INTRODUCTION

Relationships and stories are essential to the human condition—people and ideas relate to each other, and narrativizing these relationships can create “true” myths important for human survival. The topic is personal—my relationships with four environmental thinkers and activists, and with metaphors of earth-changing proportions. Aldo Leopold, Van Rensselaer Potter, Arne Naess, and Rachel Carson inspired me to not only “think like a mountain” and then to embrace my feminine side and “feel like water,” but to act boldly in the real world. As courageous scientist-scholars they enriched my mind, and as human beings they strengthened my heart.

The stories involve seeking out academic and real-life dominant words and stories, exploring their impacts and values as they facilitate or distort our journeys through time as we examine the mysteries of ourselves and our multiple cultural worlds. The characters are larger-than-life spirits that meet on the peaks of inspiring mountains and on the shores of vast bodies of turbulent seas. Their stories plumb the depths of our humanity and of our ignorance. Ultimately, they demonstrate the quest for wisdom in community and how personal death can reflect a life well lived.

Our real world of human living and meaning is more about relationship and process than structure and content, and more about culture than physics. Drawing connections amongst divergent sources is a mechanism of creativity and generativity. Our understanding of words as they relate to each other in stories is more important for our existence than knowing how atoms bind together in molecules or how stars are formed. Changing the story can help create a viable future, and such transformation can be just as powerful as the havoc wreaked on the physical environment by the industrial age that now threatens coming generations.

As a physician, cognitive scientist, and reformed bioethicist (see below), I have focused my academic career on the cognitive challenges of brain aging, and increasingly of late, on intergenerational education and sustainability. My life goal is to help to create learning environments that foster collective wisdom, promote healthy living, and grow spirited citizens to serve a viable future.

I practice in an academic hospital in the city of Cleveland—a city that is linking its future to health care and a green economy. Health care systems should be healthy, caring, and patient-oriented (person-oriented), but they are not, especially in the United States. Educational systems should be imbued with the passion for learning and student-oriented, but they only profess to be so. Health is a mirror of a culture’s material and spiritual well-being; teaching youngsters (and adults) is our hope for the future. Sickness in individuals and organizations comes from being out of balance internally and in relation to the external world. Ill health creates dis-ease and threatens an organism’s
ability to thrive and survive. Learning is the major way to promote better health. Our health and educational enterprises are neither successful nor sustainable. They are poor value for money in terms of enhancing quality of life though disease prevention and amelioration and educating innovative and committed citizens. Their failures to even define health or a well-educated person adequately reflect why the human species is endangered.

In an era of global climate change, how can health and learning systems become drivers toward a viable future instead of contributing to our distraction and demise? How can we prioritize our research, our clinical care, and our educational goals to promote an integrative model of health, rather than pursue the fantasies of unlimited growth and death avoidance? To me the first step is in principle quite simple: stories and images (multimedia narratives) must be constructed to draw us into a more realistic appreciation of the present and an optimistic view of the future. What is complex is how we construct and disseminate these powerful, life-affirming narratives. For this endeavor we must look to past connections between people and ideas that inspire us and give us hope. We can then take these historical tales and myths, incorporate them in the context of modern culture and information technology, and build new processes and organizations that encourage change. It takes courage and risks. And it will take a world willing and able to create and support opportunities for more people—especially those who currently live in fear and poverty—to demonstrate such fearlessness. Simply maintaining the status quo is itself a risk—indeed perhaps the greatest risk, since it leads to unsustainable population growth and certain further environmental degradation.

This essay turns now to the relationships I had and have with Aldo Leopold, Van Rensselaer Potter, Arne Naess, and Rachel Carson and their ideas. Such relationships illustrate powerful cultural processes alive in the world that offer hope for the future. I then focus on the application of these concepts and values in The Intergenerational School, a public charter school in Cleveland committed to spirited, lifelong learning and sustainable multi-age conversations about the future of our communities and the planet. I end with some more abstract reflections of the commonalities and differences among my four ecologically inspiring mentors and implications for action in the world.

### RELATIONSHIPS—ONLY CONNECT

The story of my relationships with my four environmental heroes begins with a journey into the rapidly evolving field (soon discipline and then profession) of bioethics. As one who worked within the medical industrial complex to find effective biological treatments for what I used think was a medically targetable entity called Alzheimer’s disease, I began to be concerned about the values underlying this academic endeavor and how its quest for a cure was driven by fame and fortune. I came to see the Alzheimer’s field as a caricature of medicine’s general addiction to a biotechnological imperative pushed forward by scientism and capitalism. I studied issues like genetic testing, informed consent, conflict of interest, and end-of-life care. I saw money driving the field, and medicine ignoring the major threats to health. Looking for an alternative perspective, I earned a Master’s degree in Bioethics, but also became concerned about the field’s limited moral scope and moral imagination. Some of my teachers suggested I should learn about the man who invented the word “bioethics,” and that is how my story of reformation begins. In the beginning was that word.

In 1970 Van Rensselaer Potter, inspired by Aldo Leopold’s conception of land ethics, coined the term “bioethics.” In his first book, *Bioethics: A Bridge to the Future*, Potter described this new field of study and action as located in the boundaries between biology and the humanities. He titled his second book *Global Bioethics, Building on the Leopold Legacy*. In later work I did with him, Potter and I extended the concept of global bioethics to deep bioethics, drawing on the inspiration of the deep ecologist and Norwegian philosopher, Arne Naess. Naess had adopted Leopold’s expression that human beings need to learn to “think like a mountain” as a metaphor for long-term, aspiring, broad-based ecological thinking for his deep ecology movement. Leopold had coined this phrase in recalling the death of a wolf that he had shot and wondering how a mountain might think about the long-term impacts of predators on deer populations (about which Leopold changed his own views during
his career). Leopold, Potter, and Naess all had grave concerns about the future and saw value discussions as important to influencing our fate as a species.

Although they overlapped on the faculty at the University of Wisconsin in Madison, Potter and Leopold never met one another. Leopold was killed in a fire the year before I was born. Leopold inspired me through his writing and his influence on Potter. In addition, I was fortunate to befriend Leopold’s biographer, Curt Meine, and to read his own inspiring work on conservation. I also attended several conferences focused on the Leopold legacy held in places where Leopold had lived and made his contributions. Curt’s original scholarship also gave me the knowledge that beauty was a late editing addition to Leopold’s now famous definition of something being ethical—i.e., anything that preserves the integrity, stability, and beauty of a biotic community. In a handwritten insert the word “beauty” was added to an otherwise typed text and the word “aesthetically” added to the word “ethically.” As a scholar and as an ethicist, I had been much concerned about truth, but as a photographer looking for the “perfect” image to “capture” nature, I needed to understand and appreciate beauty and why scholars and ethicists tended to ignore this third path of Western philosophical thinking.

The first time I met Van he picked me up at the airport in his rusting 1984 Subaru with the license plate “YES ZPG” and wearing his farmer’s cap and scruffy clothes. Yet Potter was a PhD oncologist and member of the National Academy of Sciences who came to fully develop his ethical thinking only late in his career. His work in basic biochemistry of tumors led him to see the dangers of excess growth and the complexities of efforts to understand and intervene in biological systems. I spent several years collaborating with Van and conducting an extensive oral history. He was a genuine scientist who searched for the beauty in nature through knowledge. I was honored to give an address at his memorial service after he died in 2001.

For several years afterward I tried unsuccessfully to get the University of Wisconsin to recognize the power of linking their existing commitment to the Leopold Legacy to Van’s contribution in health ethics.

Potter never met Naess. I met him on two occasions, but only late in his career when he was limited by dementia. On the first visit I arranged a lunch on a mountainside overlooking Oslo, where he had been the youngest philosophy professor ever at the University of Oslo. He had developed the idea of deep ecology to focus on our spiritual connections to nature and to be critical of those “shallow” ecologists who only looked at the more scientific, practical, and superficial aspects of ecosystems. He could still wax eloquently and passionately about his work on the meaning of words and of the importance of every person developing a personal philosophy. His own “green” belief system, Ecosophy T (meaning “nature wisdom”), was named after the mountain upon which he build his hut to retreat from the world. Potter also had his own guiding philosophy expressed in a dozen or so statements that he included prominently in both his books. Arne was actually a mountaineer and famous for his exploits of one kind or another (like climbing up the outside of an academic building). Despite being demented, he inspired me and continued to be a national hero as his deep ecological ideas reflected the Norwegian sense of connectedness to nature. As a neurologist, I was a bit perplexed by the patchy nature of his cognitive impairment. His long-term memory and language were as expected more preserved than his short-term memory, but his wife said he could not even tie his own shoe laces, unusual for that degree of language preservation. By my second visit he was as expected looking more frail but still able to express his passion for nature. He illustrates for me the continuum of cognitive challenges and how persons with dementia can still play an important role in the lives of
others. Arne did in mine. Remarkable people remain remarkable even when affected by cognitive losses.

Interestingly, like Naess, Leopold and Potter both had a hut or shack located away from the city where they could commune deeply with nature and write. Each was acutely concerned about words and the capacities—and limitations—of the human mind. Each had a poet’s heart as well as a scholar’s intellect.

After being imbued by the spirit of these male heroic figures, I found my fascination with mountain climbing and photography expanding. In an effort to inspire myself and others I probed deeper in the landscapes of the mind. Clearly the long-term view built into the metaphor of “thinking like a mountain” is even more necessary today as the pace of global climate change and “weather weirding” accelerate (the latter is my term; some use climate weirding, first coined by Amory Lovins, to highlight abnormal and disturbing variations in climate systems, but I think bringing the focus to weather connects better to people’s day-to-day and month-to-month appreciation that our local weather is becoming stranger and more disruptive). Before my last visit with Arne I took a boat up the west coast of Norway and felt the strong presence of the increasingly ice-covered mountains as we traveled north beyond the Arctic Circle. Perhaps my deepest (and highest and most effortful) mountain experience was in the Himalayas of Nepal. Walking very slowly, feeling every breath at 17,000 feet while listening to my Sherpa guide tell me the name and height of every peak we passed, I realized that mountains did not worry about their names or even whether the range was separable into different peaks and certainly did not engage in a competition about how high they were!

Inspired by Arne’s deep ecology, Van and I wrote our only paper together and invented the term “deep bioethics” to build upon his notion of global bioethics. Van was frequently inventing new words to modify bioethics, so I also joined in that game. As Warren Reich pointed out, “global” meant both planetary in scope and intellectually all-encompassing. I suggested adding “deep” to mean looking into the core of the sphere of human thought and action by engaging with passion and spirit our relationships to nature. Frankly, it was also a dig at mainstream bioethicists, who seemed most eager to converse narrowly about a variety of genetic and medical research issues, but rarely took on the major world health issues or the power of medicine and its commodification.

Perhaps it was Arne’s telling me about how he would stay in the water for hours feeling the sea creatures around his toes, or learning of Potter’s community work with the Lake Monona conference center in Madison, or seeing the power of snow and ice in the Himalayas, but I eventually began to retell my own life story as a scientist/photographer starting in college studying the estuarine ecology of the Chesapeake Bay. I also explored the biology and behavior of thirst in animal models for my undergraduate psychology thesis. I was re-narrating my career as a clinical neuroscientist, trying to understand how people think and value natural systems.

Water became the force to balance the power of mountains. Given enough time, water can wear down any mountain. Water is essential to life. It is often associated with a more feminine energy as in the environment of the womb or the monthly flow of lunar tides. I tend to eschew dichotomous thinking like polar opposites such as masculinity and femininity; I see such dialectics more in an Eastern Yin and Yang fashion. However, the feminine side of all of us needs more voice in the world. I was then drawn to the work of Rachel Carson and to her haunts along the coast of Maine. Her books Silent Spring, The Sea Around Us, and Sense of Wonder inspired me with the same passion that my three masculine eco-ethicist figures had.

The idea that water can take on many forms (gas, liquid, and solid) in many different contexts (clouds, seas, lakes, rivers, and brooks) allowed me to create the metaphor of “think like water” to complement “think like a mountain.” Water can be steamy, misty, flowing, rigid—words that to me evoked emotion. Just as water can overpower mountain, I came to realize that if we are to change our course as a species we must link back into our animal, emotional side in a healthy manner and not pretend that we are above nature and can think our way out of every complex dilemma we find ourselves in. Perhaps the reawakening

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of the feminine in the world is a large-scale cultural response of our species to our current plight, which was created in large part, one might suggest, by masculine “control and conquer” forms of thought and action.

BACK TO SCHOOL

So I and many others have been inspired and enriched by these great and courageous people. But how do we change inspiration to aspiration and then act in the world? Over the last ten years I have focused on publishing a series of books deconstructing my career as a neurologist and neuroscientist. I then co-founded a public charter school with my wife Cathy and am currently moving my health practice into it. But to go back to the initiation of my academic career, one beginning was in a brain nucleus, once called mysteriously the “substantia innominata.” Few people knew of its existence prior to our work at Johns Hopkins. For a brief moment in time, I was arguably the world’s expert on a single brain nucleus. I recommend such a career strategy to all my mentees! In truth, however, I was lucky in my time, I was arguably the world’s expert on a single brain nucleus. I recommend such a career strategy to all my mentees! In truth, however, I was lucky in my research. This nucleus is now known as the cholinergic basal forebrain and is one of the key brain structures affected in aging, Alzheimer’s disease, and other related conditions. Cholinergic drugs are now the mainstay of our rather ineffective pharmacopeia for dementia.

Over the last quarter century, I have studied and cared for people affected by so-called Alzheimer’s disease. My main emphasis in these years was basic biological research studying autopsy specimens that had been generously donated by family members and trying to develop drugs to improve the quality of life of people affected by those conditions based on an understanding of the biology. I became a well-known Alzheimer expert when I wrote or edited a series of books challenging the dominant story of the disease.† The most provocative was entitled The Myth of Alzheimer’s: What You Aren’t Being Told about Today’s Most Dreaded Diagnosis.8 This book retold the story of Alzheimer’s suggesting that the dominant model (which I in fact helped to develop) was quite misguided. Alzheimer’s disease is not one condition, and it is related to aging despite common assertions to the contrary. It is a very heterogeneous condition at genetic, pathological, and clinical levels of description. Despite billions of dollars of research, we have no effective ways of treating Alzheimer’s from severe brain aging on the continuum of normal aging, nor do we have effective biological treatments. Although we have had many claims of breakthroughs over the years and assertions that we are close to the cure, we are not. If Alzheimer’s is in fact a variety of age-related biological processes, then a cure is not likely, and new approaches to what is genuinely a tremendous individual, family, and social challenge need to be developed.

Embedded in this story is recognition of the power of words, especially when they are fear-provoking medical diagnoses like Alzheimer’s disease, and how cultural stories limit individual choices about aging processes. I turned my attention to concepts like brain health, brain fitness, and positive aging. I came to recognize that as one—and perhaps the major—organ of learning, the brain inspires a more comprehensive program of disease prevention that focuses in part on building healthier learning organizations. We should not ignore, however, that we really learn with our entire body and often with other brains and bodies in social contexts.

Ten years ago my wife and I started The Inter-generational School® as a charter school in Cleveland, Ohio. The idea was to create an elementary school in which children from challenging urban environments could be offered, and share, learning experiences with young adults and elders. This community of excellence has demonstrated quantitatively and qualitatively its value for both children and for elders with memory problems. It has achieved local, regional, national, and international attention for its ability to improve public education while also offering opportunities for older adults to maintain their sense of purpose and engagement in community, even if challenged by dementia.

Since its beginning, the school has had a green consciousness and a commitment to sustainability. After all, sustainability is ultimately an intergenerational ethical issue. How do we use resources in the present so that future generations can also have opportunities to thrive? Since the start, we have had in-
tergenerational gardening and nature programs. Of late we have been collaborating even more extensively with our local nature center. Located quite close to the school in the Doan Brook watershed, the Nature Center at Shaker Lakes has a series of boardwalks that are wheelchair accessible and are decorated with inscribed quotes from Rachel Carson. It is here that our young students and elders created and collected the stories that led to their being awarded a First Prize in the EPA Rachel Carson’s Sense of Wonder multimedia contest last year.

Currently we are extending our gardening programs to include a food-producing, permaculture model called an Edible Forest Garden. In the school we expect our learners of all ages to work the soil and help produce food in a manner that teaches about ecosystems, local economies, and healthy eating. It is in this school and garden that I will develop an intergenerational health and wellness practice with colleagues in family medicine, nursing, and other professions.

This school and garden-based health practice will focus on long-term systems thinking and help create the values and collective wisdom necessary for sustaining our community. Our focus is on the necessity of water and watersheds for human life and is inspired by the work of Rachel Carson. Although Ohio is not known for its mountains, the upper Shaker Lakes are located on an escarpment approximately 1,000 feet above the level of Lake Erie into which the Doan Brook flows. Moreover, our distant history is of glaciers wearing down the mountains once present in our region.

To complement our real-life learning environment we are also developing an intergenerational island school in a virtual reality environment called Second Life. In this digitally-created environment, we can not only model the Edible Forest Garden to learn how ecosystems work in that digital environment, but also offer the opportunity for students to terraform our virtual reality. The students can include hills and bodies of water in their designs in ways not possible in real life. By “creating” mountains and bodies of water in a space in which the ecosystem and march of time itself can be modified, students learn to think about systems and use metaphors like “think like a mountain” and “feel like water.” Hence, we’re trying to create an environment in which city children can work with college, nursing, and medical students as well as elders to develop the long-range thinking necessary to ensure the future of our species. In this endeavor, we are inspired by the life stories and the thoughts and values of the likes of Aldo, Van, Arne, and Rachel.

LAST REFLECTIONS AND THE WAY FORWARD

I was drawn to both the commonalities of thinking and behavior among the three men and the differences between them (and my original stance in the world) and Rachel Carson. Leopold, Potter, and Naess all thought about systems of interconnecting parts in interdisciplinary ways. Each considered the limitations of human thought processes and actions in the world, thus promoting a profound humility about the human condition. Each valued the power of language in changing human behavior. All were deeply concerned about the future and of the role of the human species in it. Each recognized that huge challenges lay ahead in a time before many others came to appreciate our plight. Each was an actor in the world in their professions: Leopold as the developer of game management, Potter as an early biochemist and oncologist, Naess as a political activist, and Carson as a biologist writer. Each was an academic in part but shared ambivalence about the role of universities. Each saw their field of engagement as the whole planet and its peoples. Each was respectful of biological and cultural diversity. They were authentic—i.e., they lived their own philosophies in their daily lives. Each was a person who attracted others to their cause and was willing to make personal sacrifices.

For me Rachel Carson played a special role. During my career as neurologist, cognitive scientist, and ethicist, I was strong on brain and thinking but relatively weak on heart and emotions. As a scientist, I lamented the loss of awe and mystery in the process of trying to understand natural and human systems. During my career the essence of the scientific enterprise has seemed to move from wonder and wholeness to finance and fragmentation. Carson had all the virtues of the men described above (as best I understand her life and work) but that “sense of wonder” was expressed particularly powerfully (and even in the title of one of her books). She seemed more fascinated with water and the seas around us than perhaps the land and the mountains above us. I also came
to act on this inspiration from Carson and devote more of my teaching to water. Whether with medical students at the level of physiology or communities and watersheds, we should emphasize that the need to avoid thirst and to maintain quality water supplies will be key to our personal and species survival. People die (as I knew personally from my work on the end of life and dementia) after a short period of dehydration. So understanding the power and poetry of water systems will be more important than understanding mountains. Moreover, as discussed above, water can exist in three very different states—gas, liquid, and solid. This property struck me as representing well the changeable states of emotions. The words used to describe the formation and movement of water seem to imply process and energy more than (relatively) static mountains. Water is more immediate and less remote than larger land forms. Water connects all living creatures with the earth. As I said before, I also came to realize that water was in some sense more powerful than mountains (glaciers, floods, even trickles from springs over time can erode mountains). This water metaphor was associated with my recognition that humans need to see themselves more as animals with emotions than as a kind of supernatural cognitive species.

All four of my environmental heroes saw the need to act. Now, decades after their work in the world, that need for engagement is even greater. But we are likely too late to avoid even greater environmental disasters and human suffering to come. With the possible exception of geological events like volcanoes and earthquakes, there are no natural disasters anymore. Human influenced global warming and changes in sea levels are affecting every meteorological event.

Diseases affecting many species, including ours, are spreading in somewhat predictable ways following the changing temperatures.

But we do need to stay firm to the idea of thinking globally and acting locally (and also thinking and valuing locally and acting globally). In The Intergenerational School we have started a project in which our youngsters interview local environmental activists. These activists saved the Doan Brook and our nature center from a corrupt county engineer who wanted to put a freeway through our watershed in the 1960s. By creating the opportunity for young students to learn what these elders did in the past to make it possible for all of us to enjoy the brook today, we hope to motivate them to address the future challenges of the brook (like the mixing of raw sewage and runoff waters during flooding).

Ultimately the world will become what it will become with little regard for its hospitality toward its current dominant, sentient species. When the picture is too big and bleak, the best course of action is to take manageable and wise steps in one’s own sustainability journey. It is learning that gave us power as a species in the world, and it is learning that offers us our best hope. Fostering learning in community is what the school aspires to. It is what Leopold, Potter, Naess, and Carson did in their own lives, and what they continue to inspire us to do, today and for the future.

NOTES
11. Edible Forest Garden, a concept developed by David Jacke with implementation at our school led by Brett Joseph, at https://sites.google.com/a/case.edu/fairhill-partners-forest-garden-information-and-research/work-products-1.