

## FINDING A WATER ETHIC THROUGH RELIGION, AESTHETICS, CONFLICTS & THE LAW

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## FINDING A WATER ETHIC THROUGH RELIGION, AESTHETICS, CONFLICTS & THE LAW

### I. INTRODUCTION

You arrive home exhausted and covered in sweat from the humid air and the long day at work. The dog is barking, your wife is yelling at you because you forgot to fix the light in the kitchen, and the next time your baby needs his diaper changed, you are up. A stack of bills waits for you on the kitchen counter. You also need to wash your wife's car tonight because she has to drive some clients around tomorrow. Right now, however, all you want to do is take a shower and get into some clean clothes. You know that once you feel refreshed, you will be able to handle all the little fires waiting for you. You walk into the bathroom and strip off your sweaty shirt and jeans. You step into the shower and turn the knobs anticipating the cool, clean flow of water from the silver shower head. But wait! You never feel that cool tingle against your skin because there is no water! Suddenly, all of the other problems at home seem to quell in the utter emergency you are experiencing. Without water, you will not be able to cook dinner tonight, wash dishes, wash the car, bathe the baby, or take your own shower. Needless to say, this is going to be a long night!

Just about everyone has experienced a feeling of helplessness because of plumbing problems. But the average person in a developed country like the United States does not think about water's importance until the water is not there. Then, that person's need for water usually takes priority over all other problems.

Water is important to humans not only for household uses, but also for manufacturing, agriculture, ecological preservation, recreation, and many other interests.<sup>1</sup> Legislators developing water policies often cannot reconcile conflicting water interests because they do not

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<sup>1</sup> See discussion *infra* Part I  
I.

understand their regions' water ethics.<sup>2</sup> Ethics philosophers and legal analysts have performed extensive studies on environmental ethics and human values.<sup>3</sup> These same experts, however, have neglected to separate water ethics from environmental ethics.<sup>4</sup> In this article, I do not speculate on what the ideal water ethic should be. Instead, I use religion, aesthetics, water conflicts, and the law to exhibit that no single water ethic exists.<sup>5</sup> Each continent, country, and region has its own water interests and water ethics.<sup>6</sup> Governments and environmental lobbyists should educate themselves on their regional water ethic and their neighboring countries' water ethics before writing policies or lobbying for policy changes.<sup>7</sup> By understanding their own water ethic, and the water ethic of other nations, governments can more effectively allocate limited water resources.<sup>8</sup>

## II. WATER ISSUES

Water is essential for human life, for manufacturing, for agriculture, and for ecological preservation.<sup>9</sup> Although fresh water is so important, it is not readily available in every nation. "While water accounts for 70% of the earth's surface, more than 97% of earth's water is seawater, and most of the remaining 3% is found in glaciers and aquifers too deep to be accessed."<sup>10</sup> Although earth's natural water cycle of evaporation and rainfall should provide

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<sup>2</sup> See discussion *infra* Part V.

<sup>3</sup> See discussion *infra* Part III.B.

<sup>4</sup> See discussion *infra* Part III.B.

<sup>5</sup> See discussion *infra* Part V.

<sup>6</sup> See discussion *infra* Parts II, V.

<sup>7</sup> See discussion *infra* Part V.

<sup>8</sup> See discussion *infra* Part V.

<sup>9</sup> See World Health Organization (WHO), *World Health Organization Brief: The Right to Water* 6 (Nov. 2003) (on file with author), available at [http://www.who.int/water\\_sanitation\\_health/rightwater/en/](http://www.who.int/water_sanitation_health/rightwater/en/) [hereinafter *The Right to Water*].

<sup>10</sup> Chad West, *Show Me the Water! It is Time for Congress to Acknowledge the Human Right to Water Access*, 36 ENVTL. L. REP. 10047 (2006) (citing SANDRA POSTEL, *LAST OASIS* 27 (W.W. Norton & Co. 1997)). Water distribution on earth is as follows: Oceans and seas (97.5%); polar

enough water to meet all water demands, water is not always located where it is needed.<sup>11</sup> Water location is not the only problem; the world's population has tripled and water demand has increased six-fold over the last century.<sup>12</sup> Because of these water issues, water has become increasingly important to both citizens and legislatures.<sup>13</sup>

Before discussing the concept of a *water ethic*, it is useful to first acknowledge how public and private interests play roles in water policy decisions. Some of the interests that influence legislative policies include water for: (1) human preservation and sustainment; (2) manufacturing and industry; (3) agriculture; (4) marketing and sales; (5) navigation; (6) recreation and private ownership; and (7) ecological preservation. Water policy is also impacted by international borders and by the composition of the water (whether it is on the surface or underground). The following sections introduce these water interests and provide examples of how the interests can impact legislators' international and national water policy decisions.

#### A. Domestic Uses

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ice caps and glaciers (2.05%); deep groundwater (750 – 5000 meters) (0.38%); shallow groundwater (less than 750 meters) (0.30%); lakes (0.01%); soil moisture (0.005%); water in the atmosphere (0.001%); rivers (0.0001%); water in plants and animals (0.00004%). CONSTANCE ELIZABETH HUNT, *THIRSTY PLANET* 42 (2004).

<sup>11</sup> JEFFREY ROTHFEDER, *EVERY DROP FOR SALE* 8 (2001). The earth receives 40,000 cubic kilometers of water per year, which is enough to sustain life and supply the industrial and agricultural communities, but the problem is the location of the water. *See id.* Specifically, countries like Australia and Iraq have water shortages while countries like Canada have water excesses. John Peet, *Priceless*, *ECONOMIST*, July 17, 2003 (on file with author), *available at* [http://www.economist.com/displaystory.cfm?story\\_id=1906846](http://www.economist.com/displaystory.cfm?story_id=1906846). Over time, this unequal dispersion of water has increased the gap between those who have access to water and those who do not. ROTHFEDER, *supra* note 11 at 8.

<sup>12</sup> John Scanlon et al., *Water as a Human Right?* 1 (International Union for Conservation Environmental Policy and Law Paper. No. 51) (2004) (on file with author), *available at* <http://www.waterandnature.org/pub/EPLP51EN.pdf> [hereinafter *Water as a Human Right*]. Further, severe water shortages today will only get worse; by 2050, four billion people will experience water shortages. Dan Vergano, *Water Shortages Could Leave Worth in Dire Straits*, *USA TODAY*, Jan. 27, 2003, at 9B.

<sup>13</sup> *See* Scanlon, *supra* note 12 at 1.

Water's most important use is arguably to preserve human life and sustenance. In developed countries, water is commonly used by humans for drinking and food (7%), bathroom appliances (20%), bodily hygiene (39%), laundry (12%), and for other purposes (22%).<sup>14</sup> Average adults normally consume two to three liters of water daily through eating and drinking.<sup>15</sup> Similar amounts are released through respiration, sweat, and urine.<sup>16</sup> People begin feeling thirsty after losing only 1% of bodily fluids while risking death if fluid loss nears 10%.<sup>17</sup>

In addition to individual water uses, household water uses—particularly for sanitation—play important roles in society.<sup>18</sup> Household water use is primarily determined by availability and cost, and there are vast differences in regional water consumption statistics world-wide.<sup>19</sup> For example, the average domestic water withdrawal per person per day is 47 liters in Africa, 85 liters in Asia, 334 liters in the United Kingdom (UK), and 578 liters in the United States.<sup>20</sup>

The major water-for-consumption issues that developed countries like France, the United States, and Spain encounter involve water quality and water distribution.<sup>21</sup> In many developing countries, however, simple access to water for consumption can be a challenge. In fact, it is

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<sup>14</sup> See Henri Smets, *Water for All* 10 (The Water Academy) (2004) (on file with author). See also HUNT, *supra* note 10 at 44 (noting that 70% of the human body is made up of water).

<sup>15</sup> HUNT, *supra* note 10 at 44.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* (citing D. Hinrichson et al., *Solutions for a Water-Short World* (The Johns Hopkins University Center for Public Health) (1997)).

<sup>18</sup> *Id.*

<sup>19</sup> *See id.*

<sup>20</sup> *Id.*

<sup>21</sup> *See, e.g., Spain's Government Sees Support Slide Away*, NEWS FROM SPAIN, Oct. 10, 2005 (on file with author), available at <http://www.euroresidentes.com/Blogs/2005/10/spains-government-sees-support-slide.htm> (discussing Spain's water distribution problems); *Iberian Misery as Drought Bites*, BBC NEWS, June 13, 2005, available at <http://news.bbc.co.uk/2/hi/europe/4086864.stm> (same); Smets, *supra* note 14 at 12 (discussing France's water distribution problems). See also HarmoniCop, Project Downloads, [www.harmonicop.info/](http://www.harmonicop.info/) (follow "downloads" hyperlink, then click on any of the hyperlinks in this section for examples of water distribution problems and analyses in Western Europe).

common for water consumption in poor countries to be as low as 20 liters per person.<sup>22</sup> Consumption is so low because many of these developing nations have little or no safe water access.<sup>23</sup> Specifically, almost one billion people worldwide do not have available sources of clean drinking water, causing famine, starvation, and even death.<sup>24</sup> This problem, coupled with the fact that two billion people lack access to sanitation, is causing deaths and diseases throughout the world.<sup>25</sup> “Upward of 10 million deaths per year, mostly among the young and elderly, are caused by water-related diseases, chiefly cholera and dysentery. Nearly 250 million new cases [of these diseases] are reported annually.”<sup>26</sup>

Governments of developing countries, when designing and enacting water policies, often do not have the resources or experience to adequately provide and preserve clean drinking water for all citizens.<sup>27</sup> These deficiencies, when compounded with interests from environmentalists, industries, and other nations, make water policy development very difficult.

### *B. Manufacturing and Industrial Interests*

Manufacturing and industrial interests often compete with citizens’ drinking water requirements, consequently impacting national policy development. In developed nations, most

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<sup>22</sup> *Id.*

<sup>23</sup> *See id.*

<sup>24</sup> *See id.*

<sup>25</sup> Guerquin et al., *World Water Actions, Making Water Flow for All* xviii (World Water Council Water Action Unit) (2003).

<sup>26</sup> ROTHFEDER, *supra* note 11 at 9. Preventable water-related diseases kill between 10,000 and 20,000 children every day. PETER GLEICK, *THE WORLD’S WATER 2003-2004* 2 (Island Press 2003) [hereinafter *THE WORLD’S WATER 2003-2004*]. *See also* Amy Hardberger, *Life, Liberty, and the Pursuit of Water: Evaluating Water as a Human Right and the Duties and Obligations it Creates*, 4 N.W. U. J. INT’L HUM. RTS. 331, 331, available at <http://www.law.northwestern.edu/journals/jihr/v4/n2/3> (noting that in some third-world countries, over 50% of citizens have little or no access to safe water).

<sup>27</sup> Even developed countries like the United States have problems providing clean water to all citizens. *See generally* West, *supra* note 10 (discussing the drinking water problems in the United States, where 1.9 million Americans, mostly along the United States-Mexico border, have little or no water access).

industrial water use is for cooling thermal-electric power plants.<sup>28</sup> “Manufacturing and processing industries, such as chemical production, petroleum refining and pulp and paper production [and] food processing, constitute another class of uses. Cleanup, sanitary and fire protection account for most of the balance of industrial water uses.”<sup>29</sup> To make consumer products such as carpets, steel, beer, cotton, rubber, and plastic, industries use vast amounts of water.<sup>30</sup> The United States, for example, uses 28 billion gallons of freshwater each day for industrial production.<sup>31</sup>

Still, industrial water use has more implications for water *quality* than it does for *quantity*.<sup>32</sup> Effluent discharges from some industries harm freshwater resources while other industry discharges actually improve the quality of freshwater resources.<sup>33</sup> Harmful discharges include toxins, chemicals, and other discharges that can alter water temperatures.<sup>34</sup> Conversely, helpful discharges result from industries such as pharmaceutical and microelectronic companies

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<sup>28</sup> See Robert A. Young, *Applications 1: The Case of Water Used in Intermediate Goods*, MEASURING ECONOMIC BENEFITS FOR WATER INVESTMENTS AND POLICIES 6 (1996), reprinted in Steven Renzetti, THE ECONOMICS OF INDUSTRIAL WATER USE 73 (2002) (citing PETER H. GLEICK, WATER IN CRISIS: A GUIDE TO THE WORLD’S FRESH WATER RESOURCES (1993); P. ROGERS, AMERICA’S WATER: FEDERAL ROLES AND RESPONSIBILITIES 285 (1993) [hereinafter WATER IN CRISIS]; W.B. Solley et. al, *Estimated Use of Water in the United States*, U.S. Geological Survey (1990)).

<sup>29</sup> *Id.* See also JOHN WARFIELD SIMPSON, DAM! 182-83 (discussing the key role that water played in the development of Silicon Valley, California).

<sup>30</sup> See Efcom, Water Facts, <http://www.efcom.com/wswra/waterfacts.htm> (last visited Jan 31, 2006). To produce an average living room carpet, 50,000 gallons of water are required. *Id.* Further, 40,000 gallons of water are required to produce the steel for one automobile, fifteen hundred gallons for a barrel of beer, 100 gallons for a pound of cotton, 55 gallons for a pound of synthetic rubber, and 24 gallons for a pound of plastic. *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> HUNT, *supra* note 10 at 46.

<sup>33</sup> See *id.*

<sup>34</sup> *Id.*

that clean polluted water, use the water for producing products, and then discharge the clean wastewater back into the ecosystem.<sup>35</sup>

Because industries use so much water, and then discharge effluents into freshwater resources, governments often consider industrial uses and needs when designing water policies.<sup>36</sup> In most countries, however, industrial needs fall in the shadow of the extensive agricultural water needs.<sup>37</sup>

### *C. Agriculture*

Water and agriculture have historical roots almost as old as man.<sup>38</sup> Today, water is more important to agricultural development, as it consumes approximately 85% of fresh water consumption worldwide.<sup>39</sup> Further, in most developing countries, agriculture accounts for as much as 90% of fresh water usage.<sup>40</sup> Therefore, governments addressing water issues should

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<sup>35</sup> *See id.*

<sup>36</sup> *See* discussion *supra* Part II.B.

<sup>37</sup> *See* discussion *infra* Part II.C.

<sup>38</sup> AMY VICKERS, HANDBOOK OF WATER USE AND CONSERVATION 330 (2001).

The practice of irrigation dates back 6,000 years to the Sumerians, members of one of the earliest known civilizations in Mesopotamia. Through the ages, irrigation has transformed many sunny and fertile but arid regions of the world into useful, crop-producing lands. For 2,000 years, Sumerian farmers produced wheat and barley with irrigation water diverted from the Euphrates River. The great food-producing regions of California's Central Valley, the Great Plains of the western United States, northern China, Egypt, and northwest India are just a few dramatic examples of the power of irrigation to coax life out of dry, sun-baked soil.

*Id.* (citations omitted)

<sup>39</sup> *See* Vergano, *supra* note 12, at 9B. In 2003, United States farmers used over 28 trillion gallons of water for irrigation. *See* U.S. DEP'T OF AGRIC., IRRIGATION BY ESTIMATED QUANTITY OF WATER APPLIED: 2003 and 1998, Table 12, *available at* <http://www.nass.usda.gov/census/census02/fris/fris03.htm> (follow "PDF" hyperlink for Table 12).

<sup>40</sup> West, *supra* note 10, at 10058, (citing Peet, *supra* note 11). For statistical data of water quantity withdraws from 128 developing countries, *see* FOOD AND AGRIC. ORG. OF THE UNITED NATIONS, AQUASTAT DATABASE, <http://www.fao.org/ag/agl/aglw/aquastat/dbase/index.stm>



consider agricultural concerns alongside with domestic water concerns.<sup>41</sup> Many of these agriculture concerns stem from outdated irrigation techniques or from outdated pricing schemes.

While only 17% of the world's cropland is irrigated, these lands produce one-third of the world's total food supply.<sup>42</sup> "Carried out correctly, and with adequate drainage, irrigation can provide farmers with the control of water applications necessary to grow modern, high-yielding crop varieties and increase the number of annual harvests from one to two or three."<sup>43</sup> However, outdated irrigation techniques have caused a recent reduction in average crop yields worldwide.<sup>44</sup> "Irrigation, if carried out incorrectly, can cause waterlogged and salted farmland, declining and contaminated aquifers, shrinking lakes and inland seas, and the destruction of the aquatic ecosystems."<sup>45</sup>

Some environmentalists assert that governments should also consider water pricing in irrigation.<sup>46</sup> "Pricing water properly is most important in agriculture . . . . [However], [g]overnments often build, maintain, and operate irrigation systems with public funds, and then charge farmers next to nothing for these expensive services."<sup>47</sup> For example, in Mexico, irrigators pay approximately 11% of their water's full cost, while Indonesian and Pakistani

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(follow "Aquastat Online Database" hyperlink; perform search for desired country) (last visited Feb. 3, 2006).

<sup>41</sup> *Id.*

<sup>42</sup> HUNT, *supra* note 10 at 68.

<sup>43</sup> *Id.*

<sup>44</sup> *See id.*

<sup>45</sup> *Id.*

<sup>46</sup> *See* SANDRA POSTEL, LAST OASIS: FACING WATER SCARCITY 165-66 (1997).

<sup>47</sup> *Id.*

irrigators pay approximately 13%.<sup>48</sup> “In Egypt, a land of extreme scarcity, farmers are not charged directly for their irrigation of water at all.”<sup>49</sup>

Although irrigation practices drain water resources, agriculture is the lifeblood of many nations.<sup>50</sup> Therefore, legislators must balance domestic drinking and agricultural needs in water policy development.

#### *D. Water Sales*

Since bulk water sales have been increasing worldwide over the last decade, governments must also address water marketing dynamics in national water policies. The international sales of bottled water have skyrocketed, and proposals exist that call for the transfer of large quantities of fresh water across international borders, including oceans.<sup>51</sup> Proponents of water trade assert that natural resources, such as minerals, fossil fuels, timber, and agricultural goods are exported daily without generating nationalistic anti-export sentiment.<sup>52</sup> Therefore, why should water sales by pipelines, barges, bags, or bottles be any different?

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<sup>48</sup> *Id.*

<sup>49</sup> *Id.* “In India, the world’s third largest food producer, government spending to operate and maintain medium and large canal projects exceeds the total revenue collected from farmers by 23.5 billion rupees (\$816 million).” *Id.*

<sup>50</sup> The following percentages represent agriculture’s contribution to the Gross Domestic Products of each corresponding country: Afghanistan (38%); Albania (23.6%); Armenia (24.9%); Bahrain (56.9%); Belize (22.5%); Benin (33.9%); Bhutan (45%); Burma (54.6%); Burundi (45.6%); Cambodia (32.9%); Cameroon (44.8%); Congo, Democratic Republic of (55%); Ethiopia (40.1%); Faroe Islands (27%); Gambia (35.5%); Ghana (35.5%); Guatemala (22.8%); Guinea (23.7%); Guinea-Bissau (62%); India (20.6%); Laos (48.6%); Liberia (76.9%); Morocco (21.7%); Nepal (40%); Niger (39%); Pakistan (21.6%); Papua New Guinea (35.2%); Rwanda (37.6%); Sri Lanka (17.7%); Sudan (38.7%); Syria (25%); Tanzania (43.2%); Uganda (31.1%); United States (1%); Zambia (21.7%). CIA: THE WORLD FACTBOOK, <http://www.cia.gov/cia/publications/factbook/fields/2012.html> (last updated Jan. 10, 2006).

<sup>51</sup> PETER H. GLEICK, THE WORLD’S WATER 2004-2005 33 (2004) [hereinafter THE WORLD’S WATER 2004-2005].

<sup>52</sup> *Id.* at 42. Although water has been treated as an economic good for some time now, the extent of the privatization efforts underway is growing. *Id.* at 57.

Tanker and pipeline sales, often intertwined, are the prevailing methods of water transfer.<sup>53</sup> In 2000, for example, “Israel began negotiations to buy over 13 billion gallons of water a year from Turkey.”<sup>54</sup> Turkish tankers are moored to giant yellow floating stations two miles offshore, awaiting orders for delivery.<sup>55</sup> This water will be transferred through Turkish pipelines to the Mediterranean Sea, where the water will then be pumped onto the barges.<sup>56</sup> In addition to selling to Israel, Turkey is also preparing to sell water by tanker and pipeline to Malta, Libya, Cyprus, Greece, and Egypt.<sup>57</sup> In the United States, T. Boone Pickens, a Texas oil tycoon, has bought and sold oil for years.<sup>58</sup> More recently, Pickens recognized the potential for profits in the water trade and wants to build a giant pipeline that can pump as much as 60 billion gallons a year.<sup>59</sup>

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<sup>53</sup> Maude Barlow, *The Global Trade in Water*, Third World Traveler, [http://www.thirdworldtraveler.com/Water/Global\\_Trade\\_BG.html](http://www.thirdworldtraveler.com/Water/Global_Trade_BG.html) (last visited Feb. 2, 2006).

<sup>54</sup> *Id.*

<sup>55</sup> *See id.* (noting that Turkey “has the pumps and pipes to export four to eight times that amount”).

<sup>56</sup> *See id.*

<sup>57</sup> *Id.* Barlow provides several more examples of water sales via barge and pipeline, including shipment to the Bahamas, Japan, Taiwan, and Korea. *See id.*

<sup>58</sup> ROTHFEDER, *supra* note 11 at 166. “In the United States, where water privatization is fairly new, the private water sector generates more than \$80 billion per year in revenue. U.S. bottled water sales have increased from just over 2 billion liters per year in 1980 to almost 18 billion liters per year in 1999, and sales increase at a rate of 10% annually.” West, *supra* note 10, at 10057 (citations omitted).

<sup>59</sup> ROTHFEDER, *supra* note 11 at 166. Other examples of water sales include Aquapolaris’s melting of Greenland’s glaciers:

Among the most aggressive are plans to draw down meltwater from Greenland’s mammoth glaciers and sell it to any nation that pays the price. These ice sheets, which predate both people and pollution, cover 700,000 square miles (an area nearly three times the size of Texas) and are over two miles thick. Altogether they blanket 85 percent of Greenland. Like several other projects in that country alone, Aquapolaris, a partnership of a bottled water company and a shipping firm, has received a license to transport thousands of tons of melted glacial water to, in the company’s words, ‘meet the world’s growing water shortage.’

*Id.* at 120.

Aquarius Water Trading and Transportation was the first company to fully perfect the water bag shipping technology, a technology that might soon replace barge transfers.<sup>60</sup> The idea behind “water bags” came from Jean Claude Chalmet, a United Kingdom (U.K.) commodities trader, who visited Piraeus, Greece, in the early 1990’s after hearing about Piraeus’s water transfer via barges to the dry, tourist-encroached Saronic Islands.<sup>61</sup> After seeing this shipping and water-delivery process, Chalmet thought he could create a profitable business anywhere in the world by delivering water to dry regions.<sup>62</sup> But Chalmet did not follow the Greek’s example of using barges—he designed large bags made of polyurethane.<sup>63</sup> By 1997, Chalmet and his company, Aquarius, had won a Greek contract to take over the water transfer from Piraeus to the Saronic Islands.<sup>64</sup>

Jeffrey Rothfeder, author of *Every Drop for Sale*, notes that water bag technology is quite possibly the future of water marketing.<sup>65</sup> Specifically, advances in bag technology have drastically lowered the cost of transferring water by boat.<sup>66</sup> “In fact, prices have come down so

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<sup>60</sup> *Id.* at 121.

<sup>61</sup> *Id.* at 122.

<sup>62</sup> *Id.*

<sup>63</sup> *See id.* at 123-24. Aquarius’s water shipping methods are highly methodical. “A series of metallic pipelines carry freshwater from the Greek mainland to . . . a succession of tubular polyurethane bags, each about thirty yards deep . . . . Combined, these linked bags can handle anywhere from 1,000 to 2,000 metric tons of water.” *Id.* at 123.

<sup>64</sup> *Id.* Aquarius’s future looks bright: “Aquarius predicts that the [water] market will soon exceed 200 million metric tons per year. The company’s bag fleet consists of eight 720-ton bags and two 2,000-ton versions. The larger bags hold two million liters of water each.” Barlow, *supra* note 53.

<sup>65</sup> ROTHFEDER, *supra* note 11, at 124.

<sup>66</sup> *See id.* at 124-25 (noting that water transport by bags costs around \$1,300 an acre-foot while water shipped from a barge can cost as much as \$3,000 an acre-foot, and desalination costs approximately \$2,000 an acre foot).

fast that seaborne water transport is now competitive with most other water supply technologies, including traditional approaches like pipelines and experimental ones like desalination.”<sup>67</sup>

Bottled water sales, like bulk water sales, are growing. In 2002, global bottled water sales reached 131 billion liters annually, and have increased at 10% per year.<sup>68</sup> The largest consumer of bottled water is the United States, followed by Mexico.<sup>69</sup> “In the past few years, however, consumption in China has grown enormously. From 1997 to 2002, China grew from the ninth to the third largest consumer of bottled water.”<sup>70</sup> Bottling companies are capitalizing on these increased sales, often consolidating with small companies to tighten holds on key markets:

Nestle S.A., for example, owns dozens of brand names including Arrowhead and Poland Springs in the United States, and the well-known brand, Perrier. In 2001, the largest selling brands in the United States were Aquafina (a Pepsi product), with revenues of \$645 million, [and] Dasani (a Coca-Cola product) with revenues of \$560 million . . . .<sup>71</sup>

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<sup>67</sup> *Id.*

<sup>68</sup> THE WORLD’S WATER 2004-2005, *supra* note 51, at 17-18 (noting that the volume of fruit drinks is only increasing at 2% per year and the volume of beer and soft drink sales is only increasing at 1% per year).

According to the Beverage Marketing Corporation (2003), global per-capita bottled water use has risen from 12.6 liters per-capita per year (lpcy) in 1996 to over 21 lpcy in 2002. Changes in per-capita consumption of bottled water are even more dramatic, however, when evaluated on a regional or national basis . . . . The rate of increase is extremely high in South America, where use has doubled from 14 to 28 lpcy, and in Asia, where use is growing by 20 percent per year and has increased from under 4 to more than 8 lpcy. Total per-capita use, however, is still dominated by consumers in North America and Europe, where annual use is 85 and 64 lpcy, respectively.

*Id.* at 18.

<sup>69</sup> *Id.* For complete bottled water statistics including consumption per capita, and United States sales by region, see Bottledwaterstore.com, Bottled Water Still Number 2, at <http://bottledwaterstore.com/waterfacts2005.htm> (last visited Apr. 22, 2006).

<sup>70</sup> THE WORLD’S WATER 2004-2005, *supra* note 51, at 18, 21.

<sup>71</sup> *Id.* at 21.

Although the price of bottled water far exceeds that of tap water throughout the world, consumers seem willing to pay this increased price for convenience and quality.<sup>72</sup>

Water used in bottling and bulk sales operations has to come from somewhere. Often, companies withdraw water from aquifers to meet supply and demand needs. Since groundwater withdrawals often cause reductions in rechargeable and non-rechargeable aquifer levels, legislators must consider water marketing issues in water policy decisions.

#### *E. Navigation Interests*

Records indicate that the first boat sailed before 4000 B.C. on the Mesopotamian rivers Euphrates and Tigris, and before 3000 B.C. on Egypt's Nile River.<sup>73</sup> "From that time onward throughout antiquity, these rivers were heavily used as thoroughfares of waterborne commerce, but there was no freedom of trade or navigation for foreign vessels."<sup>74</sup> In Egypt and Mesopotamia, pharaohs and rulers monopolized control of navigational movement and trade.<sup>75</sup>

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<sup>72</sup> See, e.g., Noel C. Paul, *Water & Gas: An American Pricing Paradox*, THE CHRISTIAN SCI. MONITOR, Aug. 5, 2003, <http://www.csmonitor.com/2002/0805/p11s02-wmcn.html> (noting that "Americans are willing to pay so much [for bottled water] because they prize convenience . . . When consumers spend \$1.60 on a liter of bottled water, they are paying for a lifestyle as much as for the water itself"); Michelle Moore, *Can Public Water Utilities Compete With Bottled Water?*, ON TAP, Spring 2003, available at <http://www.nesc.wvu.edu/ndwc/articles/OT/SP03/BottledWater.html> (stating that "grabbing a bottle of water at the store is easier than filling a bottle with water at home").

<sup>73</sup> Ludwik A. Teclaff, *Fiat or Custom: The Checkered Development of International Water Law*, 31 NAT. RES. J. 45, 46 (1991) (citations omitted). "Navigation, due to its relationship and importance to transportation, has played a leading part in the advancement of civilization. Men learned early that travel by water was a convenient means of transporting their goods of trade to other lands." Navis.gr, History of Navigation, <http://www.navis.gr/marinarav/history.htm> (last visited Apr. 10, 2006).

<sup>74</sup> Teclaff, *supra* note 73 at 45, 46.

<sup>75</sup> See *id.*

Over time, navigational rights on rivers evolved from total state control to inter-state agreements that allowed citizens to move freely between neighboring nations.<sup>76</sup> For example, in 1792, the French Executive Council claimed that all riparians were entitled to freedom of navigation.<sup>77</sup> That same year, President Jefferson declared that the Mississippi River should be open to all of its inhabitants.<sup>78</sup> Throughout the Twentieth Century, the Rhine, Danube, Nigil, Congo and Senegal Rivers were all subject to agreements allowing for partial or full riparian movement.<sup>79</sup>

Author Ludwik A. Teclaff, however, believes that governments eased up on water movement restrictions too slowly.<sup>80</sup> In Teclaff's article *Fiat or Custom: The Checkered Development of International Water Law*, Teclaff asserts that the persistent control by riparian states over who could and could not navigate the waters within their territories disrupted the freedom of navigation.<sup>81</sup> Individual state controls also create problems for legislators tasked

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<sup>76</sup> See *id.* Rome first opened up navigation of rivers to the public, "but retained control of the commercial aspect of river traffic." *Id.* (citing E. ENGELHARDT, HISTOIRE DU DROIT FLUVIAL CONVENTIONNEL 6-12 (1889)).

The comparative freedom of navigation obtained, however, only on those rivers or stretches of rivers flowing within the borders of the Roman Empire. On the Rhine and the Danube, which were boundary rivers, navigation and trade were as strictly controlled as in Egypt under the pharaohs . . .

By the late Middle Ages, local magnates operated dozens of toll stations on each of the major rivers. The cities at first resisted this encroachment on freedom of navigation but, as their own power and independence grew, they themselves became major [enforcers of water regulations and control].

*Id.* at 46-47 (citations omitted).

<sup>77</sup> *Id.* at 47 (citing H. GROTIUS, DE JURE BELLI AC PACIS, bk. II, § 2, No. 11 (1625); E. DE VATTTEL, LE DROIT DES GENS, bk. II, § 127 (1758)).

<sup>78</sup> *Id.* (citing 1 MOORE, DIGEST OF INT'L LAW, §130 at 624 (1963)). See generally *id.* at 45-58, for a comprehensive discussion of the development of international navigation laws.

<sup>79</sup> See *id.* at 48-59.

<sup>80</sup> See *id.*

<sup>81</sup> *Id.* at 59.

Inner-city agreements to keep parts of river systems open were the precursors of navigation treaties between states, but not until the 19th century do we have

with designing water policies because policies must consider how river trade and movement restrictions impact citizens and foreign relations.

#### *F. Individual Property Rights*

Historically, in most societies, individuals' rights to use water and rights to use land have been closely linked.<sup>82</sup> Specifically, the "right to use water depended on the use or ownership of land or structures built on such land."<sup>83</sup> This approach, which stemmed from Roman law, gave land owners adjacent to watercourses a privileged right and had a major influence on water policies in later European countries.<sup>84</sup>

Roman law distinguished the more important, perennial streams and rivers from the less important seasonal water bodies. The former were considered to be common or public while the latter were private. The right to use a public stream or river was open to all those who had access to them. Roman law, however, recognized the right of the government to prohibit the use of any public water and required an authorization for taking water from navigable streams.<sup>85</sup>

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multilateral conventions, such as the Congress of Vienna and the Congress of Berlin, providing for freedom of navigation on international rivers generally. Even then, the riparian states found ways to flout the intent of such instruments. Moreover, in Europe, these conventions and others pertaining to individual rivers were restricted to stipulating freedom of navigation primarily on mainstems. If, as in Africa, they had included national tributaries, they would have been in the vanguard of measures treating entire river basins as units of water use.

*Id.*

<sup>82</sup> FOOD AND AGRIC. ORG. OF THE UNITED NATIONS, *The "Lost" Connection Between Land Tenure Rights and Water Rights*,

[http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/007/y5692e/y5692e05.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/007/y5692e/y5692e05.htm)

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

For example, Roman law denied the possibility of private ownership of running water. The Institutes of Justinian published in A.D. 533-34 held that running water was a part of the 'negative community' of things that could not be owned along with air, the seas and wildlife.

*Id.*

<sup>85</sup> *Id.*



This distinction between private and public waters long retained an influence in most European countries.<sup>86</sup> “Generally speaking, while an administrative permission was necessary for the use of public waters this was not necessary in the case of private waters.”<sup>87</sup> Public waters were waters considered to be “navigable” or “floatable.”<sup>88</sup> Private water usage stemmed from land ownership and provided land owners with unrestricted use of the waters on their lands.<sup>89</sup>

Common law countries such as North America and England followed the Roman tradition and developed “riparianism” in the nineteenth century.<sup>90</sup> “Riparian land owners had the right to make ‘ordinary’ use of the water flowing in the watercourse” by using the water reasonably for domestic needs and watering of livestock.”<sup>91</sup> A riparian could use water for any reasonable purpose so long as it did not negatively impact other riparians above or below.<sup>92</sup>

In the United States, “the flexibility of the common law tradition enabled the development of a new . . . water rights doctrine, the ‘prior appropriation’ doctrine.”<sup>93</sup> Prior

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<sup>86</sup> *Id.*

<sup>87</sup> *Id.* “The distinction was maintained by the French Civil Code—the *Code Napoleon*—promulgated in 1804 after the French Revolution.” *Id.*

<sup>88</sup> *Id.*

<sup>89</sup> *See id.*

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

<sup>92</sup> *See id.*

Much of the development of the riparian doctrine took place in the damp and water rich climates of England and New England, and indeed much of the case law (jurisprudence) on riparian rights related to disputes over the . . . operation of water mills rather than water abstraction. Such principles transferred with difficulty to more arid climates. For a start, given that the riparian doctrine conferred rights only on the owners of riparian land, large swathes of otherwise productive irrigable land beyond the riparian parcels were effectively denied rights to water. In Canada, for example, the riparian doctrine effectively prohibited irrigation on any large scale in the southern regions of the prairie provinces which had an arid desert-like climate with an average precipitation of only 28 centimetres per year.

*Id.*

<sup>93</sup> *Id.*

appropriation “severed the linkage between land tenure rights and the acquisition of water rights, the latter being acquired on the basis of beneficial use rather than land ownership.”<sup>94</sup> The development of prior appropriation has spurred new water laws that bring water resources within the state domain.<sup>95</sup>

The main legacy . . . of land rights based approaches to water rights is found in those increasingly rare provisions in water legislation that restrict the right to hold (administrative) water rights to land owners and, as described at the end of the previous section, in tying the use of water subject to such rights to specific parcels of land including industrial, commercial or agri-business premises. Even these residual links are being lost. In a number of jurisdictions it is necessary for an applicant for a water right merely to be in possession of the relevant land parcel on which the water is to be abstracted or used or to have a legal right of access to the point at which water will be abstracted. The widespread introduction of fully tradable water rights would see the link finally broken.<sup>96</sup>

In summary, “modern water rights regimes tend to be fully divorced from landed property and, as a direct result, represent a sophisticated response to the growing pressures on water resources.”<sup>97</sup> Such regimes enable legislators to make rational choices about water permitting while maintaining enough “flexibility to ensure that future water requirements can be met.”<sup>98</sup> Legislators designing water policy must consider river basin plans, priorities, minimum flow requirements, and many other public and private water interests when designing water policy. As seen in the next section, both private and public interests often compete with ecological preservation interests, causing problems in policy-making.

### *G. Ecological Preservation*

Up to this point, I have discussed water interests that are entirely anthropocentric (human-centered). Water also plays an essential role in earth’s ecological preservation, and

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<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> *Id.*

<sup>97</sup> *Id.*

<sup>98</sup> *Id.*

altering water resources can impact animals, humans, industry, and future natural resources.<sup>99</sup> “Only in the past few decades have people started to explicitly recognize the enormous range of values provided by ecosystems, including their irreplaceable services, their monetary value, and their role in sustaining human and other life on the planet.”<sup>100</sup>

A perfect example of how drastic water reductions can impact all of the interests mentioned above is seen in the Aral Sea’s gradual drop in water levels.<sup>101</sup> The shrinking Aral Sea, located in central Asia, symbolizes “much of what has gone wrong with water management.”<sup>102</sup> From 1960 to 1991, Soviet planners diverted central Asian rivers for irrigation, consequently preventing most water from reaching the Aral Sea.<sup>103</sup> These diversions reduced the volume of the Aral Sea by 60%, tripling salinity levels and causing massive toxic dust storms that negatively impacted local crop production.<sup>104</sup> Fish were also impacted: “All 24 native fish species in the Aral have disappeared, and the fish catch, which totaled 44,000 tons in the fifties and supported 60,000 jobs, has dropped to zero. Abandoned fishing villages now dot the sea’s former coastline.”<sup>105</sup> Further, humans have been harmed by the Aral Sea’s water level reduction.<sup>106</sup> “Low river flows have concentrated salts and toxic chemicals, making water

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<sup>99</sup> See discussion *infra* Part II.G.

<sup>100</sup> Guerquin et al., *supra* note 25 at 15. Guerquin also notes that water works with ecosystems to produce food, decompose organic waste, purify water and air, store and recycle nutrients, prevent floods, and absorb human and industrial wastes. See *id.* Guerquin further estimates the value of ecosystem services at between \$36 and \$58 trillion a year, “compared with gross world product of \$39 trillion in 1998.” *Id.* (citation omitted).

<sup>101</sup> POSTEL, *supra* note 46 at 60-61.

<sup>102</sup> *Id.* at 61.

<sup>103</sup> *Id.*

<sup>104</sup> See *id.* at 61-62 (noting that winds spread over 40 million tons of toxic dust-salt from the dry seabed onto crops).

<sup>105</sup> *Id.* at 62 (citing V.M. Kotlyakov, *The Aral Sea Basin: A Critical Environmental Zone*, ENV’T, Jan./Feb. 1991).

<sup>106</sup> See *id.*

supplies hazardous to drink.”<sup>107</sup> This concentration of minerals, coupled with heavy pesticide use and poor sanitary conditions, has led to rampant disease.<sup>108</sup>

The Aral Sea example exhibits how water policies lacking ecological protections can harm human health and the agriculture and fishing industries. Governments wanting to protect resources for the future must consider ecological repercussions in their policy decisions.

#### *H. International Borders*

States have historically guarded their river basin riparian powers jealously.<sup>109</sup> This self-centered focus has caused states to recognize the interdependence of rivers and river basins very slowly—too slowly to influence the development of appropriate legal principles to manage transboundary basins.<sup>110</sup> “The process might have been speeded up if customary law had been allowed to develop. By now not only would the perception of unity of all waters within the river basin have been generally accepted, but also the appropriate legal principles.”<sup>111</sup>

Encouragingly, however, cooperation between countries seems on the rise.<sup>112</sup> “In southern Africa, for instance, observers are encouraged that Angola, Namibia and Botswana at least aren’t shooting at each other over disagreements on how to divide the Okavango River.”<sup>113</sup> “Namibia, one of the driest sub-Saharan African countries, wants to divert water from the

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<sup>107</sup> *Id.*

<sup>108</sup> *See id.* (stating that “typhoid fever has risen nearly thirtyfold, and that of hepatitis, sevenfold. The rate of esophageal cancer in Muynak, an old fishing port, is 15 times the Soviet average”) (citations omitted). *See generally* HUNT, *supra* note 10, at 13-23 (providing extensive discussions into how the water cycle works and why it is environmentally necessary).

<sup>109</sup> *See* discussion *supra* Part II.E.

<sup>110</sup> Teclaff, *supra* note 73 at 45.

<sup>111</sup> *Id.*

<sup>112</sup> G. Pascal Zachary, *Water Pressure: Nations Scramble to Defuse Fights Over Supplies*, WALL STREET JOURNAL, Dec. 4, 1997 at A17. The Okavango runs through Angola, then along Namibia until finally flowing into Botswana. *See id.*

<sup>113</sup> *Id.*

Okavango, pumping it uphill to a network of canals and pipelines linked to its capital city.”<sup>114</sup> Although the Namibian’s plan would only cut one percent from the Okavango’s flow, Botswana still protests because any amount of reduction might detour tourists from visiting Botswana’s lush river delta.<sup>115</sup>

The recent flare-up between Malaysia and Singapore exhibits how quickly governments can respond to a water threat.<sup>116</sup> “Malaysia supplies about half of Singapore’s water via pipeline and it is contractually bound to do so well into the next century. Its veiled threat of a cut-off hit Singapore in the midst of a drought that has withered Singapore’s reservoirs to two-thirds capacity, sending Singaporeans into a panic.”<sup>117</sup> Within weeks, Singapore’s water chief launched a campaign to reduce waste and increase supplies.<sup>118</sup> “The centerpiece was a plan to build desalination plants, which would produce water at about eight times the cost of current supplies.”<sup>119</sup>

While the conflict was ultimately resolved, it is a perfect example of how one state’s water actions can impact another’s water access. Because of this interdependence on water resources, legislators must consider what water interests their neighbors may have.

### *I. Water Location and Composition*

Quite possibly the most difficult concept that a legislator must consider when forming water policies is the location and composition of the water. Are water resources primarily found

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<sup>114</sup> *Id.*

<sup>115</sup> *See id.*

<sup>116</sup> *Id.*

<sup>117</sup> *Id.*

<sup>118</sup> *See id.*

<sup>119</sup> *Id.*

on the surface, or more likely, in groundwater? Is the water located in deep aquifers, requiring massive mining or pumping? Is the water polluted?<sup>120</sup>

Groundwater pumping is becoming more popular throughout the world as surface waters are diverted, assigned, or restricted by dams or other devices.<sup>121</sup> In 2003, more than half of the world's population depended on ground water for basic needs.<sup>122</sup> Groundwater management and monitoring is difficult for legislatures and agencies because it is an "invisible" resource.<sup>123</sup> Specifically, "[t]he environmental contributions it makes to stream base flows, wetlands, and surface vegetation are masked and, unlike surface water flows, impossible to observe

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<sup>120</sup> While humans are blamed for most pollution problems, some pollution is natural. Consider the arsenic problem in the Bengal Delta on both sides of the India-Bangladesh border: Experts believe that the arsenic washed down from the Himalayas after "accumulating in the silt beneath the Bengal Delta for at least 2 million years." Tom Clarke, *Delta Blues*, 422 NATURE 255, Mar. 20, 2003. "Some wells contain 400 times the World Health Organization safe drinking-water standard for arsenic. Current estimates are that 80 million Bangladeshis are at risk, with [millions of gallons of] drinking water containing five times the WHO arsenic limit." *Id.*

<sup>121</sup> See Gabriel Eckstein & Yoram Eckstein, *A Hydrogeological Approach to Transboundary Ground Water Resources and International Law*, 19 AM. U. INT'L L. REV. 201-02 (2003). Eckstein notes that in Europe, "at least seventy-five percent of drinking water comes from ground water; in Austria, Croatia, Denmark, Hungary, Italy, Lithuania, and Slovenia, it exceeds ninety percent." *Id.* at 202 (citing E. ALMÁSSY & Zs. BUSÁS, U.N./E.C.E. TASK FORCE ON MONITORING & ASSESSMENT, GUIDELINES ON TRANSBOUNDARY GROUND WATER MONITORING, VOLUME 1: INVENTORY OF TRANSBOUNDARY GROUND WATERS at 21, U.N. Sales No. 9036952743). Eckstein also identifies the percentage of ground water that composes the following countries' water supplies: "Austria (99%), Belarus (80%), Bulgaria (60%), Croatia (90%), Estonia (70%), Finland (57%), Germany (75-90%), Hungary (95%), Lithuania (100%), The Netherlands (67%), Portugal (60%), Slovak Republic (80%), Slovenia (90%), Switzerland (84%), Ukraine (65%)." *Id.* (citations omitted).

<sup>122</sup> *Id.* at 201-02.

<sup>123</sup> THE WORLD'S WATER 2004-2005, *supra* note 51, at 79.

directly.”<sup>124</sup> Over the past 50 years, water wells have been added in vast numbers in many parts of the world, often times with little or no regulation.<sup>125</sup>

Perhaps the biggest problem in groundwater management is that many of the world’s largest and best known aquifer systems have not been fully studied.<sup>126</sup> “In the Gangetic basin, for example, although the location of major recharge zones, such as the Bhabar zone at the base of the Himalaya, are well known, scientifically based quantitative estimates of the actual amounts of recharge have proved unavailable.”<sup>127</sup> It is equally problematic that little is known about groundwater dynamics and availability in locations outside the major aquifer systems.<sup>128</sup>

By adding water composition complexities to the competing water interests discussed in this section, it may seem impossible for legislators to enact effective water policy. Existing water ethics, however, provide a tool for legislators to begin with.

### III. ENVIRONMENTAL ETHICS

#### A. *Why Ethics?*

Upon entering the twenty-first century, humans face environmental challenges unparalleled in the history of this planet.<sup>129</sup> “The natural resources that sustain life on this planet—air, water, and soil—are being polluted or depleted at alarming rates. Human population

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<sup>124</sup> *Id.* (noting that pumping wells are not intentionally hidden, but their small-scale, dispersed, and generally private nature disguises accurate measurements of groundwater extraction).

<sup>125</sup> *See id.* (stating that many of the world’s most populous nations—India, Pakistan, Mexico, China, and most of the Middle East and North Africa—have been acting irresponsibly for 20 to 30 years by depleting their groundwater resources) (citation omitted).

<sup>126</sup> *See id.* at 81.

<sup>127</sup> *Id.* The Gangetic Basin transcends India, Pakistan, Nepal, and Bangladesh. *See Indo-Gangetic Basin, Low Productivity, High Potential*, WATER FOR FOOD, available at [http://www.waterforfood.org/pdf/Indo\\_Gangetic\\_Brochure.pdf](http://www.waterforfood.org/pdf/Indo_Gangetic_Brochure.pdf) (last visited Feb. 3, 2006) (providing more information and a map of this basin).

<sup>128</sup> THE WORLD’S WATER 2004-2005, *supra* note 51, at 81.

<sup>129</sup> JOSEPH R. DES JARDINS, ENVIRONMENTAL ETHICS, AN INTRODUCTION TO ENVIRONMENTAL PHILOSOPHY 5 (3d ed. 2001) (noting that through human activity, life on Earth “faces the greatest mass extinctions since the end of the dinosaur age 65 million years ago”).

growth is increasing exponentially.”<sup>130</sup> In 2006, the estimated world population was over 6.5 million.<sup>131</sup> “While it was not until 1804 that world population first reached 1 billion people, the most recent 1 billion increase took just twelve years.”<sup>132</sup> As the world population continues to grow, the risk for further environmental depletion and degradation increases.<sup>133</sup>

Faced with these imminent environmental challenges, humans are confronted with momentous decisions. Before making decisions that will impact humans and the environment we live in, “it seems only reasonable that we should step back to reflect on the decision-making process itself.”<sup>134</sup> That process of stepping back to look at the bigger picture is the essence of philosophical ethics.<sup>135</sup> “Ethics involves a self-conscious stepping back from our lives to reflect on what we should do, how we should act, and what kind of people we should be.”<sup>136</sup>

All evolved ethics have rested “upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to cooperate (perhaps in order that there may be a

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<sup>130</sup> *Id.*

<sup>131</sup> U.S. CENSUS BUREAU, World Population Information, <http://www.census.gov/ipc/www/world.html> (last visited Apr. 13, 2006).

<sup>132</sup> DES JARDINS, *supra* note 129 at 5.

<sup>133</sup> *See id.*

Toxic wastes that will plague future generations continue to accumulate worldwide. The world’s wilderness areas, its forests, wetlands, mountains, and grasslands, are being developed, paved, drained, burned, and overgrazed out of existence. With destruction of the ozone layer and the potential that the “greenhouse effect” will lead to global warming, human activity threatens the very atmosphere and climate of the planet Earth.

*Id.* *See also* Wetland Habitat Fund (WHF), WHF Wetland Statistics, <http://www.whc.org/wetlandfund/en/about/wetstats/wetStats.html> (last visited Apr. 14, 2006) (noting that in the United States, only 47% of original wetlands remain).

<sup>134</sup> *Id.*

<sup>135</sup> *See id.* at 6.

<sup>136</sup> *Id.*



place to compete for).”<sup>137</sup> Humans should consider environmental ethics because our relationship with nature today impacts the availability of Earth’s resources tomorrow. The following section discusses the history and prevailing theories of environmental ethics.

### *B. Environmental Ethics Theories*

Humans have embraced environmental ethics throughout history. Since the seventeenth century, most humans have recognized that we “hold Earth as a trust, and [we are] not only responsible for its care, but also answerable for the delivery of [our] role as stewards or trustees.”<sup>138</sup> These beliefs stem primarily from Christianity.<sup>139</sup> The Bible, for example, denotes that Earth belongs to God, and humans simply maintain the land as a leasehold.<sup>140</sup> Therefore, even though humans have dominion over all of Earth’s resources, our dominion is somewhat limited by ethical guidelines.<sup>141</sup>

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<sup>137</sup> Aldo Leopold, *The Land Ethic*, ANIMAL WELFARE AND THE ENVIRONMENT (Richard D. Ryder ed., 1992), reprinted in ANDREW LIGHT AND HOLMES ROLSTON III, ENVIRONMENTAL ETHICS 39 (2003).

<sup>138</sup> ROBIN ATTFIELD, ENVIRONMENTAL ETHICS 21 (2003). Anthropocentrists may feel that humans are not stewards of the Earth because Earth’s resources exist to maximize human benefits. See discussion *infra* Part III.B. “However, a renunciation of the human responsibility to nature could be disastrous.” See Chad West, *Economics and Ethics in the Genetic Engineering of Animals*, 19 HARV. J. OF L. & TECH. 414, 426 n.92 (2006) (citing ATTFIELD, *supra* note 138 at 23). “Human beings cannot help drawing their food, clothing and shelter from the natural world, and if in doing so they attempt to throw off all ethical constraints [for nature and other humans], the outcome is likely to be the exercise of power without any pretence at responsibility.” *Id.* (citing ATTFIELD, *supra* note 138 at 23).

<sup>139</sup> ATTFIELD, *supra* note 138 at 21.

<sup>140</sup> See *id.* (citing *Psalms* 24 and *Leviticus* 25:23). Attfield provides an in-depth analysis into man’s dominion over the Earth and its creatures, and concludes by stating that man’s dominion over Earth is still conditional on man acting ethically. *Id.* at 22.

<sup>141</sup> But see Leopold, *supra* note 137, reprinted in ANDREW LIGHT AND HOLMES ROLSTON III, ENVIRONMENTAL ETHICS 38 (2003) (asserting that man’s disposal of property has always been in the interest of expediency (usefulness), without regard for what is right and wrong). Leopold recalls a tragic story to further his theory:

When god-like Odysseus returned from the wars in Troy, he hanged all on one rope a dozen slave-girls of his household whom he suspected of misbehavior during his absence.

It was only recently that authors and philosophers captured these ethical guidelines on paper. Environmental ethics began “as a philosophical discipline in the early 1970s through various authors and philosophers.”<sup>142</sup> In that era, the public started paying attention to the environment because of the use of fungicides and pesticides, the nuclear arms’ race of the sixties, and the ethical issues spurred by toxin usage in the Vietnam War.<sup>143</sup>

Environmental ethics has branched into several different theories over the last ten years.<sup>144</sup> Three of these theories appear most frequently in ethical discussions: (1) the ecocentric approach; (2) the anthropocentric approach; and (3) the deep-ecologist approach.<sup>145</sup> This section introduces these prevailing approaches to environmental ethics.

The ecocentric (often called *land ethic*) approach to environmental ethics “changes the role of [humans] from conqueror of the land-community to plain member and citizen of it.”<sup>146</sup> Ecocentrists believe that ethics should include land, plants, and animals.<sup>147</sup> Land and water should no longer be viewed as mere objects, “as dead matter that can be used and shaped in any

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This hanging involved no question of propriety. The girls were property. The disposal of property was then, as now, a matter of expediency, not of right and wrong.

*Id.*

<sup>142</sup> ATTFIELD, *supra* note 138 at 37. Attfield credits American Holmes Rolston III, Australian Richard Routley, Norwegian Arne Naess, and John Passmore for forcing environmental ethics into the public spotlight. *Id.* See also JOHN PASSMORE, *MAN'S RESPONSIBILITY FOR NATURE: ECOLOGICAL PROBLEMS AND WESTERN TRADITIONS* (1974).

<sup>143</sup> ATTFIELD, *supra* note 138 at 37.

<sup>144</sup> See discussion *infra* Part III.B.

<sup>145</sup> See discussion *infra* Part III.B. Other common ethic theories include biocentric ethics (which considers all life forms to possess intrinsic value) and ecofeminism (which considers environmental ethics through women’s history), among others. DES JARDINS, *supra* note 129 at 135, 249. For the purposes of this article, I limited my discussion to what I determined to be the three prevailing theories.

<sup>146</sup> Leopold, *supra* note 137, reprinted in ANDREW LIGHT AND HOLMES ROLSTON III, *ENVIRONMENTAL ETHICS* 38 (2003). In this theory, humans have “no privileged status in the ecological community.” DES JARDINS, *supra* note 129 at 189.

<sup>147</sup> DES JARDINS, *supra* note 129 at 186. See also *supra* note 141 (the Odysseus story).

way that humans desire,” but as living organisms “that can be healthy or unhealthy, injured or killed.”<sup>148</sup> Aldo Leopold, the leading philosopher behind the land ethic, concedes that land and water should be used as resources for human benefit.<sup>149</sup> Still, Leopold suggests that we view the land holistically, as a community that has its own moral standing.<sup>150</sup> Proponents of this theory would not support any actions that would alter the integrity, stability, or beauty of water resources.<sup>151</sup> For example, a farmer can use river water to irrigate so long as he returns the water to the river in its natural form without run-off pesticides.<sup>152</sup> Aquifer withdrawals for bottling or domestic usage are acceptable until the withdraw rate exceeds the recharge rate.<sup>153</sup> Essentially, ecocentrists believe that all waters can be owned and managed as long as those waters are maintained in their original form without damming, pollution, or reduction.<sup>154</sup>

Another prevailing environmental ethic theory is the anthropocentrism (human-centered) theory, which unlike the ecocentric approach, puts human interests first.<sup>155</sup> While anthropocentrism recognizes that humans may have some responsibilities to natural ecosystems, these responsibilities are only in place to protect Earth for human survival.<sup>156</sup> In other words, humans “have no obligation to promote or protect the good of non-human living things” unless the end goal is to promote human life.<sup>157</sup> An anthropocentrist would likely have no problem

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<sup>148</sup> DES JARDINS, *supra* note 129 at 186-87.

<sup>149</sup> *Id.* at 187.

<sup>150</sup> *Id.*

<sup>151</sup> *Id.* at 190.

<sup>152</sup> *See id.*

<sup>153</sup> *See id.*

<sup>154</sup> *See id.*

<sup>155</sup> Paul W. Taylor, *The Ethics of Respect for Nature*, from ENVIRONMENTAL ETHICS 3 (1981), reprinted in ANDREW LIGHT AND HOLMES ROLSTON III, ENVIRONMENTAL ETHICS 74 (2003).

<sup>156</sup> *Id.*

<sup>157</sup> *Id.*

supporting any type of water legislation as long as the legislation was designed with human interests in mind.

The third prevailing environmental ethic approach is that of the deep ecologists—often called environmentalists.<sup>158</sup> Ecologists focus on the ecosystem as a whole, not on the individual entities that comprise it.<sup>159</sup> Ecologists believe that healthy ecosystems are balanced, diverse, and sustainable, while unhealthy ecosystems lack one or more of these characteristics.<sup>160</sup> Within a healthy ecosystem, entities are expendable.<sup>161</sup> For example, some water pollution is acceptable as long as water management programs are in place to prevent excessive pollution, which would throw the ecosystem off balance.<sup>162</sup> Additionally, dams and water diversions are acceptable as long as ecosystems supported by the original river are not destroyed or significantly altered. Most ecologists would support any type of water legislation as long as the legislation’s possible effects on Earth’s ecosystem as a whole are analyzed, and the ecosystem remains at the forefront of society’s interests. Ecologists would not support water legislation that harms an ecosystem, like when a lake or wetland is drained.<sup>163</sup>

The popular environmental theories introduced in this section are just that—they are theories. Before society can answer the philosophers’ calls and become more environmentally friendly and water conscious, the water ethic that currently exists must be identified. Would you repair a busted radio if you did not know what a radio was? Would you buy a plane ticket to

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<sup>158</sup> Tom Regan, *Animal Rights: What’s in a Name?*, ANIMAL WELFARE AND THE ENVIRONMENT (Richard D. Ryder ed. 1992), *reprinted in* ANDREW LIGHT AND HOLMES ROLSTON III, ENVIRONMENTAL ETHICS 69 (2003).

<sup>159</sup> *See id.* at 70.

<sup>160</sup> *Id.*

<sup>161</sup> *See id.*

<sup>162</sup> *See id.*

<sup>163</sup> *See discussion supra* Part III.B.

Cote d'Ivoire if you had no idea where it was located?<sup>164</sup> Similarly, how can we ever move towards an “ideal” water ethic if we do not understand what our current ethic is? Throughout the remainder of this paper, I focus on capturing the elusive water ethic by using human historical, moral, and legal frameworks.

#### IV. THE EVOLUTION OF A WATER ETHIC

Water ethics have been developing since 6000 B.C., when ancient mythology first appeared.<sup>165</sup> Throughout the last 8000 years, water ethics have developed through evolving mythology, religion, and legends.<sup>166</sup> More recently, the societal water ethic can be seen in human rights laws, and in national constitutions and water sharing agreements.<sup>167</sup> Famous works of art, music, and poetry depict society’s ideal vision of water aesthetics, and the recent growth of waterfront real estate sales exhibit that people value the relaxing and recreational opportunities of pristine freshwater.<sup>168</sup> Water conflicts, including wars and terrorist attacks, also shed some light on society’s ethical views of water resources.<sup>169</sup> The following section discusses the water ethic developments.

##### *A. Moral Development*

###### 1. Mythology

The role of water in society first manifested itself in mythology as far back as 6000-4000 B.C.<sup>170</sup> In ancient mythology, water was “associated with the feminine, while fire [was]

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<sup>164</sup> Cote d'Ivoire (the Ivory Coast) is a country in Western Africa.

<sup>165</sup> VERONICA STRANG, THE MEANING OF WATER 84 (2004).

<sup>166</sup> See discussion *infra* Part IV.A.

<sup>167</sup> See discussion *infra* Parts IV.A.3, B.

<sup>168</sup> See discussion *infra* Part IV.C.

<sup>169</sup> See discussion *infra* Part IV.D.

<sup>170</sup> STRANG, *supra* note 165 at 84. Strang notes that rock art dating back for millennia often depicts water symbols and figures. *Id.*

connected to the masculine.”<sup>171</sup> Water was considered an element of fertility, giving life, just as women do.<sup>172</sup> “Many cultures associate water with women—be they goddesses, nature spirits or nymphs.”<sup>173</sup> Legends and stories involving water influenced world development.<sup>174</sup> Most of the European culture evolved from these mythologies, of which water played a key role.<sup>175</sup>

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[Additionally,] some of the most well-known deities are associated with alluvial rivers whose floods were critical to the worshippers’ ability to produce food. For example, the Babylonians looked to Aquarius to ensure that the Tigris and the Euphrates [fertilized] the floodplain annually. The Egyptian sun god Ra had a similar role regarding the Nile, which also became the focus of a Roman cult of Isis and Sarapis, whose devotees . . .” valued Nile water for its fertility, prosperity, and familial well-being.

*Id.*

<sup>171</sup> World Water Day 2006, Water and World Views: Water and Mythology, [http://www.unesco.org/water/wwd2006/world\\_views/water\\_mythology.shtml](http://www.unesco.org/water/wwd2006/world_views/water_mythology.shtml) (last visited Apr. 15, 2006).

<sup>172</sup> *See id.*

In Blackfoot Native American mythology, in the beginning there was a giant womb, out of which everything burst, including all animals and Old Man. Since the creation was underwater, the Old Man and all the animals emerged floating on a raft, and one by one they attempted to dive to the bottom of the water to bring back some mud. One by one they failed, until Muskrat dived, and, nearly dead, re-emerged with mud. From that mud, Old Man shaped the lands of the Earth and the plants that live upon it . . . .

According to Australian Aboriginal mythology, All-mother arrived from the sea in the form of a rainbow serpent with children (the Ancestors) inside her. It was All-mother who made water for the Ancestors by urinating on the land, creating lakes, rivers and water holes to quench their thirst.

*Id.*

<sup>173</sup> *Id.* “This is particularly true of running water, such as springs or water fountains, as they represent fertility and childbirth.” *Id.*

Mythology does more than link water with women; in many myths and legends, water is both a source of life and a place of death. These myths call on the sensuous nature of water to tell their stories: in some cases, this is personified by a water spirit, often called a nymph, who takes the form of a beautiful young woman. She is not generally seen to have any malicious intent, but used water as a place of regeneration (sometimes miraculous) and recreation. The Greek water nymphs are the most well-known of such water spirits, but they populate the myths of a great number of civilizations . . . .

Not all mythological water spirits are as well-intentioned as nymphs: Welsh, Irish, Norse and other mythologies all tell of troublesome water spirits, all young girls or women, who lure victims to their water abode and cause them to

## 2. Religion

Water not only played a role in ancient mythology, but also served as a foundation for many religions.<sup>176</sup> Water “can make a person clean, externally or spiritually, ready to come into the presence of [his or her] focus of worship.”<sup>177</sup> Additionally, water is a building block of life, and has the power to both give and destroy life.<sup>178</sup> “We are at the mercy of water just as we are

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drown, like the Sirens that Ulysses encounters in the Greek epic poem, the *Odyssey*.

*Id.* For a variety of water myths and stories, *see generally id.* (follow hyperlinks: “Water Myths and Stories”; “Water Myths”; “Water Nymphs in Greek Mythology”; “Sacred Springs and Other Water Lore”).

<sup>174</sup> *Id.* One moralistic legend is still told throughout Africa:

In Zaire it is said that a chieftainess named Moena Monenga sought food and shelter in a village. She was refused, and when she reproached the villagers for their selfishness, they said, ‘What can you do about it?’ So she began a slow incantation, and on the last long note, the whole village sank into the ground, and water flowed into the depression, forming what is now Lake Dilolo. When the village's chieftain returned from the hunt and saw what had happened to his family, he drowned himself in the lake.

*See* World Water Day 2006, Water and World Views: Water, Religions and Beliefs, [http://www.unesco.org/water/wwd2006/world\\_views/water\\_religions\\_beliefs.shtml](http://www.unesco.org/water/wwd2006/world_views/water_religions_beliefs.shtml) (last visited Apr. 15, 2006) [hereinafter Water, Religions and Beliefs].

<sup>175</sup> *See* STRANG, *supra* note 165 at 85 (noting that many rivers throughout Europe are named for Celtic water gods and goddesses, including the Seine (named after Sequana), the Dee (named for the goddess Deva), and the Thames (named for Tamesa or Tamesis)).

<sup>176</sup> The Water Page, Water in Religion, <http://www.thewaterpage.com/religion.htm> (last visited Apr. 16, 2006) [hereinafter Water in Religion].

<sup>177</sup> *Id.*

<sup>178</sup> *Id.* In some cultures, water is not only a building block of life; it is the origin. *See* World Water Day 2006, Water and World Views: Water and Creation of the World, [http://www.unesco.org/water/wwd2006/world\\_views/water\\_creation\\_world.shtml](http://www.unesco.org/water/wwd2006/world_views/water_creation_world.shtml) (last visited Apr. 15, 2006).

Creation myths are stories that describe the beginnings of humanity, earth, life and the universe, and water features prominently in a large number of them. In one Egyptian myth, a chaos of churning water, called the Nu, rose up and receded again. With each recession from the turbulence of the water a hill of land would emerge, giving birth to the first sunrise . . . .

There is more than one creation myth associated with water in Egypt, and Egyptian civilization is not the only one to have made water the central element in its creation stories. It is easy to grasp the significance of water in a land where all

at the mercy of our God or gods.”<sup>179</sup> While the significance of water varies depending on the religion, these two water qualities transcend throughout all cultures and faiths.<sup>180</sup>

The Bahá’í faith, the newest independent religion, encompasses approximately 5,000,000 members in 188 countries.<sup>181</sup> Bahá’í believers place “great importance on agriculture and the preservation of the ecological balance of the world.”<sup>182</sup> Water is a fundamental resource for agriculture “and plays a key role in all the life support systems of the planet.”<sup>183</sup> It is important for devout Bahá’ís to recognize and respect creation for its beauty and diversity—water plays a central role in that creation.<sup>184</sup> Bahá’ís support a global approach to water management since “water is not a respecter of national boundaries.”<sup>185</sup> They would likely encourage governments to cooperate with neighboring countries in water policy development.

For Buddhists, symbolism and rituals are “pointless because they seek spiritual enlightenment that comes from seeing the reality of unreality.”<sup>186</sup> Although Buddhists do use water in some ceremonies, this usage is probably not impacted by water legislation.

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things - transport, food, water, bathing, writing - were made possible through the Nile River, source of life and livelihood throughout the land.

*Id.*

<sup>179</sup> *See id.*

<sup>180</sup> *See id.*

<sup>181</sup> *See* Bahá’í Topics, The Bahá’í Faith, <http://info.bahai.org/article-1-2-0-1.html> (last visited Apr. 16, 2006). The largest community of Bahá’ís live in India (2.2 million), followed by Iran (350,000), and the United States (150,000). Wikipedia.com, Bahá’í Faith Demographics, *at* [http://en.wikipedia.org/wiki/Baha'i\\_Faith](http://en.wikipedia.org/wiki/Baha'i_Faith) (last visited Apr. 16, 2006). No country has a Bahá’í majority—the largest percentage is in Guyana (7%). *Id.*

<sup>182</sup> Water in Religion, *supra* note 176.

<sup>183</sup> *Id.*

<sup>184</sup> *Id.*

<sup>185</sup> *See id.* “The use, sharing, protection and management of water need to be governed by spiritual principles of justice and equity, and the fundamental concept of moderation. Decisions on water need to be taken through processes of consultation involving all those concerned or affected.” *Id.*

<sup>186</sup> *Id.*



Christians use water for baptisms, which clean the body and the soul.<sup>187</sup> Baptism refers to the process of dipping the whole body under water, by pouring water over a person's head three times (affusion), or by sprinkling water over a person's head (aspersion).<sup>188</sup> No water legislation should impact Christians' use of water, as holy water can come from any source so long as it is blessed by a priest or preacher.<sup>189</sup>

In Hinduism, "all water is sacred, and holy places are usually located on the banks of rivers, which are viewed as particularly sacred."<sup>190</sup> Hindus believe that "those who bathe in the Ganges River—the most sacred of rivers" will reach paradise before being reincarnated.<sup>191</sup> Hindu funeral grounds are always located near rivers, and human ashes are often cast into a holy river.<sup>192</sup> "For Hindus, morning cleansing with water is a basic obligation."<sup>193</sup> Surprisingly, the Ganges River is one of the most polluted rivers in the world.<sup>194</sup> Although over 60,000 Hindu

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<sup>187</sup> *See id.*

Baptism has its origins in the symbolism of the Israelites being led by Moses out of slavery in Egypt through the Red Sea and from the baptism of Jesus by John the Baptist in the Jordan. After Jesus' resurrection he commanded his disciples to baptize in the name of the Father, Son, and Holy Spirit (Matthew 28:19-20). Baptism is regarded differently in different denominations within Christendom.

*Id.*

<sup>188</sup> *Id.*

<sup>189</sup> *See* Catholic.net, On the Sacraments, Q. 301, <http://www.catholic.net/RCC/Catechism/4/bk4ls27.html#RTFToC11> (last visited Apr. 16, 2006) (describing holy water simply as water blessed by a priest).

<sup>190</sup> *Id.* Hinduism is the world's third largest religion with 837 million followers (13% of the world's population). Religious Tolerance.org, Hinduism: The World's Third Largest Religion, <http://www.religioustolerance.org/hinduism.htm> (last visited Apr. 16, 2006). "It is the dominant religion in India, Nepal, and among the Tamils in Sri Lanka." *Id.*

<sup>191</sup> *Id.* Water also plays a role in the funeral rights of Buddhism, Hinduism, Islam, and Judaism, among others. *See id.*

<sup>192</sup> *Id.*

<sup>193</sup> *Id.*

<sup>194</sup> Forum on Religion and Ecology, Hindu Engaged Projects, [http://environment.harvard.edu/religion/religion/hinduism/projects/sankat\\_mochan.html](http://environment.harvard.edu/religion/religion/hinduism/projects/sankat_mochan.html) (last visited Apr. 22, 2006).

pilgrims dip themselves in the Ganges River daily, India has done a poor job maintaining the Ganges's water quality.<sup>195</sup>

In Islam, water is important for purifying and cleansing.<sup>196</sup> “Muslims must be ritually pure before approaching God in prayer; some mosques have a courtyard with a pool of water in the centre, but in most mosques, the ablutions are found outside the walls.”<sup>197</sup> Most Islamic worshippers believe that water cannot be owned by any one person, as God owns it and humans are merely stewards.<sup>198</sup> Therefore, Muslims cannot morally sell water as an economic good.<sup>199</sup> This creates a problem for free market environmentalists who believe that water management should be left to the free markets.<sup>200</sup>

In Judaism, ritual washing restores or maintains a state of ritual purity.<sup>201</sup> This washing can include “the hands, the hands and the feet, or total immersion.”<sup>202</sup> Total immersion must be done in *living water*—either the sea, a river, a spring, or a *mikyeh* (a Jewish ritual bath).<sup>203</sup>

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<sup>195</sup> *See id.*

<sup>196</sup> *Id.* I use “Muslims” to describe Islamic worshippers in this paper.

<sup>197</sup> *Id.*

<sup>198</sup> International Development Research Centre, Islam and Water Management: Overview and Principles, [http://www.idrc.ca/en/ev-93948-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-93948-201-1-DO_TOPIC.html) (last visited Apr. 16, 2006).

<sup>199</sup> *See id.*

<sup>200</sup> *See Free Market Environmentalism?*, ENVTL. ECON., July 12, 2005, [http://www.env-econ.net/2005/07/free\\_market\\_env.html](http://www.env-econ.net/2005/07/free_market_env.html). Some primarily Muslim countries include: Somalia (100% Muslim); Turkey (99.8%); Iran (99%); Algeria (99%); Afghanistan (99%); Yemen (99%); Morocco (98.7%); Iraq (97%); Libya (97%) Pakistan (96.35%); Saudi Arabia (95.7%); Jordan (95%); Qatar (95%); Egypt (91%); Niger (90%); Indonesia (88.22%); Syria (88%); West Bank and Gaza (84%); Lebanon (70%); Sudan (65%); Malaysia (60.4%); Nigeria (50%). Wikipedia.com, Islam by Country, [http://en.wikipedia.org/wiki/Islam\\_by\\_country](http://en.wikipedia.org/wiki/Islam_by_country) (last visited Apr. 16, 2006). For a complete listing of Muslim countries, *see id.*

<sup>201</sup> *See Water, Religions and Beliefs*, *supra* note 174 (noting that the origins of this process are found in the Torah).

<sup>202</sup> *Id.*

<sup>203</sup> *Id.*

In some cultures, spirits are embodied in water. For example, the “Shinto religion is especially known for its belief in water spirits, or *suijin*.”<sup>204</sup> These spirits are found in springs, lakes, ponds, wells, and even irrigation waterways.<sup>205</sup> The *suijin* take the form of snakes, dragons, eels, turtles, fish and the mythical kappa.<sup>206</sup> “One *suijin* is said to manifest itself as a water-cleansing bacteria that is present in sewage water!”<sup>207</sup> Waterfalls are sacred under Shinto, and a person who stands under one is purified.<sup>208</sup>

The primary religions that could impact water management are Islam and Bahá’í, as many Muslims refuse to sell water and Bahá’ís support a global approach to environmental issues.<sup>209</sup> Still, all religions, myths, and legends have formed society’s ethical opinions of water. More recently, some human rights activists have been calling for governments to acknowledge the human right to water access. I introduce this water ethics campaign in the following section.

### 3. Human Rights Laws

Several international entities are encouraging governments to acknowledge the existence of a human right to water access. In 1948, the United Nations (“UN”) passed the Universal Declaration of Human Rights, which guaranteed all people the right to a healthy standard of

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<sup>204</sup> See Water, Religions and Beliefs, *supra* note 174. The Shinto religion is Japan’s indigenous religion, with an estimated 117 million followers. AsianInfo.org, Japan’s Religion and Philosophy, <http://www.asianinfo.org/asianinfo/japan/pro-religion.htm> (last visited Apr. 16, 2006). “In customary practice, Shinto rites are observed to celebrate such occasions as birth and marriage, while Buddhist ceremonies are used for funerals and memorial services.” *Id.*

<sup>205</sup> *Id.*

<sup>206</sup> *Id.* See also *Kappa*, ENCYCLOPEDIA MYTHICA, <http://www.pantheon.org/articles/k/kappa.html> (last visited Apr. 16, 2006) (describing and offering a drawing of the mythical Kappa).

<sup>207</sup> See Water, Religions and Beliefs, *supra* note 174.

<sup>208</sup> *Id.*

<sup>209</sup> *Contra supra* notes 54-57, 200 and accompanying text (noting that 99.8% of Turkish citizens are Muslim, but Turkey has plans to sell water to many Middle Eastern countries).

living.<sup>210</sup> In 2000, the U.N. Committee on Economic, Social, and Cultural Rights (UNCESCR) included the rights to safe drinking water and adequate sanitation in a person's right to health.<sup>211</sup> In 2001, World Water Day participants further defined the right to water as "a right to access to water of sufficient cleanliness and in sufficient quantities to meet individual needs."<sup>212</sup>

In 2002, the UNCESCR recognized that water is an independent right.<sup>213</sup> UNCESCR drew upon a range of international treaties and declarations, stating: "the right to water clearly falls within the category of guarantees essential for securing an adequate standard of living, particularly since it is one of the most fundamental conditions for survival."<sup>214</sup> The UN made this statement in General Comment 15, and further commented that the right to water comprises

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<sup>210</sup> See John Scanlon et al., *supra* note 12, at 20.

<http://www.waterandnature.org/pub/EPLP51EN.pdf> (last visited Jan. 11, 2006). See also Chad West, *supra* note 10, at 10047 (2006) (discussing the human right to water access and the domestic water access and sanitation problems in poor regions of the United States).

<sup>211</sup> Scanlon, *supra* note 12, at 20.

<sup>212</sup> World Water Day, Water, Health and Human Rights: Overview of Thematic Articles, <http://www.worldwaterday.org/wwday/2001/thematic/hmnrightrights.html> (Feb. 2, 2005) [hereinafter Water, Health and Human Rights] (proposing that providing affordable water is not a charitable act, but a state obligation and the right of each individual). "The participants also determined that, at a minimum, the quantity of water must suffice to meet basic human drinking, bathing, cleaning, cooking, and sanitation needs, while quality requirements vary depending on the particular usage (i.e., cleaner water is needed for drinking water than for sanitation water)." West, *supra* note 10 at 10050 (citing Water, Health and Human Rights, *supra* note 98).

<sup>213</sup> The Right to Water, *supra* note 9 at 8. The U.N. Committee on Economic, Social, and Cultural Rights ("UNCESCR") recognized this in General Comment 15 at its 29th session held in November 2002. Righttowater.org.uk, *General Comment 15*, <http://www.righttowater.org.uk/code/No15.asp> (last visited Jan 17., 2006).

<sup>214</sup> The Right to Water, *supra* note 9 at 8. UNCESCR also noted that governments should approach development from a rights perspective because a rights approach would empower people to be at the center of their development and not simply recipients of aid. See *id.* at 9.

Ultimately, "a rights-based approach may deliver more sustainable solutions because decisions are focused on what communities and individuals require, understand and can manage, rather than what external agencies deem is needed." Additionally, *Water as a Human Right* links the right to water with a list of other fundamental and natural human rights such as the right to life, the right to food, the right to self-determination, the right to adequate standard of living, and the right to health.

West, *supra* note 10 at 10051 (citing The Right to Water, *supra* note 9 at 10, 19-20).

both “entitlements” and “freedoms.”<sup>215</sup> “Freedoms include, among other things, the right to be free from water disconnections through the contamination of water supplies, while entitlements include the right to a system of water supply and management that provides water equality for all people.”<sup>216</sup>

The most recent declaration of the human right to water access took place at the Third World Water Forum in March, 2003.<sup>217</sup> At this forum, ministers and delegation heads used General Comment 15 and other instruments to develop a water resolution: “Water is a driving force for sustainable development . . . [and is] indispensable for human health and welfare. Prioritizing water issues is an urgent global requirement.”<sup>218</sup>

Groups such as Amnesty International and the World Wildlife Fund (WWF) criticized the UN’s lack of progress, noting that the declaration did not explicitly recognize the human right to water or prioritize freshwater ecosystem conservation.<sup>219</sup> Even with the alleged lack of progress at the Third World Water Forum, international doctrine still supports the human right to water. General Comment 15 cites two legally binding treaties supporting the declarations for the human right to water: “the right to water is enshrined in two of the six core human rights treaties: the Convention on the Elimination of Discrimination Against Women (1979) and the Convention on

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<sup>215</sup> Righttwater.org.uk, *supra* note 213.

<sup>216</sup> West, *supra* note 10 at 10051 (citing Righttwater.org.uk, *supra* note 213).

<sup>217</sup> Third World Water Forum, *Ministerial Declaration*, <http://www.mofa.go.jp/policy/environment/wwf/declaration.html> (last visited Jan. 20, 2006).

<sup>218</sup> *Id.* While the messages sent by UNCESCR and the Third World Water Forum support the human right to water access, critics argue that the declarations are ineffective because none are binding. Righttwater.org.uk, *supra* note 213. “Several states have consistently refused to acknowledge that access to water is a human right, rather than just a basic need.” West, *supra* note 10, at 10051 n.76 (quoting Righttwater.org.uk, *supra* note 213). Critics argue that U.N. comments only clarify state objectives, not create new human rights. Righttwater.org.uk, *supra* note 213.

<sup>219</sup> See West, *supra* note 10 at 10051 and footnotes.

the Rights of the Child (1989).<sup>220</sup> While both treaties were created to protect against discrimination, they apply to water protection and allocation. Specifically, the Convention on the Elimination of All Forms of Discrimination Against Women, Article 14(2), states that:

parties shall take all appropriate measures to eliminate discrimination against women in rural areas in order to ensure, on a basis of equality with men and women, that they participate in and benefit from rural development and, in particular, shall ensure to such women the right: . . . (h) to enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply. . . .<sup>221</sup>

Similarly, the Convention on the Rights of the Child, Article 24(2), holds that parties should take measures to “combat disease and malnutrition through . . . the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution.”<sup>222</sup>

Many experts disagree on the legally binding power of the above treaties and General Comment 15. However, most governments throughout the world recognize the responsibility to provide water, or at least a clean environment, to their citizens.

### *B. Legal Development*

Religion and mythology provide a foundation from which most laws have developed. Consequently, each country’s laws encompass values the citizens of that country deem important. One can shed light on a nation’s water ethic by observing its constitution’s provisions (or lack thereof) relating to water and its water sharing agreements with other countries.

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<sup>220</sup> UNCESCR, General Comment No. 15, U.N. Doc. E/C.12/2002/11 (Nov. 26, 2002), *available at* [http://www.unhchr.ch/tbs/doc.nsf/0/a5458d1d1bbd713fc1256cc400389e94/\\$FILE/G0340229.pdf](http://www.unhchr.ch/tbs/doc.nsf/0/a5458d1d1bbd713fc1256cc400389e94/$FILE/G0340229.pdf) (last visited Nov. 5, 2005).

<sup>221</sup> Convention on the Elimination of All Forms of Discrimination Against Women, G.A. Res. 34/180, U.N. GAOR, 34th Sess., Supp. No. 46, at 193, U.N. Doc. A/34/46 (1979).

<sup>222</sup> Convention on the Rights of the Child, G.A. Res. 44/25, art. 24(2)(c), adopted Nov. 20, 1989, entered into force Sept. 2, 1990, *available at* <http://www.unhchr.ch/html/menu3/b/k2crc.htm> (last visited Oct. 19, 2005).

## 1. Constitutions

Many national constitutions have provisions granting citizens a right to a balanced or healthy environment.<sup>223</sup> Through these environmental provisions, some nations have exhibited interest in guaranteeing domestic water access for citizens and protecting water resources for the future. Table A includes many of these provisions.

**Table A**

<b>State</b>	<b>Legal Provision</b>
Cambodia	Const. (1993) Art. 59: The State shall protect the environment and balance of abundant natural resources and establish a precise plan of management of land, water, air, wind geology, ecological system, mines, energy . . . forests and forest products, wildlife, fish and aquatic resources.
Eritrea	Const. (1996) Art. 10: . . . The State shall have the responsibility to regulate all land, water and natural resources and to ensure their management in a balanced and sustainable manner and in the interest of the present and future generations; and to create the right conditions for securing the participation of people to safeguard the environment.
Ethiopia	Const. (1998) Art. 90(1): Every Ethiopian is entitled, within the limits of the country's resources, to clean water. Art. 92: The state has a duty to control and utilize land and natural resources for the common good of the nation's people and for their development. The state has an obligation to strive to ensure a clean and healthy environment and other environmental rights.
France	Para 11 of the Preamble to the French Constitution of 1946: "[the nation] guarantees to all [. . .] health protection, material security." The French Water Act of 1992 says that the use of water belongs to everyone.
Gambia	Const. (1996) Art. 216(4): The State shall endeavor to facilitate equal access to clean and safe water.
Guatemala	Const. (1985) Article 127: Water regime. All waters belong to the public domain, and are inalienable and imprescriptible. The use and enjoyment are granted in the ways established by law, and in accordance to social interest. A specific law will regulate this matter. Article 128: Use and enjoyment of water, lakes and rivers. The use and enjoyment of lake and river waters, for agricultural, farming, tourist or purposes of any other nature, that contribute to the development of domestic economy, is at the service of the community and not of any particular person, but users shall have the obligation to reforest the shores and channels, as well as to provide access routes.
India	Const. Art. 48A: The State shall endeavor to protect and improve the environment . . . Art. 51A: It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures.
Laos	Const. (1991) Art. 17: All organizations and citizens must protect the environment and natural resources: land, underground, forests, fauna, water sources and atmosphere.
Mexico	Const. (amended 1999) Art. 27: Ownership of the lands and water within the

<sup>223</sup> See John Scanlon et al., *supra* note 12 at 42-46.

	<p>boundaries of the national territory is vested originally in the Nation, which has had, and has, the right to transmit title thereof to private persons, thereby constitution private property . . .</p> <p>Centers of population which at present either have no lands or water or which do not possess them in sufficient quantities for the needs of their inhabitants, shall be entitled to grants thereof, which shall be taken from adjacent properties, the rights of the small landed holdings in operation being respected at all times.</p>
Namibia	<p>Preamble to Sixth Draft Water Resources Management Bill, (2002): Government’s overall responsibility for an authority over the nation’s water resources and their use, including the equitable allocation of water to ensure the right of all citizens to sufficient safe water for a healthy and productive life and the redistribution of water.</p>
Nicaragua	<p>Const. (1987) Ch. III, Art. 60: Nicaraguans have the right to live in a healthy environment.</p> <p>Law No. 28 (1987) Art. 36: Communal property are the lands, waters, and forests that have traditionally belonged to the Communities of the Atlantic Coast, and they are subject to the following provisions:</p> <p>1. Communal lands are inalienable; they cannot be donated, sold, encumbered nor mortgaged, and they are inextinguishable.</p>
Panama	<p>Const. Art. 114: It is a fundamental duty of the State to guarantee that the population live in a healthy environment, free of pollution, where air, water and food satisfy the development requirements for an adequate development of human life.</p>
South Africa	<p>Const. (1996) § 24(a): Everyone has the right to an environment that is not harmful to their health or well-being.</p> <p>South African Bill of Rights (1996) enshrines a right of access to water in Section 27: (1) Everyone has he right to have access to . . . (b) sufficient food and water</p>
Switzerland	<p>Const. (1991) Article 24bis: (1) To ensure the economical use and the protection of water and the prevention of damage by water, the Confederation, having regard to the total water economy, shall by legislation establish principles in the general interest concerning: a) the conservation and exploitation of water, especially for the supply of drinking water and the enrichment of underground water: b) the use of water for energy production and for cooling purposes; c) the regulation of water levels and of the flow of surface and underground water, the diversion of water outside its natural course, irrigation and drainage and other intervention in the water cycle.</p>
Uganda	<p>Const. (1995) Preamble: The State shall protect important natural resources, including land, water, wetlands, . . . on behalf of the people of Uganda.</p>
Zambia	<p>Const. (1996) Art. 112: The State shall endeavor to provide clean and safe water.</p>

It is interesting that many developed countries like the United States and Spain chose not to explicitly acknowledge water resource protections in their constitutions.<sup>224</sup> General protections for water resources are more likely found in manuals for regulatory agencies like the Environmental Protection Agency (“EPA”) or in state laws.<sup>225</sup>

## 2. Water Sharing Agreements

<sup>224</sup> See *supra* Table A.

<sup>225</sup> In the interest of brevity, this paper does not tackle the challenge of identifying and listing all international regulatory laws regarding water protections. However, to determine the true water ethic of a particular nation, one should certainly observe these laws.



Surface and groundwater agreements between countries also provide some insight into water ethics. Within these watercourse agreements, nations often list their water priorities. The following are some examples of water priorities that countries have included in various watercourse agreements.

The UN Convention on the Law of Non-Navigational Uses of International Watercourses provides a framework from which many other watercourse agreements have been modeled.<sup>226</sup> Under Part II, Article 5, the Convention outlines what constitutes equitable and reasonable utilization and participation by involved nations.<sup>227</sup> The overarching theme of Article 5 seems to encompass the division of water resources between countries.<sup>228</sup> Part II, Article 6 expands this theory by suggesting that nations should consider social and economic needs of watercourse

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<sup>226</sup> UN Convention on the Law of the Non-navigational Uses of International Watercourses, International Water Law Project, [www.internationalwaterlaw.org](http://www.internationalwaterlaw.org) (follow hyperlink “Documents”; click on “International Documents”; click on “UN Convention on the Law of the Non-navigational Uses of International Watercourses (May 1997)”) (last visited Apr. 22, 2006).

<sup>227</sup> *Id.*

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 and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse States concerned, consistent with *adequate protection* of 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 Convention.

*Id.* (emphasis added)

<sup>228</sup> *Id.*, Part II, Art. 5.

states<sup>229</sup>, the population dependent on the watercourse<sup>230</sup>, the usage effects on each nation<sup>231</sup>, and the existing and potential uses of the watercourse.<sup>232</sup>

The Convention also considers important the *protection* of water resources.<sup>233</sup> Part II, Article 6, clarifies the UN's intent to protect water resources by suggesting that nations should consider ecological factors<sup>234</sup> and conservation and protection of water resources.<sup>235</sup> Part IV, Article 21, of the Convention is perhaps the most aggressive environmental protection provision.

Watercourse States shall . . . prevent, reduce and control the pollution of an international watercourse that may cause significant harm to other watercourse States or to their environment, including harm to human health or safety, to the use of the waters for any *beneficial* purpose or to the living resources of the watercourse.<sup>236</sup>

This provision exhibits the UN's interest in protecting water resources for all beneficial uses, which could include aesthetics and recreation.<sup>237</sup>

The European Union (EU) established the Union's action plan for water policies via Directive 2000/60/EC.<sup>238</sup> The Union noted in the Directive's first clause that: "Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such."<sup>239</sup> The Directive, unlike the UN Convention, did not set out a list of

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<sup>229</sup> *Id.*, Part II, Art. 6, §1(b).

<sup>230</sup> *Id.*, §1(c).

<sup>231</sup> *Id.*, §1(d).

<sup>232</sup> *Id.*, §1(e).

<sup>233</sup> *Id.*

<sup>234</sup> *Id.*, § 1(a).

<sup>235</sup> *Id.*, § 1(f).

<sup>236</sup> *Id.*, Part II, Art. 21, § 2 (emphasis added).

<sup>237</sup> *Id.*

<sup>238</sup> Directive 2000/60/EC of the European Parliament and of the Council, Establishing a Framework for Community Action in the Field of Water Policy, International Water Law Project, [www.internationalwaterlaw.org](http://www.internationalwaterlaw.org) (follow hyperlink "Documents"; click on "Europe"; click on "Directive 2000/60/EC of the European Parliament and of the Council, Establishing a Framework for Community Action in the Field of Water Policy") (last visited Apr. 22, 2006).

<sup>239</sup> *Id.* at 1, clause 1.

priorities.<sup>240</sup> Instead, it simply stated that the ultimate aim was to eliminate hazardous substances from water resources and to restore the marine environment to its natural state.<sup>241</sup> Still, the Union determined that financial considerations often trump water quality concerns, noting that if a body of water is so polluted that clean-up is infeasible, then efforts should be foregone.<sup>242</sup> The Directive set out these general guidelines, but ultimately left most water policy and enforcement responsibilities to local-level river basin authorities.<sup>243</sup> Thus, the Union not only exhibits an overarching concern for the environment, but also a concern for “diverse conditions and needs” of humans in different regions.<sup>244</sup>

The UN Convention and EU Directive represent two different approaches to water management—the Convention sets out priorities while the Directive sets out an overarching goal and lets smaller water boards figure out community-based priorities. Both represent attempts to use water ethics to balance human and ecological needs. One can use other water sharing documents similarly to clarify regional water ethics.<sup>245</sup>

### *C. Aesthetics and Recreation*

No water ethic is complete without recognizing water’s aesthetic importance.<sup>246</sup> Author Howard Morpheus defines aesthetics as that “effect of the physical properties of objects on the

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<sup>240</sup> *See id.*

<sup>241</sup> *Id.* at 3, clause 27.

<sup>242</sup> *Id.*, clause 31. If, however, the pollution source is identified early, that polluting nation should pay for any costs necessary to restore and preserve the ecosystem. *Id.*, clause 11.

<sup>243</sup> *Id.* at 2, clause 13.

<sup>244</sup> *Id.*

<sup>245</sup> For an extensive list of surface and groundwater agreements, *see generally* International Water Law Project, [www.internationalwaterlaw.org](http://www.internationalwaterlaw.org) (last visited Apr. 22, 2006).

<sup>246</sup> *See* discussion *infra* Part IV.C.

senses and the qualitative evaluation of those properties.”<sup>247</sup> Although cultural rules about what is or is not aesthetically pleasing differ, it is widely-accepted that objects are beautiful if they succumb “with an ideal of how things ‘should’ be.”<sup>248</sup>

People have consistently built homes and cities near water. During early times, it was for necessity and agriculture.<sup>249</sup> Now, people build water-front homes for aesthetic purposes.<sup>250</sup> The U.S.-based National Association of Realtors estimated that recreational home sales reached record highs in 2004, with waterfront homes leading the way.<sup>251</sup> People build water-front homes to escape city life and spend time kayaking, swimming, canoeing, or boating with their families.<sup>252</sup>

Aesthetic enjoyment depends, to some extent, on people having the luxury of time with which to engage with their surroundings in a relaxed and receptive mode. The fact that the particular qualities of water encourage affective engagement may explain why it is central to so many recreational activities. All recreational activities are—intrinsically—‘outside’ the constraints of domestic or commercial life, allowing people to experience water more meditatively or sensually.<sup>253</sup>

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<sup>247</sup> STRANG, *supra* note 165 at 103 (citing Howard Morphy, *Aesthetics is a Cross-Cultural Category: a debate held in the Muriel Stott Centre, John Rylands University Library of Manchester on 30th October 1993* at 258 (ed. J. Weiner 1994).

<sup>248</sup> *Id.*

<sup>249</sup> See discussion *supra* Part II.C.

<sup>250</sup> See Vivian Marino, *Water, Water Anywhere*, N.Y. TIMES.COM, Mar. 31, 2006, <http://travel2.nytimes.com/2006/03/31/realestate/31second.html> (stating that nowhere has the rise in second-home prices been more prevalent . . . than with properties on or near water”).

<sup>251</sup> See *id.*

<sup>252</sup> See *id.*

<sup>253</sup> STRANG, *supra* note 165 at 104. Communities often take action to protect pristine open spaces. In February, 1999, New York’s governor announced an agreement “to protect nearly 400 acres of pristine shorefront and 13 islands on Blue Mountain and Utowana Lakes” in the Adirondack Forest. Press Release, Governor of New York, Governor Announces Protection of Pristine Adirondack Lands (Feb. 26, 1999), [http://www.ny.gov/governor/press/99/feb26\\_99.htm](http://www.ny.gov/governor/press/99/feb26_99.htm). The plan would keep nearly 200 acres open to the public for fishing, hiking, and primitive camping. *Id.*

‘Blue Mountain and Utowana lakes are ideal examples of the rugged beauty and spectacular resources of the Adirondacks,’ Governor Pataki said. ‘This agreement will preserve their breathtaking vistas, crystal-clear waters and unspoiled islands

Since people value the relaxing nature of water-front life, “it is unsurprising that water in its ‘proper’ form—as a ‘living’ spring or fountain, as a mesmerizing river or liberating sea—is considered as an object of beauty.”<sup>254</sup> It is equally predictable that polluted or disordered water “becomes ugly and abhorrent.”<sup>255</sup>

In her book, *The Meaning of Water*, author Veronica Strang notes that rivers can be sources of inspiration for poets, composers, and artists.<sup>256</sup> It is for such reasons that humans seem to appreciate water’s beauty. Therefore, when considering water ethics, water’s aesthetic qualities should also be included.

#### D. Conflicts

Since 1503, when Leonardo da Vinci and Machiavelli planned to divert the Arno River away from Pisa during conflict between Pisa and Florence, nations have continually used water as a tool of conflict.<sup>257</sup> At *The World’s Water*, a website sponsored by Pacific Institute, one can

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and make them available for friends and families to enjoy. This is good for our environment and for the tourist economy of Hamilton County.’

*Id.*

<sup>254</sup> *Id.*

<sup>255</sup> *Id.*

<sup>256</sup> *See id.* Water has served as an inspiration for music for centuries. Water Facts 2004, Water and Music, <http://bottledwaterstore.com/waterfacts2004.htm> (last visited Apr. 22, 2006). Some works attributed to water include Gilbert and Sullivan’s *Pirates of Penzance*, Cole Porter’s *Anything Goes*, Rodgers and Hammerstein’s *South Pacific*, Frederic Chopin’s *Prelud, op. 28, no. 15*, “The Raindrop,” Giacchino Rossini’s *Overture to William Tell*, Ludwig van Beethoven’s *Symphony No. 6, movement 4* “The Thunderstorm,” and Garth Brooks’s *The River*. *See id.*

<sup>257</sup> PETER GLEICK, *THE WORLD’S WATER 2002-2003* 196-208 (Island Press 2002), available at <http://www.worldwater.org> [hereinafter *THE WORLD’S WATER 2002-2003*]. Gleick’s website actually chronicles water conflicts back to 3000 B.C., where a Sumerian legend parallels the well-known Biblical account of Noah’s Ark: “Ancient Sumerian legend recounts the deeds of the deity Ea, who punished humanity for its sins by inflicting the Earth with a six-day storm. The Sumerian myth parallels the Biblical account of Noah and the deluge, although some details differ.” *Id.*

find monthly updates of water-related conflicts.<sup>258</sup> The more recent water conflicts have resulted from political activism<sup>259</sup>, terrorist attacks<sup>260</sup>, or development disputes.<sup>261</sup>

Of all the world's water-deprived regions, no region encompasses more conflicts than the lands along the Nile.<sup>262</sup>

It is the world's longest river and comes barreling out of the African Highlands, half a continent, 4,238 miles away from its Mediterranean delta. No other river on earth flows through such diversity . . . The lands of the Nile's watershed are also many and varied—the slopes of the Mfumbiro volcanoes in Zaire, Uganda's Mountains of the Moon, and the sumptuous Masai Mara and Serengeti in Kenya and Tanzania. Hundreds of different languages are spoken in this basin, but its distinctive societies are alike in their growing reliance on the waters of the Nile. What these people build on the river will write much of the story of their future in the next century.<sup>263</sup>

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<sup>258</sup> Pacific Institute, The World's Water, Water Conflicts, <http://www.worldwater.org> (follow hyperlink "water conflict", click on "water conflict chronology", click on "Environment and Water Security Conflict Chronology") (last visited Apr. 22, 2006) [hereinafter Water Conflicts].

<sup>259</sup> For example, on January 26, 2002, the Khumbuwan Liberation Front destroyed a hydroelectric powerhouse of 250 kilowatts in Nepal. *Id.* By June, 2002, rebels had destroyed more than seven micro-hydro projects and pipelines supplying drinking water to Western Nepal. *Id.* Additionally, in 2000, Kyrgyzstan cut off water to Kazakhstan until coal was delivered. *Id.* Uzbekistan also cut off water to Kazakhstan for non-payment of debt. *Id.*

<sup>260</sup> For example, in 2003, Al-Qaida threatened United States water systems in a Saudi Arabian magazine by stating they do not "rule out . . . the poisoning of drinking water in American and Western cities." *Id.* Also in 2003, four incendiary devices were found in a Michigan water-bottling plant. *Id.* "The Earth Liberation Front claimed responsibility, accusing Ice Mountain Water Company of 'stealing' water for profit. Ice Mountain is a subsidiary of Nestle Waters." *Id.*

<sup>261</sup> For example, on May 8, 2003, a bomb blast at the Columbia-based Cali Drinking Water Treatment plant killed three workers. *Id.* "The workers were members of a trade union involved in intense negotiations over privatization of the water system." *Id.* During 2001, in China, "to protest destruction of fisheries from uncontrolled water pollution, fishermen in northern Jiaying City, Zhejiang Province, dammed the canal that carries 90 million tons of industrial wastewater per year for 23 days. The wastewater discharge into the neighboring Shengze Town, Jiangsu Province, killed fish, and threatened people's health." *Id.* In Somalia during 2004, approximately 50 people were killed in clashes between two divisions of the same clan in villages along the Ethiopian border. *Id.* "The fighting reportedly began over access to pastoral land and water wells." *Id.* In 2000, a clash between Kenyan "villagers and thirsty monkeys left eight apes dead and ten villagers wounded. The duel started after water tankers brought water to a drought-stricken area and monkeys desperate for water attacked the villagers." *Id.*

<sup>262</sup> DIANE RAINES WARD, WATER WARS 181 (2002).

<sup>263</sup> *Id.* at 181-82.

Egypt, the country that is both at the end of the Nile and the most-developed on the Nile, is worried that Ethiopia will dam the great river at its source.<sup>264</sup> Egypt has continuously stated its willingness to go to war: “If Ethiopia takes any action to block our right to Nile water . . . there will be no alternative but for us to use force. Tampering with a nation’s rights to water is tampering with its life . . . .”<sup>265</sup>

All of the Nile’s bordering countries—Burundi, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, the Sudan, Tanzania, Uganda, and Zaire—are poor and growing.<sup>266</sup> Seven of these countries are among the world’s least developed nations.<sup>267</sup> All of these countries are dependant on the Nile for agriculture<sup>268</sup> to support domestic needs and trade.<sup>269</sup> Egypt is of course most interested in agricultural trade and community development, as it is the most developed.<sup>270</sup> The other countries, conversely, need irrigation for survival.<sup>271</sup> These conflicts demonstrate that people will do just about anything—including killing other humans—to ensure they have water.

#### V. COMMUNITIES SHOULD SET THEIR OWN WATER ETHICS

Historically, water ethics have developed from mythology, religion, governments, human rights activists, aesthetic interests, and conflicts.<sup>272</sup> Today, however, water ethics in developed countries are primarily concentrated around economics, and to a lesser extent aesthetics. Undeveloped nations value water primarily for domestic food and household uses, and for

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<sup>264</sup> *Id.* at 186

<sup>265</sup> *Id.* (quoting Anwar Sadat, Egypt’s Deputy Prime Minister for Foreign Affairs in 1990).

<sup>266</sup> *Id.* at 183.

<sup>267</sup> *Id.*

<sup>268</sup> *See supra* note 50.

<sup>269</sup> WARD, *supra* note 262 at 183 (2002).

<sup>270</sup> *See id.*

<sup>271</sup> *See supra* note 50.

<sup>272</sup> *See discussion supra* Part IV.

economic gain through commercial agriculture if feasible.<sup>273</sup> Ethical considerations from religion and aesthetics play little if any role in undeveloped countries.<sup>274</sup> Governments and environmental lobbyists should first identify and understand their regions' water ethics and interests before designing policies or lobbying for change.

Developed countries such as the United States, Japan, and most of Western Europe do not have water ethics centered on religion. Although religion may have had a role in defining cultural values, developed countries seem to ignore religious influences in water policy decisions.<sup>275</sup> Consider Judaism and Christianity: members of both religions baptize followers in the Jordan River, but the Lower Jordan River is filled with untreated sewage and irrigation runoff.<sup>276</sup> The countries polluting the river seem more concerned with economic and domestic benefits of the Jordan than with the Jordan's religious significance.<sup>277</sup> One would think that Muslims, who consider water holy, would not sell or pollute water.<sup>278</sup> Turkey, however, which is 99% Muslim, is preparing to sell water to several different nations.<sup>279</sup> Additionally, Muslim countries continually destroy water resources as a tool of war.<sup>280</sup> These examples exhibit that water ethics in developed countries probably do not encompass religious influences.

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<sup>273</sup> See discussion *supra* Parts II.C, IV.D.

<sup>274</sup> See discussion *supra* Parts II, IV.

<sup>275</sup> See discussion *supra* Part II.

<sup>276</sup> *Pollution Threatens Revered Jordan River*, U.S. WATER NEWS ONLINE, Nov. 2005 (on file with author), <http://www.uswaternews.com/archives/arcglobal/5pollthre11.html>. See discussion *supra* Part IV.A.2.

<sup>277</sup> See *id.* See discussion *supra* Part II.D.

<sup>278</sup> See discussion *supra* Part IV.A.2.

<sup>279</sup> See discussion *supra* Part IV.A.2.

<sup>280</sup> See *Water Conflicts*, *supra* note 258.



Instead, developed countries maintain a water ethic centered on some combination of economics and aesthetics.<sup>281</sup> To determine how much a nation values economics over aesthetics, or vice-versa, one should observe economic interests, private property rights (whether a region uses the rule of capture, prior appropriation, natural stream flows, etc), prevalence of preserved lakes and waterways versus industry uses, and waterfront real estate statistics.<sup>282</sup> By simply investigating these water interests, one can determine the prevailing water ethic of a particular region. To understand the more subtle, long-term water ethic of a region, one should uncover constitutional or statutory water protection provisions, the acceptance of a human right to water, and water sharing agreements that lay out water priorities. One should determine why some legislatures grant citizens water protections in their constitutions while others simply leave it to administrative regulations.<sup>283</sup> Did the sixteen nations acknowledging their constitutional responsibilities to give clean water to citizens recognize a higher ethical calling than other nations? Environmentalists hoping to ignite a region's evolution from a human-centered water ethic to something else should answer this question. More importantly, both environmentalists and legislatures should keep the prevailing and subtle water ethics in mind when designing water policies or enlisting water priority changes.

Unlike developed countries, undeveloped nations are more likely to value water for survival, for economics, or a combination of the two. Consider, for example, the 2004 clash in Somalia between two divisions of the same clan over access to pastoral land and water wells.<sup>284</sup>

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<sup>281</sup> See discussion *supra* Parts II.B-D, IV.C. (exhibiting that the agricultural, manufacturing, and water marketing industries are large consumers of water resources).

<sup>282</sup> See discussion *supra* Part II.

<sup>283</sup> See discussion *supra* Part IV.A.3.

<sup>284</sup> See *supra* note 244.

Fifty members of the same clan died for access to water.<sup>285</sup> What incentive does a thirsty citizen have to preserve the aesthetic beauty of a stream or a holy river? Why should citizens of India clean up the sacred Ganges River when they do not have water for their crops or even for their own survival?<sup>286</sup> Even though 60,000 Hindu pilgrims bathe in this sewage-ridden water daily, India is the world's largest food producer and would rather focus on putting any leftover dollars in the bank after feeding its enormous population.<sup>287</sup> It is important for legislators and environmentalists to understand that water ethics in developing countries differ from those in developed countries. Any governmental water action in undeveloped countries has the potential to incite conflicts, especially if survival resources are inhibited. Therefore, local level participation in water policy decisions is critical in undeveloped countries.

The EU Directive was an effective policy document from an ethics perspective because it set out minimum priorities, and then encouraged local level communities to use their own water ethics to manage water resources. There are situations where big government can and should play a role—to ensure all citizens have minimum access to water and to ensure that overall ecosystems are sustained for the future. As this paper has exhibited, however, there is no world-wide water ethic. Water ethics vary per continent, per country, and per region based on religion, wealth, national development, and necessity. It is the regional communities that best understand their own water ethics.

## VI. CONCLUSION

Although the modern water ethic varies in each nation, it primarily centers on a combination of economics and aesthetics in developed countries. Water ethics in undeveloped

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<sup>285</sup> *See id.*

<sup>286</sup> *See discussion supra* Part IV.A.2.

<sup>287</sup> *See discussion supra* Part IV.A.2. For endless examples of local-level disputes over access to water resources, *see generally* Water Conflicts, *supra* note 258.

countries, conversely, centers on survival. When designing water policies, governments should identify and reconcile national water interests and water ethics. To adequately protect water resources for the future, water policies should consider overall ecosystem protection and the ethics and interests of neighboring countries. Further, both international and regional participation in setting water priorities is the best method to capture the numerous water ethics existing in small communities.