

## **Teaching Sustainability via the Environmental Humanities: Studying Water, Studying Ourselves**

**Dr. Todd LeVasseur**

College of Charleston

**Abstract:** The dawning anthropocene requires innovation and organizational change across all types of institutions, including in higher education. One area where innovation can occur is in curricula building, and the offering of pertinent classes for sustainability education. This paper approaches sustainability education within the classroom from the perspective of the environmental humanities, focusing especially on the discipline of religion and nature/ecology. Scholarly tools from these domains provide teaching and research opportunities to help build on-campus and campus-community sustainability networks and initiatives. Three readings are analyzed to explore how teaching about sustainability via the environmental humanities is an integral part of campus sustainability initiatives, both in the classroom, in the community, and with facilities. The readings are international in scope and focus on water resource management. It is argued that exposing students to how different cultures conceive of and thus manage the natural world, and specifically fresh water, presents an opportunity for critical reflection and such reflection can help generate best teaching practices for sustainability education. Furthermore, teaching about sustainability via the environmental humanities can allow for interdisciplinary networks to be forged, thus helping higher educational institutions realize their mission and value statements.

**Key Words:** critical thinking skills, environmental humanities, interdisciplinarity, religion and ecology, shared sunlight, sustainability, transition campuses, water management

## **Teaching Sustainability via the Environmental Humanities: Studying Water, Studying Ourselves**

Educators are tasked with introducing students to concepts about sustainability, and this task takes on an urgent immediacy as humanity enters deeper into the anthropocene. In teaching these concepts, the field does not need more studies to tell us that as a species we are living beyond our means (and to be sure, there is extreme variation amongst and within extant global societies, from abject poverty to fetishized opulence), as more science and more reports and more news headlines will not generate a sustainable society. So what possibly will?: changes in values and worldviews, which, once changed, can possibly trigger changes in organizational structures and aggregate societal behaviors and lifestyles; or at least lead to new political, cultural, and ethical structures that can enable more sustainable lifeways.<sup>1</sup> At least, this is the hypothesis I present to my students, who quickly learn that everything is “text” when it comes to sustainability, and thus everything we study deals implicitly and explicitly with sustainability and bridging the gap between values and practice, or structure and behavior.

My professional approach to teaching, researching, and studying about sustainability is from the perspective of the environmental humanities, while my professional home is within both a Department of Religion and an Environmental Studies Program. The theories and methods I utilize when teaching introduction to environmental studies are broadly interdisciplinary, yet eventually narrow in on questions about cultural praxis in regards to human-nature interactions, and specifically what worldviews and values guide human behaviors within natural systems. I attempt to instill in my students the ability to recognize interconnected issues of power, gender, class, race, and justice as we study resource use, economics, landscape engineering, environmental ethics, population dynamics, politics, and patterns of consumption. The trajectory of the course is a steady accumulation of tools, from the natural sciences, social sciences, and humanities, which ends with us discussing resiliency and systems thinking and how these are the core of understanding (and cultivating) any form of sustainability.

This paper is a distillation of my experience of being both scholar and teacher about sustainability issues, and recognizes the unique power and influence that cultural institutions have when it comes to managing resources for sustainability. It also explicitly refers to the variable of religion, and how religious beliefs and practices influence how humans conceive of and manage a variety of resources, whether sustainably or not. The resource in question for this paper is fresh water, and the religions are Islam in Pakistan, Hinduism in India, and a comparative study of pre-industrial religions from around the globe. Through this undertaking I hope to explain how teaching about sustainability via the lens of religion can: (1) help students better understand how ideas shape human interaction with nature, and ideas related to cultural authority via religion shape how resources are managed; (2) help students gain empathy and critical thinking skills as they learn about beliefs and communities and ecosystems different than their own; and (3) help students reflect upon their own culturally-embedded conceptions of water and their relationships with their local watershed. Maintaining sustainable water supplies is one of the key issues that must be faced as the world enters further into the anthropocene (Brown, 2009); therefore, equipping students with these critically reflective skills, and with knowledge of human-water relations in other parts of the world, is a worthy goal for sustainability studies.

*Sustainability*

What, then, is sustainability? Studies and definitions abound which attempt to answer this, so I need not wade into that quagmire here. Rather, I offer a pithy shorthand for how I frame my own evolving understanding of the term: “shared sunlight.” This is a key goal I have in teaching my courses: helping students to understand that the earth is a closed system and the only input (outside of some cosmic gases, dust, and meteors) is sunlight; and more so, contemporary sunlight. This is the energy that drives everything (outside of deep sea vents), and that keeps everything we take for granted going. And what do we take for granted: Industrial society, with its linear bureaucracies and institutional structures and its linear consumption patterns.

Yet, this dominant lifeway runs on ancient sunlight, via fossil fuels that are rapidly running out and the use of which is bringing us perilously close to a variety of sobering tipping points that we must avoid if we truly want sustainability in any form. Or, as the plant geneticist Wes Jackson explains, “We are losing the elements of which we are made” (2010: 8), which he offers as soil (and thus food), but also fresh water, and significantly, an atmosphere with a concentration of CO<sub>2</sub> below 350ppm. For Jackson, and therefore for my own understanding of sustainability, “all future scaffolding [of civilization] will...be dependent on the powers of the renewability of our planet’s ecosphere and whatever renewable technologies it can support” (ibid: 13). Or, simply, “The challenge for *Homo sapiens* is to learn to live within the means, not exceed the natural recharge rate of the forces at work on the earth’s crust” (ibid: 68). Which raises important questions: how many college campuses are running on contemporary sunlight, and how many are operating beyond the recharge rate of the earth’s various systems? Followed by another: can the scale of the biggest universities, which are small cities in their own rights, successfully operate only on contemporary sunlight?

Jackson’s insights suggest that adapting civilizational lifeways and institutional structures so that they are based on real-time sunlight energy must become our species’ priority, as the natural recharge rate of the planetary system is the rate at which contemporary sunlight bombards earth. Unfortunately, almost all of the institutions within industrial civilization are scaffolded upon the stock of ancient sunlight that is creating runaway climate change. In Jackson’s reading, such a shift to living off of contemporary sunlight must begin with agriculture, and it must be precipitated by a “*conceptual change, followed by practice*” (ibid: 15, author’s italics).

Another way of framing this is to consider entropy. Robust resilient ecosystems run off of contemporary sunlight and they create order from disorder, or flourishing adaptive systems from entropy and decay. Sustainable social systems that run off of contemporary sunlight must be able to do the same, since human social systems and their manifestation in institutions of various forms (including colleges and universities) are nested within larger biosystems. Thus, the context for developing a praxis of sustainability is from a planetary to a local scale, and campuses are influenced in direct and indirect ways due to actions across the entirety of this scale spectrum. The goals at all levels must be to maintain dynamic equilibrium where the energy of contemporary sunlight runs biosocial systems, which are able to make resilient order out of entropy. However, current globalized industrial systems, including the ubiquitous industrial college/university campus, are creating “the entropic degradation of the biosphere by releasing more energy through transformations than is being replaced by global photosynthesis” (Wessels, 2006: 50). Because industrial society is powered by ancient sunlight, the inherent sustainability of the planet is breaking down: “Think of any environmental problem and you will

see it is a process where complex systems are being simplified or concentrated materials are being diffused” (ibid: 52), as a result of not living off of contemporary sunlight.<sup>ii</sup>

The “shared” element of “shared sunlight” refers to equity and justice. Sustainability cannot exist without justice, and justice cannot exist without equity. In my classes I talk to my students about equity and justice on campus and within the larger Charleston community, framing this discussion within the mission statement of the College of Charleston. This triggers discussions about equity and justice at national and international levels. Issues like environmental racism, unequal consumption patterns aggregated at national scales, and the inability of the U.S. to take meaningful action on climate change all enter into discussions at this point, as do rights of future generations of humans, and rights of/duties towards all other species.

Students quickly see that equity is central to achieving sustainability; yet, they also quickly see that the dominant paradigm of the industrial economic system for which they are being trained to enter as “productive citizens” is one of self-interest, and the idea of success is living what amounts to a high-entropy lifestyle. They are stuck in a paradox, and one that is very real, as many have student loans and rightly aspire to a life of meaningful work and relative abundance and comfort. The problem is that as a society and an educational community the ideology of self-interest has trumped, and this ideology is at odds with sustainability.<sup>iii</sup> No element of a system can hoard all inputs for its own function, or the system eventually breaks down. Yet most campuses are teaching students that this is indeed what counts as success. When students internalize the need for equity, and couple this with an understanding of natural limits of biosystems, then they are intellectually and emotionally ready and committed to helping work towards sustainability. In other words, they are ready to “share sunlight,” or to at least ask critical questions about fossil-fuel based industrialization that can help trigger a change in societal values and thus practice.<sup>iv</sup>

### *Water*

Water is our most basic need, for without it we cannot hydrate our cells, nor grow the food we need to metabolize energy for our cells. *Isaiah 40:6* has it only half right: all flesh is grass, but it is also water. Stephan Harding and Lynn Margulis go so far as to suggest “that we properly rename our third from the Sun inner planet after the humble, crucial chemical compound that sustains us: Water!” (2010: 57.) Thus, sustainable water use, or an equitable sharing and use of water to help generate a resilient, low entropy campus or society, is a necessary condition of sustainability.

Most readers are familiar with the quip that water is the new oil, and that wars for scarce fresh water will come to dominate the geopolitics of the 21<sup>st</sup> century. This is because the numbers are staggering and alarming: dropping aquifers, changing rain patterns, less snowmelt and thus less snow runoff, dropping reservoirs, and competition for use between farming and electricity generation and urbanization and habitat protection, to mention just a few challenging scenarios. These trajectories, coupled with climate change-driven system shifts like the Asian monsoon ending and loss of snowmelt from the Himalayas, may lead to what the journalist Fred Pearce calls a “hydrological holocaust” (2006: 222) which will impact large numbers of the human family in the coming decades. To this list we must also add the growing evidence that the Gulf Stream is slowing because of ice melt, the Amazon rainforest is transitioning into a savannah, and droughts in the Midwestern USA are leading to record low depths along the Mississippi

River. All of these water cycles are intimately connected with larger climactic cycles, so the truism still holds: sharing sunlight. Only in this case, societies will have to learn how to sustainably manage and share water, all while the sources of water are in flux. As the ethicist Gary Chamberlain points out, “Since ancient times water rules, regulations, and agreements have existed to provide access to streams, wells, oases, and other water sources. Water presents a very different problem than stationary land—namely, it moves” (2008: 131).

Thus, sustainably managing limited fresh water reserves and budgets is equal with the need to manage ghgs as being the most pressing issue of this century. Just as “the Industrial Age isn’t ending because of the decline in opportunities for further industrial expansion[, i]t is ending because individuals, companies, and governments are coming to the realization that its side effects are unsustainable” (Senge, et al, 2008: 8), so too this realization must dawn in higher education. This realization demands the appropriate attention in our classrooms and our campuses, and teaching about water use via the lens of environmental humanities, and especially religion and nature/ecology, can help generate this realization.

### *Religion and Water*

Those in the humanities investigate and interpret “texts.” These texts manifest in various forms: books, landscapes, bodies, art, dance, fabrics, food, media, myths, laws, and ethics, to name a few. The interpretation is typically critical, comparative, and historical, and with the onset of postmodern, queer/feminist/race, and postcolonial studies, it addresses issues of power and oppression. This epistemological purview is now merging with that of sustainability and environmental studies to form the environmental humanities. As a scholar within this area, I am equipped to introduce students to studying the cosmologies, narratives, histories, and various “texts” of religions, past and present, in order to see how humans have used religion to interact with and manage nature, and vice versa. This study includes hermeneutical, historical/substantive, and phenomenological approaches, as well as functionalist approaches.

Given the severity of the ecocrisis, there is also a tension within environmental humanities broadly, and the study of religion and nature/ecology specifically, about whether scholars are undertaking normative and possibly even advocacy work as they study cultural and environmental texts. Some scholars believe religion, since most humans are religious, may be a “silver bullet” that can serve as a vector that can carry “green” and sustainable values and ethics if practitioners can just green their teachings and ethics. Other scholars bracket such assumptions and instead study the data at hand and leave such normative claims alone. I fall in the latter camp as a scholar, and further recognize that historically and currently what people do in the name of religion drives quite a bit of environmental destruction, although there is now increasing mobilization via religion to help protect the environment.

This said, it is safe to say that “religious communities, too, must generate new capacities for new responsibilities on an altered planet” (Rasmussen, 2013: 7), and the evidence strongly suggests that there is a slow realization dawning within the vanguard of some religions that are actively “going green” and advocating for sustainability. As religions are typically the storehouse of a community’s ethics, especially in pre-industrial and Global South parts of the planet, then it can be assumed that what religious leaders and institutions have to say about the earth and its resources will play an influential factor in how followers ethically view various resources.<sup>v</sup> I will briefly outline three scholarly sources I use in class that address this issue, while explaining

how using these can help students think about water and sustainability in ways that help generate empathy and critical thinking skills.

(1) Shah, et al. “Water Conservation Through Community Institutions in Pakistan: Mosques and Religious Schools.”

One struggle with teaching about sustainable resource management is that many of our students come from affluent North American cities and suburbs. Most have not traveled abroad so have not witnessed extreme poverty, overcrowding, and, importantly, societies where normative Protestant Christianity is not the dominant way of being religious or conceiving of religion. This reading helps challenge this comfort zone, as it focuses on research undertaken in Pakistan, which is approximately twenty percent Shia and seventy percent Sunni. A minimal background in Islam is needed to teach using this chapter, as the authors themselves do not provide much data on whether their case studies involve Sunni or Shia Muslims.

What is important to let students know is that many Muslims in other parts of the world operate under sharia law, which is a hierarchy used to guide community relations. The hierarchy is as follows: the Holy *Qur'an* is the most authoritative source to guide Muslim life; next is the *hadith*, or the sayings and actions attributed to the Prophet Muhammad;<sup>vi</sup> the third level is *qiyas*, or analogical reasoning by jurists (imams and scholars, typically male) where jurists apply hadiths to current contexts by way of analogy; and fourth is *ijma'*, or the consensus of the scholarly community. Shi'a Muslims have their own lineage of leaders, and Sunnis have their own legal schools, with this split dating back to the later 600s CE regarding disputes over who was to lead the fledgling Muslim community. Historically and currently there is great diversity within Islam, and it is very important to recognize that not all Muslims are Arabs, as this is a major stereotype students tend to hold. Politically, Pakistan is a democracy, yet in rural areas, Muslim imams and religious schools (*madras/madrasas*) play a central role in organizing daily life and in settling community disputes. This is another area which may challenge American students: the separation of church and state that they take for granted is not as clear-cut in other parts of the world, especially rural areas where farming and/or nomadic grazing are the main occupancy, as in Pakistan.

Given Pakistan's Muslim history, dry arid climate, and farming/nomadic agricultural economy, how water is used and managed is of utmost import. The authors begin this chapter by quoting the *Qur'an*, where Allah says “We made from water every living thing” (2001: 61), while they also reference various hadith. The reader is also introduced to the key argument they are making, which is indicative of the argument I am making in this paper: “water conservation in Muslim countries can be planned on the basis of Islam” (ibid: 61). This insight helps students realize the three goals I shared above, and helps them understand that water management in developing countries is often times intimately related to religion.

If sustainability includes equitable sharing of limited sunlight resources, then what is the best way to legislate this sharing? In the U.S., we typically leave this to legislative fiat. Yet, we experience inefficiencies in this management, as well as gross conflicts of interest. This chapter points out that in communities where religion and religious authority maintain a strong presence, then more effective management of resources occurs when these authorities are invited to join with government legislation to manage scarce water resources. This is because most policy is ethically-neutral, yet we live in biosocial communities, where ethics play a key role in how we

interact with one another and biospheric resources. In many parts of the world, religion is where ethical values relating to community life are taught and enforced, so it makes sense that religious leaders can influence how followers ethically share nonrenewable and renewable resources.

An important realization emerged from the study, given the prominent role Islam plays in the lives of rural Pakistani citizens, and this is that there was a “lack of clear understanding by religious leaders of the issue of water conservation in which they could play a crucial role to improve the situation” (ibid: 65). Further results of the study are insightful, and can help North American students better understand strategies that can be utilized to manage fresh water sources, domestically and internationally. These include the recognition that religious leaders and schools can help with controlling water wastage, especially in rural areas with high rates of illiteracy; government regulations alone are often ineffective on their own in changing water management behaviors; and a collaborative partnership, with a long-term vision, between NGOs, governmental agencies, corporations, and religious leaders can be very effective in helping manage resources for sustainability. This final point relates to emerging insights from sustainability-related literature, especially about cultivating sustainability leadership and sustainability change-agents: all of the key stakeholders of a system must be included and be allowed to generate trust-filled dialogue, where they can be guided by common goals, if they are to sustainably manage a resource (Walker and Salt, 2006). In this case study, religious leaders were included as stakeholders, and the dual objectives of sharing water and reducing water wastage helped shape the objectives and thus drive the actions of the networked biosocial system.

Traveling to rural Pakistan via this reading helps students reflect on human-water relations in other parts of the world. It also provides provocative insights that can be discussed in the classroom, and challenges students to strategize water management partnerships on campus and in the municipality where they live. For example, Bob Doppelt explains that “To overcome resistance and transform organisational [sic] culture, sustainability-change leaders must find the key leverage points” in a biosocial system (2010: 96). Given the determinative role of religion in many parts of the world, sustainability change-agents should collaborate with religious leaders to help shift organizational and management behavior towards sustainability. If campuses are part of a larger community, then actively forming collaborations and sharing expertise amongst a diversity of stakeholders, including local religious institutions, fits into the value and mission statement of many campuses. This *does not mean* a campus is endorsing a religion, and indeed, a campus or class *should be explicit* about this point; rather, it recognizes that, at a minimum, in certain parts of the world, religion is a key variable in sustainability initiatives, and students who are going to become professionals or who are undertaking research abroad should be exposed to this reality.

(2) *David Haberman, River of Love in an Age of Pollution: The Yamuna River of Northern India.*

Haberman’s book is one of deep ethnography and articulates his experiences researching the abject pollution of India’s second holiest river, the Yamuna. Overall, he weaves together basic information about Hinduism, and especially Vaishnavism (worship of Vishnu in the guise of his avatar, Krishna) and goddess worship (Yamuna is the goddess of love), with interpretation of sacred texts, so a comprehensive background in Hinduism is provided. He also discusses basic science about water quality, a history of India’s experience with the green revolution, and

qualitative data taken from interviews with a wide variety of Indians: government officials, activists, religious leaders, and lay citizens.

*River of Love* expertly meets the three goals given above, and for a variety of reasons. It is deeply descriptive and evocatively articulates the vibrancy of Hindu goddess worship; and it clearly analyzes the pressing problem of the pollution of the Yamuna, tracing the river from its origins in the Himalayas, through its journey into Delhi, to its stifled and polluted “death” through the Braj region, to its confluence with the Ganges. This journey is coupled with providing insights into what the realities of such abject pollution means for all the lifeforms who depend on the river for survival. Students are exposed to a real-time example of what Paul Ehrlich’s famous I=PAT formula truly means, as the Yamuna basin provides the water needs for hundreds of millions of Indians. Most of these are poor farmers, or reside in slums in larger cities. The water is also siphoned off for irrigating India’s agricultural lands, and equally powers hydroelectric dams. Lastly, and significantly, the Yamuna is a living goddess, so that “The current degradation of the Yamuna, however, is not just an ecological problem; it also involves a religious crisis, bringing into question the very nature of divinity. Furthermore, the religious culture of sacred rivers in India offers a unique avenue for approaching environmental restoration today” (2006: 1).

This insight, and the book as a whole, provides a rich opportunity to discuss a variety of sustainability issues: equity, pollution, population, industrialization, politics, and community ethics. It also provides the occasion for studying the efficacy of forming collaborative partnerships in order to better manage resources, as Haberman mentions many groups—NGOs, governmental, and religious—working on cleaning up the Yamuna. This provides the occasion, as with the reading on Islam, to talk about what sustainability means in terms of networks and organizational structure, and how this relates to sustainable resource use. As the book was published in 2006, some data may be outdated, so I have students use their computers in class to look for updates on the groups Haberman mentions while we also use Google earth to view the river. Lastly, I provide pictures I took while undertaking research in India, which helps to visually bring alive the trash and pollution Haberman expertly describes. This mixture of book, class exercise, and visual learning creates a rich context for discussing the very real challenges of managing water for sustainability, especially in non-affluent, over-populated parts of the world.

Furthermore, Haberman points out that, “Religious love is a strong motivation for environment activism in India, which fairly well distinguishes it from the dominant form of environmental activism typically found in the United States. A major motivation behind much American environmentalism stems from the belief that we are now living on the brink of, and rushing rapidly toward, an environmental catastrophe. Fear of this motivates many to work to avoid it” (ibid: 180). This contrast provides a chance for students to talk about their own commitments as citizens of a biotic and a cultural community:

- what motivates their identity as a student and as a community member?
- How can they become more self-aware of these motivations, and why might they matter?
- How can they use their college investment to become a sustainability change-agent, and what skills do they need to make this happen?

These tie into questions about aggregate motivations at a community level, and the cultural differences as outlined by Haberman provide a foil to assumptions students may hold as they answer such questions.

Many students also grapple with the Hindu notion of purity, which is not the same as pollution. In Hindu cosmology, a goddess can be physically polluted, but spiritually pure, as in the case of the goddess Yamuna. This worldview means that many along the banks of the Yamuna do not mind her pollution and are thus indifferent to cleaning her, as she is seen as being pure and powerful. From here in class we reflect back on our own conceptions of pollution, and also look back at the trajectory of clean water legislation in America. We also talk about the difficulty in effectively managing and cleaning up rivers that are impacted by the actions of millions of people. There are no easy answers, both domestically and abroad.

As I teach on a campus that is at sea level and in a city that is surrounded by rivers and marshes, I ask my students to imagine how our interactions with local waterways may be different if we saw them as abodes of the divine, rather than linear, reductionist bodies of water that we drive over as an inconvenience on our way to work or school. Many students do not even know the original names indigenous peoples had for the rivers, or how they used them in their own pre-invasion lifeways, and talking about such topics provides further occasion for self-reflection and critical thinking. Haberman's book thus provides an entryway into such discussions, so students begin to think critically about how we conceive of, and thus relate to, rivers as sources of fresh water. It also allows for rich discussions about the myriad ways that culture influences our conceptions of and relationships with watersheds.<sup>vii</sup>

(3) *John Snarey, "The Natural Environment's Impact Upon Religious Ethics: A Cross-Cultural Study."*

Reading one provides students a summary of two case studies, while reading two provides a deep ethnography of a river and Hindu relations with that river. Reading three is from a social scientist who undertakes a comparative analysis of pre-industrial religions, trying to answer the research question/thesis that "a society's evolutionary survival under environmental conditions of extreme scarcity is promoted by a Supreme Deity's legitimization of moral codes designed to protect natural resources (1996: 88). Snarey reframes the question elsewhere: "Do variations in the availability of water in the natural water predict variations in the social conception of a High God's active support of conventional social ethics? (ibid: 88). This is a key question, and one worth exposing students to, as this century will undoubtedly see unpredictable and dire variations in the availability of freshwater, and thus the ability to generate sustainable biosocial systems.

Snarey's conclusion, after comparing water conditions and religious beliefs among 186 societies, suggests "that a relationship exists between environmental conditions and supernatural beliefs among cultural groups around the world" (ibid: 93). Furthermore, Snarey's results suggest that, "A precarious water budget appears to be an almost necessary condition for the rise of a morally concerned High God" (ibid: 94). In other words, Snarey finds a strong correlation between how environmental conditions influence cultural ethics and values, especially around the variable of religion, at least in pre-industrial societies. This alone is worth having students discuss. However, Snarey provides further insights when it comes to discussing sustainability and community ethics, especially around key resources: "we now need to repair the broken link between environmental and religious ethics in a postindustrialized world that is, in fact, also

running out of clean water” (ibid: 95). Clearly we should not advocate for any religion on a campus (unless it is a faith-based campus), so that is not necessarily the most salient point of this article, given the three goals outlined above. Rather, what Snarey provides is the occasion to discuss the iterative process between a change in resource, community ethics that help guide management of that resource, and sustainability, with this discussion encompassing local to global scales.

### *Conclusion*

This paper investigates how the environmental humanities, and especially the study of religion and nature/ecology, can help generate meaningful dialogue in the classroom around issues of sustainability, especially those related to fresh water. The above three resources are able to provide a starting point for such discussions. Furthermore, these resources help develop critical empathy in students, allowing them to learn about how humans elsewhere on the planet conceive of and thus manage limited fresh water reserves, while providing an opportunity to question hegemonic American views about and management of water. The remainder of this paper offers classroom and campus-based exercises that can build upon the insights cultivated by the above readings.

One of the great things about water, and other key resources/goods like food, air, and transport, is that they provide a perfect opportunity to teach across the curricula. This means that researching and teaching about sustainable water issues can encourage students to take relevant courses in the natural and applied sciences, public health, social sciences, and humanities. Water issues can provide a “hub” around a teaching and research regime, or can become the focus of a concentration within a sustainability major, capped off by a senior thesis that researches a water issue. Such an academic trajectory also makes a recent graduate more competitive on the job market, given the severity of water issues around the globe. Lastly, the study of water as outlined above provides an exciting opportunity to meet campus mission statements, and can lead to healthy and reflective criticism about how water resources are utilized at a campus level.

Specific skills can be taught to students regarding the issue of water. GIS classes can map water flows through campus, while students can work with staff in facilities to help learn water auditing techniques. Findings can be presented on posters around campus, especially near water-refill stations, while drains on campus can be labeled “drains to \_\_\_\_ creek/river/watershed.” This can help generate a sense of community, where the campus is seen as embedded within larger natural systems, which is indeed the case. Students can also help monitor local water levels and quality, and can be invited to generate art and short stories about their relationship with local waterways, while annual celebrations or rituals around local waterways can become part of the campus calendar.<sup>viii</sup> Campuses can also instigate quantitative and qualitative research regimes, interacting with the local community to develop a “living history” of community relations with local waterways. This can be a longitudinal study, and can be augmented by hosting local talks and even a national-level conference on water research.

Equally of import is that campuses can commit to generating more sustainable infrastructures in regards to water use, and students can help design and build these. For example, constructing living machines and other black and gray-water treatment ponds, building rainwater catchment barrels, and helping plant native species are all learning-centered activities that benefit not only the campus community, but the larger community. Actively involving students in each step of

design and implementation can provide them with needed job skills that they can put on their CVs, and can empower them to become active sustainability change-agents. These and other activities sponsored by a campus learning community borrow from and build upon the already existing purpose of environmental education, which is to convey information, build understanding, improve skills, and enable sustainable actions (Monroe, et al.: 2007).

Meanwhile, such activities require actively working across disciplinary lines and entering into learning partnerships with the larger community. This recognizes that “orientation towards sustainability [in higher education] is a fragile process that need[s] manifold support from a critical mass of actors” (Barth: 172). By scaffolding vibrant learning partnerships on core resources such as water, such a critical mass can be generated. Furthermore, such activities clearly fall within the remit of most campus mission statements, and they can cultivate interdisciplinary dialogue, teaching, and research, allowing campuses to model such behavior for students. Similarly-themed approaches to sustainability education in higher education are already being undertaken by Oberlin College, and also Emory University’s Piedmont training.

It is important to note that the responsibilities of modeling such behavior do not fall solely on the shoulders of faculty, but rest as well with those in Academic Affairs, Business Affairs, facilities, and indeed with all levels of a campus institution. This means that, “Understanding what should be done to develop a more sustainable college or university is one of the most pressing responsibilities for presidents, provosts, and board members” (Cortese, 2012). It is also built upon the recognition that, “Institutions that engage their trustees in regular orientations and provide timely updates on sustainability programs position themselves for success over the long term” (Martin and Samels, 2012). Lastly, it requires that everyone who is employed by a campus and who is charged with guiding a campus, from local to State levels, realize that, “The road to sustainability is one of culture and values as much as it is about scientific and technological development. It must be guided by the arts, humanities, social and behavioral sciences, and religion as much as by the physical and natural sciences and engineering” (Cortese, 2012). Sustainable campuses of the future will be ones where “all hands are on deck,” and this must occur in a context where, “Anything like a proper response [to climate change] at this late hour will require unprecedented wisdom and a manner of comprehensive thinking and acting at a scale and immediacy for which we have no good examples” (Orr, 2012: xv).

Such valuable insights lead to one important theme that can potentially crystallize around using water as a lens with which to teach sustainability. This is the realization that, at the end of the day, we share the earth and its “resources” in common, with other humans, and every other species. Creating a campus community that focuses on the commons should be a guiding ideal, given the anthropogenic climate-related shifts already underway and that are to get much worse in the coming decades. This guiding theme intersects with the reality that humans will need to “downshift” in the coming decades, so although humans will continue to live in urban areas, they will do so in very different ways that are not facilitated by access to cheap and abundant fossil fuels. Campuses therefore provide the perfect living laboratory to educate communities about how to live sustainably, adaptively, and with resilience on a dynamic planet; one where flows and stocks of water are to be in flux. As Anthony Cortese ably explains, “Most higher education administrators and faculty members do not understand the urgency with which society must begin to reform the way it is operating and the extent to which their curricula need to focus on social, economic, and ecological sustainability in order to fulfill their obligation to society”

(2012). We must continue to labor for sustainability to be taught and embodied in both curricula and via facilities at our colleges and universities, as we also create institutional structures that can sustain themselves, and this must be done with ever-increased urgency. This is the hallmark of generating shared sunlight “transition campuses,” based on insights from the transition movement (De Young and Princen, 2012; Walljasper, 2010). Using water as an entryway can nourish such initiatives so that they bear abundant fruit.

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<sup>i</sup> Although stated in such a way that this reads as ideological determinism, or our worldviews shape our actions, I am open to evidence and theories that correctly point out that environment shapes worldviews. The study of biocultural evolution captures this iterative process, where human culture and belief shapes the environment, yet the environment shapes human culture and belief. For the purposes of this paper, I will privilege the ideational pole of this cycle, but recognize that this is more for heuristic purposes. One of the case studies I will present in this paper expertly touches on this tension.

<sup>ii</sup> For a further analysis of economics and entropy, see Farley (2010). I also recognize that sustainability is more than just better management of environmental resources; it is also about organizational structure and change, as hinted throughout this paper. However, deeper analysis of this aspect of sustainability falls outside the immediate objective of this paper so is not purposively pursued, given space constraints. See also endnote iv.

<sup>iii</sup> For an insightful analysis about self-interest and bad "idea technology," see Schwartz (2011).

<sup>iv</sup> In this paper I dance between the tension of assuming sustainability is about sustainable resource use, including developing greater efficiencies and not overshooting biological limits; and assuming sustainability is about learning organizations that can sustain their identity and ability to function in a changing world. Sustainability applies to

both scenarios, yet the latter by definition depends on the former, as it will become increasingly hard to sustain an organization (political, religious, business, educational, NGO, or other) in a world undergoing climate related triage.

<sup>v</sup> Here I point out that religion is a contested category, and most Western citizens, especially in the U.S., conceive of religion through ethnocentric, Protestant biases, where religion is assumed to deal with privatized belief in a singular and all powerful deity. See Masuzawa (2005), Roth (2008), and Smith (2004).

<sup>vi</sup> For Muslim readers: “May peace be upon him.”

<sup>vii</sup> For a provocative exploration of precisely this issue, see House (2000).

<sup>viii</sup> On ritual, environmental restoration, and environmental ethics, see LeVasseur (2011).



Author Photo



<http://www.vina.cc/news/index.php/Dham/Polluted-Yamuna-at-Mathura-scaring-away-pilgrims.html>