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ECONOMICS AND MARKETS: WATER AS A SPECIAL CASE

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Abstract

This paper examines the current methods for managing water resources and the limitations to those methods. Water is fundamental to life. Human rights to water resources should not be determined by the market or my financial considerations alone. This paper will examine the human right to water and the obstacles in current management practices to creating such a right.

Keywords—Non-monetary Values of Water, Utility of Water, Water Resources Management

"It is not the greatest of modern scientists who feel most sure that the object,
stripped of its qualitative properties and reduced to mere quantity is wholly real . . . .
The great minds know very well that the object, so treated,
is an artificial abstraction, that something of its reality has been lost."
C. S. Lewis "The Abolition of Man" (Daly and Townsend, 1993)

Introduction

There is an abundance of research regarding traditional values of water; however, for intangible qualities that affect value, the research is limited. In fact, few studies attempt to approximate a worth for water that encompasses more than a monetary value. Not all water use is market driven. Issues such as conservation for its own sake and spirituality often guide such use. Here we argue that a comprehensive understanding of values associated with water can help water managers develop a better understanding of water use. We believe this understanding of non-monetary values will improve both quantitative and qualitative water management in the future. Additionally, this insight will lend to trust in government.

Values of Water

Current literature regarding the value of water addresses multiple ways of determining the value of water when it is considered a consumable commodity. As seen through market values, the methodology employed to determine value is diverse. In this section, we address some of the issues related to value in water management. This discussion is meant to establish an appreciation for the complexity of understanding of value, even by traditional microeconomic standards.

By traditional microeconomic definitions, utility of water— the pleasure or satisfaction derived from it—is high in places where potable water does not exist or is scarce. As the amount of water increases, marginal utility decreases; as in the case of flooding, proliferation of water creates low utility for the commodity.

Water is also often seen as a capital investment for the production of other consumable goods, such as energy or in production. Estimates of value relative to utility and investments for industry are the most common use of valuation in the water management literature (See e.g. Anderson and Leal, 1991; Howard and Eng, 2005; Lindgren, 1999). We assert that it is beneficial for water managers to understand the *true* utility of water.

Regarding the abovementioned economic discussions of the value of water as a commodity, researchers include extensive calculations for global estimates of the value of water; others focus on local market values. In our opinions, estimates that attempt a global value for water are, in general, extremely weak because these approximations fail to take into account narrow issues. Studies that actually do focus on narrow issues tend to neglect how complex values are as they relate to tangible perceived needs. The Food and Agriculture Organization (FAO) of the United Nations discusses this difficulty:

> Estimating the value of water is not easy because its value varies with quality, use, location and time. During dry periods of the year, or during droughts or during drought years, water values will be much higher than in other periods. Moreover, certain seasons or times of the year may also be important . . . because of critical water demands for crop growth, heating, cooling, industrial production or shipping. (FAO, 1995)

Another topic that receives considerable attention from water management researchers is the implementation of government regulation involved with water delivery and water purity and associated increased costs (See e.g. Anderson and Hill, 1997). These scholars tend to agree on the terminology of value, but they focus on market distortions resulting from what they perceive to be government interference in markets. Gibbons states that there are few incentives for "affecting an efficient allocation among competing demands" (Gibbons, 1986: 1). As water use patterns change, so does demand. Like

many water scholars, Gibbons argues that the legal system thwarts flexibility; therefore, value is related to time, place and administrative arrangements governing its use.

Other researchers who study value in water management research address the idea that the cost of water often does not reflect its true utility, that it is seen as a "free resource" (Frederick, 1986: vii). In both market and non-market terms, estimating the value of water is complicated when consumers expect it to be "free" or "cheap" and when water purveyors reinforce those expectations by charging only for storage and transportation costs. The understanding of the value of water is also confused when there is seldom a charge that reflects opportunity costs for water (*ibid.*).

The list of examples above is not meant to be comprehensive. It is simply meant to show the different ways in which we think of the value of water and to reveal that valuation of this resource is complex because it is specific and situational. Even when researchers are limiting themselves to market values, often one value is not easy to compare to another. In other words, the current understanding of the word "value" in water management is, by its nature, composed of many complex issues.

Espeland details the importance of the transformation of pleasure and satisfaction to dollar values. Used for centuries, this process is known as "commensuration." Espeland states that understanding the forms of commensuration and the people who embrace it is critical for realizing its consequences (Espeland, 1998: 11). As used in cost-benefit analysis, commensuration allows us to compare two different entities; nevertheless, the consequences of commensuration can be both positive and negative. "Commensuration and the homogeneity it produces simultaneously diminish risk and threaten the intensity and integrity of what we value . . . Commensuration makes the world more predictable, but at what cost (*ibid.*: 28)?"

When we consider atypical uses of water, our understanding of value is blurred even further. We argue that traditional economic measurements fall short as an accurate tool to measure all the components of value when we include topics such as cultural conservation, conservation for its own sake, and religious or spiritual uses of water.

The remainder of this article focuses upon non-traditional values of water and on the satisfaction derived from it. First, we address cultural conservation. Next, we address water's spiritual value, and we address how many people worldwide value water in this way. Overall, we believe that an awareness of these non-traditional values by water managers will lead to a better understanding of the true utility of water. Ultimately, we believe this will improve the ability of water managers to make water policy. As imbued by water managers, water policy which is sensitive to both market and non-market values can encourage trust in government.

Non-monetary Values of Water

In general, there is not much attention to non-traditional uses of water in the literature. The few sources that exist contend that, after basic needs are met, utility of water lies in recreational uses and in the conservation that allows for appreciation of nature. Marc Willinger sums up the problem associated with the adjustments needed to address non-use of water:

> Non-use values are generally non-market values. To measure such values on a monetary scale, one has to design some kind of artificial market in which people can express a demand for not using an item. Therefore, there is no guarantee that the estimated value will not be influenced by the design of the artificial market. In other words, the true value cannot be observed unless one is able to give a non-controversial design of an artificial market. (Dore and Mount, 1999: 55)

Over the past two decades, contingent valuation has been the preferred methodology used to assess the non-use (or non-market) values of natural assets and resources (*ibid.*). Even though this is an

accepted standard for valuation of non-quantifiable, non-market considerations, water managers do not commonly incorporate non-monetary values into their decision making.

Conservation and Water Management

The above-mentioned traditional way of valuing water works well overall, especially in dealing with the value of water in pollution and health. If water becomes unhealthful or unusable due to pollution, a decrease in utility is fairly easy to understand and measure. The economic value of additional water made available through conservation of water also presents itself as straightforward.

There are, however, other considerations in conservation that impact water uses. Over the past forty years, particularly since the early 1970s when "environmentalism" became popular and a widely accepted political goal, many people have increasingly embraced the conservation of natural resources, simply for the sake of conservation. In other words, some communities have developed an ethic of water conservation that is independent of shortage or cost. We call this cultural conservation.

For example, the metropolitan areas of Phoenix and Tucson, Arizona in the United States are similar in their demographics, climate, and topography, yet Tucson has consistently used between 25 and 50 percent less municipal water over the last 30 or so years. The conservation ethic for these two cities is different. For many people in Tucson, conservation is an end in itself regardless of traditional market considerations (McKinnon, 2005).

We believe that it is important that water managers understand why societies make different choices when dealing with water. Often these choices deal with conservation for its own sake and with other non-market values. A similar community conservation value can be found in concerns about protecting natural resources for future generations. Stated another way, some communities, have a stronger future orientation than others. These communities lie primarily, although not exclusively, in non-Western societies. For these communities, utility lies in the concern for the future or future generations. This concern can be an important part of the culture of conservation.

It can be argued that water managers can specifically influence—perhaps even create—a culture of conservation in a community; however, rarely are water policy demand projections made that use much more than traditional views of civil engineering concerns and elasticity of demand. An understanding of the non-market issues that affect conservation will help water managers make more comprehensive decisions about water policy. With regard to conservation, non-market considerations are particularly prevalent in more developed countries, economies with the luxury of being able to conserve because it feels right. In many parts of the world, spiritual values also influence attitudes toward water use. For both conservation and spirituality, non-market values should be a part of water development and planning.

Spirituality and Water Management

In the case of water and spirituality, the concept of utility is highly intangible. The value of water is very difficult to quantify; in fact, market measurements of this resource can actually limit our understanding of its spiritual value. Ultimately, it is clear that resources can have very high value while having no monetary price.

To better understand the importance of non-market values and spirituality, we highlight the significance that various religions or groups of people assign to water and the rites in which this natural resource is used. As it relates to water management, this discussion touches the ethereal; however, we will see the importance that people place on the value of water as it relates to spirituality. We later argue that this is a value that should be incorporated into water development planning.

Community Views of Water and Spirituality

In many cultures, water is seen as a life force which represents the presence of a higher power. The concept is similar across the globe. There are two main foundations for the role of water as a central place in spiritual practice. First, water cleanses and washes away impurities and pollutants. Second, it is considered a primary building block of life. "We are at the mercy of water just as we are at the mercy of our God or gods" (Abrams, 2000).

These ideas date far back in time. Early Egyptian civilization congregated along the Nile, and there all life and transport existed. The river was considered life giving in the physical realm. As such, it gained spiritual value, and the desire to include water as part of worship became woven into Egyptian society. Egyptians believed that water was the fundamental element in creation. According to the Egyptians, only churning, chaotic water was present in the beginning. This water was called Nu. It was out of Nu that all life began (Deurer, 1997). Annual floods were welcomed by the Egyptians. "They saw them not as nature out of control—let alone as nature in need of control—but as a gift to be treasured" (Rothfeder, 2001: 30). The Nile represents continuance.

Other early cultures also gave spiritual significance to water. The Greeks worshiped Aphrodite as the goddess of love and of the sea. Chalchiuhtlicue was worshiped by the Aztecs as the goddess of running water ("Chalchiuhtlicue," 2004).

"All over the world we see the spiritual importance of water: in France, a temple sacred to the goddess Sequana is located at the source of River Seine, and the Marne River got its name from Matrona, Divine Mother[.] [T]he ancient name of the Thames River in England is Tamesa or Tamesis, denoting a river deity" (Shiva, 2002: 136).

When we address water and spirituality, we see links between various religions, no matter how diverse the belief system. Even Eastern and Western religions embrace similar spiritual values for water. First, we address water as it relates to Eastern religions and beliefs. These faiths include Buddhism and Chinese culture, Taoism, Shinto, and Hinduism. Next, we address Western religious beliefs about water. These include Judaism, Islam, Christianity and other spiritual and more ecologically-oriented thought as addressed by Zoroastrianism and the Bahá'í faith. Finally, we discuss other ecological-based spirituality as embraced by some Native American and African groups.

Stone differentiates how political communities and cultural communities are intertwined. She asserts that cultural integration into a single political community should not destroy or sacrifice identity and integrity (Stone, 2002: 19-20). This concept speaks to the heart of government representation. By better understanding the spiritual satisfaction derived from water, water managers can better understand water needs and uses; in doing so, they can foster public trust in government management of water resources. We further contend that this knowledge is beneficial to international organizations that fund water project development.

Buddhism, Chinese Culture and Water

Buddhism appears to have originated in northeast India in the sixth century B.C. The religion has nearly 325 million followers worldwide; most are in Asia. Buddhists tend not to embrace symbolism and ritual; however, water is used in the funeral ceremony (Aubuchon, 2005; Swatos Jr., 2005; Hexham, 2005). There are many variations of Buddhism around the world, yet the tradition involving water is similar. As water fills a bowl and pours over the edge, the monks recite the following words: "As the rains fill the rivers and overflow into the ocean, so likewise may what is given here [life] reach the departed" (Abrams, 2000).

The significance of water can also be found in Chinese cosmology, the branch of metaphysics that deals with time-space relationships. This belief system closely mirrors that country's religious and political changes. The Xang, Xia, Zhou and Han dynasty cosmologies all applied significance to water.

> [The Han] system states that the universe is composed of dynamic energy that operates in two modes, yin and yang. These two modes interact to produce five types of basic energy: fire, water, earth, wood,

> and metal. These five modal configurations of energy combine
> and recombine to produce the 'ten thousand things' that constitute
> the universe. (Goulde, 2004)

Geomancy, divination by means of geographical features, is also relevant in Chinese culture. Fengxue, the Chinese art of wind and water, has been used to locate energy-filled sites for markets, cities, temples, shrines and burial sites.

Taoism and Water

Taoism, which is practiced mainly in China, translates in English as "The Way," "The Flow of Things," the "Course of Nature," or "The Watercourse Way" (Yakrider, 2003). Water holds exceptional conceptual relevance within this system of belief.

> Water is used as a representation of Tao because water always
> seeks the path of least resistance. It does not compete, it spiders out,
> finds the easiest path and follows it, yet there is nothing stronger.
> Water will carve through rocks, steel, anything [that] resists it
> if given no other path around, under or over it. (*ibid.*)

Shinto and Water

Although it was not actually called "Shinto" until Buddhism was introduced to the area, this belief system is now considered Japan's indigenous religion. This system is based on the regard for the *kami*, the deities believed to inhabit mountains, trees, rocks, springs and other natural phenomenon. Whether public or private, worship of *kamis* always begins with the important act of purification with water. Troughs for ritual washing are placed inside the many sacred shrines. Purification in this way is a common spiritual practice throughout the world. Waterfalls are believed to be sacred in Shinto belief; standing under them is believed to provide purification (Bowker, 1997).

Hinduism and Water

Like Buddhism, Hinduism crosses many cultural lines. Hindu beliefs are often associated solely with Indian culture, yet many other cultures, including Balinese and Bangladeshi societies, also embrace this system of beliefs (Indonesia-Bali, 2004). Hinduism is also widely practiced in East Africa, Britain and the United States. There are nearly eight hundred million people who practice this religion worldwide (Aubuchon, 2005).

Hinduism places a profound value on water. In addition to other uses of water, the practice of using water to cleanse is fundamental. Hindus follow a morning ritual of cleansing that is also a basic obligation of Hindu worship and devotees. Central to this practice is the idea that one should take a bath before entering a temple. The Ganges River is also vital to Hinduism for most Hindus. Hindus believe that bathing in the Ganges River will wash away one's impurities. For this reason the Ganges is also called God's divine vehicle and the savior of this world (Guin, 2004). In addition, "Hindus . . . cast the ashes of their dead in the river in the belief that this will guide the souls of the deceased straight to paradise" (Abrams, 2004).

Judaism and Water

Western faiths also exhibit considerable displays of the worship of water or its use in ceremony. Like many other religions, Judaism crosses national borders, and its followers generally exist in clusters. Even though it is considered Israel's official religion, Judaism has nearly 13 million adherents worldwide (Aubuchon, 2005; Hexham, 2005). Judaism employs ritual washing and can be as simple as washing hands and feet, or it can involve total immersion. Symbolically, Judaism emphasizes the story of the Great Flood as a divine punishment. The Red Sea is also prominent in Jewish history because it allowed the Exodus of the Jews from the Egyptians. "The parting and crossing of the Red Sea shows

that God has power over nature, even the mighty oceans. Water here is powerful, but an instrument of God for punishment (for the Egyptians) and blessing (for the Israelites)" (Bowker, 1997).

Islam and Water

Between 610 and 632 A.D., the prophet Muhammad (c. 570-632 A.D.) brought Islam to the polytheistic Arabs of Mecca. Although it is predominant in Indonesia, the Islamic religion has nearly 1.1 billion followers worldwide (Aubuchon, 2005). In Islam, water is also used to purify. Similar to the adherences of Shinto and Hindu faiths, Muslims must be ritually pure before approaching God in prayer. Some mosques have a courtyard with a pool of clear water in the center, and most have bathing areas outside the walls. Fountains, which symbolize purity, are also sometimes found inside mosques.

> Islamic teachings address the inherent right to water, thus underscoring its true value. In the seventh century, the laws and codes of conduct of the then fledgling Muslim religion unambiguously articulated that access to fresh water is a right of all living beings . . . The idea that any person or group could control the availability of water or decide who gets water and who goes without was anathema and reprehensible to early Islam. (Rothfeder, 2001: 77)

The purity of water or its condition for use in preparation for prayer has manifested itself in the resistance to using recycled water. Today many Muslims accept that recycled water, now common in many parts of the world, can be used not only for agricultural and industrial purposes, but also for cleansing purposes "as long as its taste, color and smell have not changed" (Pakistan Link, 2004).

Christianity

The Christian faith, which is also practiced worldwide, has approximately 1.9 billion followers (Aubuchon, 2005). Over time, the use of water for worship and in ceremonial rites in Christianity has changed. Early Christians believed the use of water was a pagan practice, so they banned the spiritual worship of water in Europe. In 960 A.D., the Saxon King Edgar even forbade the use of fountains (Shiva, 2002: 136). "Despite the ban on water worship, people's deep faith in the sacredness of water persisted . . . old customs were absorbed into Christian rituals and water worship hid behind a Christian façade. Water maintained its sacredness in rituals of baptism and hand washing" (*ibid.*: 137). In today's religious practice, almost all Christian churches or sects have an initiation ritual involving the use of water.

Baptism originates from the symbolism of the Israelites being led by Moses out of slavery in Egypt through the Red Sea. Symbolism of water also derives from the baptism of Jesus by John the Baptist in the Jordan River. According to Christians, Jesus commanded his disciples to baptize after his resurrection. Baptism is regarded differently throughout the denominations of Christendom. With the exception of Catholicism, all Christian denominations believe that baptism does not in itself cleanse one from sin, but it is a declaration of a person's faith in Christ. In particular, the Armenian Church celebrates the Blessing of the Water on the day of Theophany, January 6. Called Churorhnek, the service is a commemoration of the baptism of Christ (Armenian Heritage, 2004). The use of water in Christian symbolism is important in two ways: It indicates that, just as they need water, Christians need God. It also symbolizes that everything is immersed in Him and cleanses. Contributing to this significance, many scholars note that Jesus described Himself as the "living water" (John 4:1-42).

Other Religions

The following religions have few adherents and are distributed so widely that we think it is unlikely that adherents will influence water use to any great degree; nevertheless, we have included them here as examples of how pervasive water is with regard to the role of water in world religion.

Zoroastrianism

Dating back to 1738 B.C., Zoroastrianism is an ancient religion of Iran. Its followers span the globe but exist mainly in Iran and India (Swatos Jr., 2005). Combining its properties of purification with value as a primary element of life, Zoroastrianism embraces water (Hexham, 2005). The intense beliefs in dualism, the opposition of good and evil, propels the belief within this religion that pure water is sacred and polluted water is evil. Worshiped extensively in Zoroastrianism, Haurvatat—meaning wholeness, health and integrity—is a feminine being and the creator of water. During the holy day of Haurvatat, which occurs in midsummer, followers of Zoroastrianism pray and make offerings by the seashore or any natural water. "In everyday life Haurvatat is observed by keeping water unpolluted and being temperate and self-disciplined. Haurvatat is the personification of what salvation means to the individual" (Bowker, 1997). Washing is also part of Zoroastrian ritual and believers maintain a flood story similar to other religions (Morgana's Observatory, 2005).

Bahá'í

Founded in Iraq in 1863, the Bahá'í faith embraces the teachings of a Persian named Bahú'u'llá. Although the administrative center is located in Haifa, Israel, the movement has spread widely in Europe, America, Africa and Eastern countries. There are approximately 17,000 congregations worldwide. This religious movement, which originated from Islam, includes laws concerning water and cleanliness. It also places great importance on the presence of water as it relates to agriculture and to ecological balance. "For Bahá'ís, respect for the creation in all its beauty and diversity is important, and water is a key element of that creation" (Dahl, 1997).

Native American Beliefs and Water

Here we refer to the indigenous people of North America as Native Americans. One should not make the assumption that the beliefs of all these groups are exactly alike. In fact, "[m]any followers of Native American [s]pirituality do not regard their spiritual beliefs and practices as 'religion' in the way in which many Christians do. Their beliefs . . . form an integral and seamless part of their very being" (Robinson, 2004). Nevertheless, some of these Native American beliefs follow concepts similar to the Bahá'í faith in that understanding ecology creates respect and balance in life. Regarding Native Americans and natural resource management on the whole, historian Norris Hundley Jr. states, "They recognized that, above all, they were part of nature and had to manage their own lives wisely" (Hundley, 1992: 15). Tsalagi and Inuit belief systems provide examples.

Tsalagi

The spiritual beliefs of the Tsalagi faith show the merging of the spiritual and physical worlds. This spiritual belief is prevalent among the Amonsoquath, a member band of the Western Cherokee Nation. In this belief system, a new day is started by "going to water." This practice entails facing the rising sun and thanking Asgaya Galvlati for another new day and for the gift of a new sun (Sovereign Amonsoquath Tribe of Cherokee, 1994).

Inuit Spiritual Beliefs

Similar to those found in other circumpolar regions, the value of water for the Inuit is similar to those found in places such as Northern Russia and the Northern Scandinavian countries. Inuit religious belief has roots in the thought that anua (souls) exist in all people and animals. Individuals, families and the tribe must follow a complex system of taboos to assure that animals will continue to make themselves available to hunters. Many rituals and ceremonies are performed before and after hunting expeditions to assure hunting success. The underwater goddess, Sedna or Takanaluk, who is part human and part fish, rules the sea mammals. She observes how closely the tribe obeys the taboos and accordingly releases her animals (Robinson, 2004).

Native Tribes of Arizona

The following statement sums up Navajo tribal views regarding water: 'To' bee iina''—"Water is life" (Bianchini, 2004). In this particularly arid place in the Southwestern U.S., this statement reflects not only spirituality but also physical truth. Recently the Native people in Arizona have become involved in an issue that they believe crosses lines of respect regarding their belief in the spiritual values of water. The local ski resort, called the Arizona Snowbowl, and the National Forest Service have approved using recycled water for snowmaking on the San Francisco Peaks north of Flagstaff (USDA Forest Service, 2004). These mountains are considered sacred to more than 13 Native American tribes throughout the Southwest. The ski resort, which opened in 1938, was controversial from its inception; nevertheless, it has thrived and has existed as part of the local economy. Because they believe that impure and unnatural water defiles their sacred place, the approval of recycled water on the Peaks has been considered an outrage to the Native Americans.

African Spirituality

As with Native American views, we cannot assume African beliefs are all alike, but many of these religions, too, carry with them the essence that God exists in the form of nature. African scholar Mbiti states, "The great creator has very few temples or images, but is almost everywhere believed in" (The Drum, 1995).

> Ordinarily there is little direct contact between man and the Supreme deity . . . Below God are the spirits, which Mbiti describes as invisible, ubiquitous, and unpredictable. They live all around: in the sky, the sun, the earth, bodies of water, rocks, or trees. (*ibid.*)

Conclusion

This article provides an introduction to some of the problems associated with determining value in water resources management. We began by pointing out that value means many different things even by traditional economic analytical standards. We then explored some of the non-market values that play a part in how societies think about and use water.

The examples we cite only touch the surface of the number of belief systems in the world; nevertheless, it is through them that we can begin to see other ways in which water is valued. Market systems rarely reflect the true utility of water in this respect. It is only through the understanding of these innate values of water that managers can consider the intended social and cultural consequences of their decisions. Below we discuss reasons water managers might want to make these considerations.

By taking a broad quantitative look at how water is viewed worldwide, what we hope to suggest is that the people responsible for developing and managing water resources would benefit government trust by incorporating non-market values into their decision making. We understand that water managers are forced daily to consider urban, agricultural, and environmental uses of water. We do not mean to state that non-traditional values should override any of these, nor do we mean to propose that non-monetary values should be commensurated so that an easily identifiable system of water allocation is locked in place. Instead, we propose that the status of the office of water management should be recognized for the power it holds regarding the symbolic representation of many beliefs. Perhaps water managers should be required to educate themselves about parts of the populace they represent, should be elected in countries with representative democracies, or should be appointed through a firm process in other countries. When water managers are held accountable not only for sustenance and environmental health as well as societal tenets, then they are more likely to create ethical solutions for all involved.

Even though the traditional context for valuing water is focused on economic values, some communities manage water in non-market terms. Mumme and Ingram show that communities in the American West link water with survival and that this dependence has led in some areas to "socially sanctioned decisions" (Mumme and Ingram, 1985: 366). Espeland grasps the delicate nature of the argument: ". . . fairness is hard to capture in consequentialist terms (Espeland, 1998: 210)." Yet, her

study on the opposition of the Yavapai Indians to Orme Dam showed repeated allusions to the concept of fairness. She argues that fairness precludes trust—not the other way around. The Orme Dam project failed despite a statement from the statewide newspaper stating that it was "inconceivable that any court would fail to place the needs of more than a million people . . . above those of 456 people (*ibid.*)." According to Espeland, the issue of the government taking land does not create trust. In this case, trust of governmental agencies was supported not only by the Native Americans involved, but also by other people who would question their real rights to property if such a proposal were passed. We believe an understanding of the pleasure or satisfaction derived from water allows for a more accurate representation of the population that water managers represent and that this representation fosters trust in government.

Organizations within the United Nations have recognized the importance of water for its non-economic uses. Although such recognition is rare in U.N. documents, this statement acknowledges the principles that surround this critical issue. "Water is at the heart of many religions and culture. Cultural traditions, indigenous practices and societal values determine how people perceive and manage water, and provide useful references for water ethics construction" (Liu et al, 2011).

The World Bank and the International Monetary Fund both use some form of Environmental Assessment (EA) for major projects that are intended to take social and cultural considerations into account in the assessment of local impacts. In fact, such assessments are often perfunctory or inadequate (See e.g. Fox and Brown). The idea for these assessments originated in the United States more than 30 years ago. In the original legislation, equal emphasis was given to the social and cultural impacts of development; however, today social and cultural impacts are not a high priority (Lindstrom et al, 2002). We argue that the legitimacy of governmental action and the acceptance of that legitimacy of international non-governmental organizations (NGOs) could significantly increase by paying greater attention to the non-market values that ordinary people put on water resources.

With regard to water management, we believe policymakers would benefit from understanding and articulating the non-monetary values people have in water. In practice this might mean anything from developing water education plans that teach the values of conservation and incorporating the benefits from such education efforts into demand projections to perhaps producing free or discounted water to religious organizations or on certain days of the year that are important spiritually to local communities. Ultimately, such management practices would likely improve relationships between water policy makers and the public. Perhaps more importantly, these practices would instill a greater appreciation and respect for water among the general public. Harmon sums up this complex issue stating that respect of culture reflects social justice and that culture is a "crucial part of our common humanity at its deepest level" (Harmon, 2002: 44).

Current trends indicate, however, that we are moving away from the appreciation of non-market values and toward market efficiency as the only legitimate value in water resources management. Over the past decade or so, the influence of international governmental organization and multinational water management companies has pushed toward the trend of privatization of water management. By definition, private firms discount non-market factors in decision making. We would not want to lose the value of efficiency, and we respect the need to return a profit, yet we think it would be in the best interest of most people to incorporate non-market values in water development and management.

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