL SERAGELDIN, TOWARD SUSTAINABLE MANAGEMENT OF WATER RESOURCES 2 (monograph, The World Bank, Washington, D.C. 1995); *Review of Sectoral Clusters, First Phase: Health, Human Settlements and Freshwater, Freshwater Resources, Report of the Secretary-General*, U.N. ESCOR, 2d Sess., at 3, U.N. Doc. E/CN.17/1994/4 (1994) [hereinafter Report of the Secretary-General].

21. *Report of the Secretary-General*, *supra* note 20, at 3.

available water supply and divided it by the number of people on the planet, there would be plenty of water to go around. The problem is it's in the wrong places.²² Turkey's got a lot; the Middle East has very little. British Columbia has an abundance; southern California is arid. This is the natural state of affairs. But it has proven to be a challenge to human ingenuity. You may have heard of some of the fantastic schemes for bringing water to areas under water stress or scarcity. Thus we have the "Peace Pipeline," through which Turkey proposes to bring water, on commercial terms, to water-short countries of the Middle East and Persian Gulf.²³ Then there is the spectacle of icebergs being towed from the seas off Antarctica, in twelve-mile-long "trains," to water-starved regions²⁴—for a price, of course. Water may be shipped not only in tankers, which has not yet proved commercially viable,²⁵ but also, as envisioned by would-be entrepreneurs, in so-called "Medusa Bags", over half a kilometer long, from Turkey to countries in the Middle East.²⁶ Likewise, British Columbia has discovered a market for its excess water in southern California,²⁷ setting up a battle between free-trade advocates under the banner of NAFTA and Canadian federal and provincial governments, which have halted bulk exports for the time being at least.²⁸

22. See, e.g., R. C. WARD, *PRINCIPLES OF HYDROLOGY*, 24-25 (2d ed. 1975).

23. For a general description, see Stephen C. McCaffrey, *Water, Politics and International Law*, in *WATER IN CRISIS*, *supra* note 14, at 92, 94.

24. A 1973 RAND Corp. report indicated that icebergs could be towed to needy areas in twelve-mile-long "trains." "According to researchers John Hult and Neill Ostrander, the trains would be driven by electric propellers, nudged by ice-breaking ships and escorted by a floating nuclear power plant." Stephen Braun, *A Deluge of Drought Solutions*, *L.A. TIMES*, June 21, 1990, at 1, col. 1. See also, *Iceberg Water Project Promoted*, APS DIPLOMAT RECORDER, ARAB PRESS SERV. ORG., Feb. 19, 1994, available in 1994 WL 2227379.

25. See the proposal prepared by James Cran, cited in the following footnote, at 11 (referring to the "vain efforts . . . to develop water markets for surplus supertankers in the mid-1980's.")

26. Under the principal proposal, water would be transported from the Manavgat River in "Medusa bags," very large (660 meters long), slow moving, flexible barges, to Haifa and Gaza. Four deliveries would be made per year, each of 500 million cubic meters of water. The water would be then be supplied to Gaza, Israel and the Egyptian Sinai, and would make other water, currently pumped from the Sea of Galilee to Haifa, available for delivery to Jordan. Deliveries to such water-short areas as Cyprus, Malta, and the Greek Islands would also be possible. James Cran, *THE SUPPLY OF WATER TO JORDAN, ISRAEL, GAZA AND EGYPT FROM TURKEY BY MEDUSA BAG* (Oct. 15, 1993) (on file with author). "Paper studies showed that a bag with the content of five supertankers could be constructed for about 1/80 the cost." *Id.*, at 11.

27. See Heather Scoffield, *B.C. Water Export Ban Brings U.S. Lawsuit*, *GLOBE & MAIL* (Toronto, Can.), Dec. 9, 1998, at B1.

28. See *id.*; Colin Nickerson, *Water-Rich Canada Shuts the Spigot*, *BOSTON GLOBE*, Mar. 4, 1999, at A1; and Anthony DePalma, *Free Trade in Fresh Water? Canada Says No And Halts Exports*, *N.Y. TIMES*, Mar. 8, 1999, at A1.

CONFLICTS WITHIN INTERNATIONAL DRAINAGE BASINS

Unfortunately, grandiose schemes such as these have not solved, and probably will not solve, the world's major water problems. It has been said that "water flows uphill to money," but the reality is that most water-scarce areas of the world are poor.²⁹ More importantly for our purposes, water is often unevenly distributed as between different countries within the same watershed. International drainage basins—those that include parts of the territories of more than one country—constitute nearly half of Earth's land area and some 60 percent of both Africa and Latin America.³⁰

If we look at these drainage basins, we find that the upstream areas are often "humid," being blessed with ample rainfall, while the downstream regions are more arid. Growing crops in arid regions means irrigation, and historians tell us that in ancient times, development of irrigation gave rise to the so-called "hydraulic civilizations" of Egypt and Mesopotamia.³¹ Yet the same thing generally did not happen in the upper basin countries, and this is understandable when you think about it. Either these countries did not need to develop irrigation because they did not need to irrigate—there being plenty of rain water—or their topographies were so mountainous that they were unsuited to this form of agriculture. Another important factor, of course, is that it was only relatively recently that humans developed the capability to build large dams that can provide water for large-scale irrigation, as well as serving other purposes.

But what happens when conditions change and the upstream countries decide they want to develop their water resources, as Turkey has and Ethiopia would like to, for example? What happens is a situation that is very similar to the one between Mexico and the United States that I described at the outset: irrigation and other uses that have been established in downstream countries for centuries, or even millennia, may be threatened. This presents an apparent dilemma: If the Harmon Doctrine prevails, upstream countries may develop their water resources without regard to the consequences in the downstream states. But if we tell the upstream countries, "No, don't touch the water flowing through your territory, because downstream country X will be injured," that doesn't seem altogether fair, either.

Here international water law has borrowed a page from the United

29. A common cliché. *E.g.*, it was used by Guy Le Moigne, Senior Water Resources Advisor, World Bank, at the Freshwater Consultative Forum, Geneva, Switzerland, December 13-16, 1993. Sometimes a political element is added: "Water flows uphill to money and power."

30. *Global Fresh Water*, *supra* note 14, at 9.

31. *See, e.g.*, LUDWIK A. TECLAFF, *THE RIVER BASIN IN HISTORY AND LAW* 15 (1967).

States, but fortunately it is not the page that the Harmon Doctrine is written on. No, it is the page, or pages, of the opinions of the United States Supreme Court in which the doctrine of equitable apportionment was developed in interstate apportionment cases. The idea is based on something that countries, like children, don't like to do: compromise. What constitutes an "equitable apportionment," or "equitable utilization," in a given case depends upon an evaluation of all relevant factors, including, yes, existing uses; but also including alternatives to those uses; potential water conservation measures that may be taken; the importance or necessity of the new, upstream use; its efficiency; geographic and climatic considerations; and so on.³² After all these factors have been weighed, it may—and usually will—be possible to strike a balance which would permit both the upstream and the downstream state to utilize the river, albeit probably not in the precise way in which they would have if they could have made the decision unilaterally.

SHARING THE RAIN

But even if we assume that the doctrine of equitable utilization will come to the rescue in some disputes over international rivers, we are still left with many serious—almost hopeless—cases of severe water shortages. I referred earlier to the fact that by 2025 there will be some fifty-two countries—that's around a fourth of all the countries in the world—accounting for thirty-five percent of the world's population, that will suffer from water stress or chronic water scarcity. Many of these countries do not share a river with another country. So, for them, refusal to share water equitably is not the problem. Instead, the problem, as I indicated earlier, is uneven distribution.

Now, all water in the seas, rivers, lakes and even most aquifers is in constant motion as part of the hydrologic cycle. Simply put, water evaporates from the sea, condenses in the air, falls to Earth as rain, and flows back to the sea again. The question I would like to put to you is, In view of the fact that water is constantly in motion in the hydrologic cycle, can we really say that any one country "owns" the water in its territory? The virtually universal rejection of the Harmon Doctrine suggests a negative answer to that question. But can we go further? The water is there only temporarily, after all, and even while in the country, much of it evaporates to start the cycle all over again. Does the international community not have an interest in the hydrologic cycle, in much the same way that it has an interest in the protection of the climate system or of the high seas? Is the water moving through

32. See The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, art. 5 and 6, U.N. Doc. A/RES/51/229, *reprinted in* 36 I.L.M. 700 (1997).

the hydrologic cycle *res communis*, something belonging to all, so that it is subject to regulation by the international community? Or is it *res nullius*, something belonging to nobody, like abandoned property, so that countries may dispose of it however they please? Our international legal system seems to have treated water more as *res nullius* than *res communis* until now. But can that regime endure?

You are probably thinking that it is fanciful to regard water as something "extraterritorial," something that states don't have absolute rights to dispose of as they see fit. But, of course, this is one of the lessons of the Harmon Doctrine—and, indeed, of Principle 21. The fact that a state is sovereign over its territory doesn't mean it has no responsibilities toward other states, especially with regard to shared natural resources. And water, especially when viewed in the context of the hydrologic cycle, would seem to be the quintessential "shared natural resource." As such, all fresh water should be shared equitably by all states.³³ The scope of application of the principle of equitable allocation should not be confined to states that share terrestrial elements of the hydrologic cycle, such as an international watercourse.

I therefore wonder whether the day is really so far away when water-short states begin to assert a "right" to a portion of the water that evaporates from areas of the sea beyond the limits of national jurisdiction.³⁴ The high seas, by definition, are not under the jurisdiction of any state. They are a "commons," an area that can only be regulated and administered by, or on behalf of, the entire international community. Certainly the amount of water that evaporates from the high seas could be calculated. The actual and projected water usage by states is already known, at least approximately.³⁵ The amount of water needed by water-short countries could be determined on the basis of minimum daily water requirements.³⁶ This water could then be provided through a mechanism administered by an appropriate United Nations agency.

33. See the "UNEP Guidelines on Shared Natural Resources," Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, Principle 1, United Nations Environment Programme Governing Council Decision, May 19, 1978, G.A. Res. 3129 (XXVIII), reprinted in 17 ILM 1097 (1978).

34. I am grateful to Dr. Malin Falkenmark, whose question "who owns the rain" asked at the Freshwater Forum, held at Geneva, December 13-16, 1993, opened my mind to the need to think in new ways about rights in the world's fresh water resources. See generally United Nations, *Freshwater Consultative Forum, First Session, Report of the Meeting* (1994).

35. See, e.g., the tables in part II.H, Water and Human Use, in WATER IN CRISIS, *supra* note 14, at 373, 373-430.

36. See Peter Gleick, *Basic Water Requirements for Human Activities: Meeting Basic Needs*, 21 WATER INT'L 83 (1996) (recommending a basic water requirement of 50 liters per person per day). Gleick demonstrates "the current failure of many nations to provide even this basic level of clean water to their citizens" *id.*

The water itself could be procured in a variety of ways, such as donations by water-rich countries, as part of their foreign-aid programs, or purchases from countries that may be water-rich but in need of development assistance; extractions from icebergs; and desalination of seawater, to name a few.

While such a system might seem far-fetched at first blush, this would not be the first time international law recognized rights of states in natural resources located in "the commons" because those states were geographically disadvantaged. As is well known, such rights were conferred upon landlocked and geographically disadvantaged states in respect of the living resources of the sea by the United Nations Convention on the Law of the Sea (UNCLOS).³⁷ For example, Article 70, paragraph 1, of UNCLOS provides:

Geographically disadvantaged States shall have the right to participate, on an equitable basis, in the exploitation of an appropriate part of the surplus of the living resources of the exclusive economic zones of coastal States of the same subregion or region, taking into account the relevant economic and geographical circumstances of all the States concerned and in conformity with the provisions of this article and of articles 61 and 62.³⁸

Articles 61 and 62 concern, respectively, conservation and utilization of living resources. The expression "geographically disadvantaged states" is defined as:

[C]oastal States, . . . whose geographical situation makes them dependent upon the exploitation of the living resources of the exclusive economic zones of other States in the subregion or region for adequate supplies of fish for the nutritional purposes of their populations or parts thereof, and coastal States which can claim no exclusive economic zones of their own.³⁹

These provisions of the Law of the Sea Convention recognize rights in states for which geography has caused hardships. This is, of course, precisely the case with regard to the arid states of the world. The rights the Convention recognizes are in fact entitlements to an equitable share of natural resources that would otherwise be under the jurisdiction of other states. The fact that the international community has accepted

37. United Nations Convention on the Law of the Sea, U.N. Doc. A/CONF.62/122 (1982), reprinted in 21 I.L.M. 1261 (1982), articles 69 ("Right of land-locked States") and 70 ("Right of geographically disadvantaged States").

38. *Id.*

39. *Id.* at art. 70(2).

such rights represents a recognition that states should not have to suffer geographically-caused hardships alone. Rather, other states that are more fortunate may be called upon to share their resources, on an equitable basis, with those that are disadvantaged, as matter of international solidarity. The same principles would seem to apply with equal or greater force to the sharing of fresh water.

Implementation of such a right would not be a simple matter, but neither would it be impossible. The machinery created in Part XI of UNCLOS for allocation of the resources of the deep seabed, as modified by the 1994 Implementation Agreement,⁴⁰ could provide a model. Alternatively, would it be out of the question to entrust the presently quiescent United Nations Trusteeship Council with the responsibility to determine, say, the equitable share of hydrologically-disadvantaged states in this water on the basis of a number of factors? Such factors could include the available indigenous water supply, human need, efficiency of use of indigenous water, availability of water from other countries—even on the same international watercourse—or from icebergs calved by Antarctica, and so on. After all, what we are faced with is not a problem of global water shortage per se, but one of many severe regional and local water shortages. Perhaps part of the solution, then, could lie in this kind of redistribution based on the theory that at least the water that evaporates from the high seas is *res communis* and should be allocated equitably among the peoples of the world.

To be sure, certain safeguards would be appropriate to prevent abuse and to discourage undue escalation of demand. For example, since the problem of scarcity is caused or exacerbated in part by population growth, provision of additional water supplies could be accompanied by education programs and measures to empower women.

Large scale water transfers are also seen by some specialists as leading to unsustainable development. The American West is an oft-cited example.⁴¹ Care would therefore have to be taken to ensure that water supplied under such a program would be used only to satisfy minimum per capita water requirements, and not for unrelated development projects.

With safeguards such as these in place, I believe a system of equi-

40. Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of December 10, 1982, *reprinted in* 33 I.L.M. 1311 (1994). This agreement cleared the way for the United States and other industrialized states that had objected to Part XI to accept the Convention. It was adopted by the United Nations General Assembly in G.A. Res. 48/263 (July 28, 1994); the Agreement, which is annexed to the resolution, was opened for signature the following day, and it has been signed by virtually all industrialized states. *Id.*

41. See Malin Falkenmark & Gunnar Lindh, *Water and Economic Development, in* WATER IN CRISIS, *supra* note 14, at 80, 87.

table sharing of the water in the hydrologic cycle could work. This, or something like it, will *have* to work if we are to avoid the “water wars” that some have predicted in the next century.⁴²

Now, Attorney General Harmon most assuredly would not have embraced these ideas, and I’m not sure what Myres McDougal would have thought of them, either. But I hope that at least they might serve—even at this early hour—as food for thought for some of you who were good enough to come this morning. Thank you for your kind attention.

42. See, e.g., Joyce Starr, *Water Wars*, 82 FOR. POL’Y 17 (1991).