

Last Lecture

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Introduction

Thank you for the opportunity this evening and thank you all for coming. I have been thinking about this last lecture for what seems like a very long time. That said, please relax and know that I'm not planning to test the boundaries of free speech or push the envelope of academic freedom or sing or mime, the truth is I don't want this to literally be my last lecture...

Putting this talk together has led to many interesting conversations with colleagues about the premise of the event and what they might say and why. It has also reminded me of two powerful motivating forces: fear of failure and the desire to create something interesting. The first motivator, fear, emerged quickly. Dave Raymond sent me an email almost immediately after I accepted the invitation to give this lecture. Dave wrote: "*Great. I look forward to some brilliance from you Jon.*" Well, thanks Dave for cutting short my brief, self-satisfied moment, of having been asked to speak **and** replacing it with the unbridled anxiety of knowing that there were **expectations**. The effectiveness of the second motivator, creating something interesting, will only be revealed when this lecture is concluded - and whether you think it time well spent or you chose daydreaming about color patterns in your den or numbing your fingers with text messages.

However, from my position I am glad that this event is well organized and publicized and one is guaranteed an audience. It might be considered profoundly deflating to prepare to give a last lecture and have no one come.

It's nice to have a captive audience

The truth is at 48, I don't feel ready to give a last lecture. This assignment really forced me to take some time to honestly reflect about what I am doing and why. Like everyone here, my life has been and continues to be a tangle of ideas, choices, decisions, failures, successes, reflections and aspirations. I am, on any given day, hopeful, angry, appreciative, appalled, inspired, heartbroken, frenzied, contemplative.... Preparing my words tonight gave me a unique opportunity to reflect and I thank **The Center for Augustinian Study and Legacy** for giving it to me. I hope, as the cartoon notes, my schlock has gravitas.

The Lecture

The first thing I did was look up the definition of the word lecture - I honestly can't recall ever having done that before. I found the following:

- An oral exposition of a given subject delivered before an audience or a class, as for the purpose of instruction
- or**
- An earnest admonition or reproof; a reprimand

In a sense, both meanings are relevant this evening. The themes I want to talk about are centered on ecology as a way of knowing, restoring an ecocentric perspective, the capacity to challenge and change our minds and moving through knowledge to wisdom. This may require some exposition on, and reprimand of, our own species

It is a challenging time to be an ecologist. In many sectors of our own and the global society, this new century has been a building storm of frustration and exhilaration, despair and hope, disappointment and promise. The truth is that the state of the planet is not good. We are in an era where we are reaching many environmental limitations, limits of resiliency, resources, resolve and respect. We face widespread habitat destruction, climate change, pollution, loss of biodiversity and increasing demands on all our natural systems. On the **one** hand, many of our species through economic and social systems continue to act as anthropocentric, arrogant environmental bullies with widespread disregard for the Earth's limited resources, functions, capacities, extraordinary biodiversity and brilliant, severe and deep beauty.

On the other hand, some humans are utilizing our unique capacity as a species to recognize, adapt, grow and thrive as equal and sustainable partners with all Earth's inhabitants, plant, animal and fungal, by adopting a more **ecocentric** view of the world. This evening I want to talk about both realities and highlight the choice all 6.6 billion of us humans have to face in how we view the Earth and our place on it. Now, I don't want to come across as overly negative, or sound the alarms of hopelessness or present myself as some academic, self-righteous twit who thinks he knows all the answers. I have taken a sort of 'Lewis Black' approach in that, as the bumper sticker says, "If you're not angry/confused/mad/outraged, you're not paying attention!" As ecologists we are supposed to have some awareness of the state of the planet and be able to report and reflect on it and suggest ways to help protect the biosphere. That is my sole intent this evening.

Ecology as a Way of Knowing

As a professional, I guess I would define myself, in part, as an ecologist. An applied ecologist who of late is teaching more than I ever imagined I would. I have a Ph.D. in Ecology. I have conducted ecological research and published papers in some of the journals of the field. I have worked in ecologically-based conservation projects in many places and continue to work to help empower rural communities to manage natural resources and break free of the legacy of colonial and neo-colonial resource control systems. As an aside, and being my last lecture, I thought I might have some latitude. I have always been dismayed when people hear of my travels and work in Central America and elsewhere and instantly raise the Indiana Jones stereotype; Indiana Jones is to archaeology as what George W. Bush was to multilateralism or what the Hummer is to fuel economy...His fictitious character represents colonialism, imperialism and a view of the world I do not share...so please don't go there...thank you...

Alright, I feel much better now... I also never feel comfortable with the labels of professor or scientist or teacher. I am part scientist, part teacher, part parent, part sloth, part recluse, spending time alternately in lectureship, scholarship, authorship, friendship, kinship, spectatorship,

stewardship, survivorship and hardship. Pick a day and I'll tell you what I am. But, much centers on having been educated as an ecologist.

Ecology is a way of knowing. Ecologists look at the Earth as a web of interconnections, linkages, cycles, mutualisms, competition, resiliencies and ultimately limitations. Ecologists are trying to understand the snapshots of evolution we are given in this time and then working to untangle their meanings both by looking deeper into the immediate and by taking a longer gaze - seeking understanding and ascertaining relationships over the green and blue landscapes of time.

The term ecology was first coined by the German biologist Ernst Haeckel in 1866, when he defined it as "*the comprehensive science of the relationship of the organism to the environment*". It is a broad field and a scientific approach that takes a broad view, the big picture, entire systems of living organisms and the connections on the continuum of life and non-life, the flows, the cycles and linkages. It recognizes the entire spectrum of life from molecules to cells to species to ecosystems. **It is as likely** to recognize the emergent properties in the hierarchy of life **as it is** to value but also recognize the limits of reductionism.

Ecology is inherently what we call 'interdisciplinary' it always has been and always will be. It is truly an inclusive science of amazing scope. The scales it plays out on can be as small as within an insect's gut or as vast as the entire biosphere. The same principles apply at all scales and in all geologic eras. Ecology thus provides a conceptual framework in which to understand the biosphere, past, present and future.

Given the complexity of ecological inquiry, description, observation and context are pre-requisites to understanding; in ecology, history, geography and natural history are as valuable as biology in providing ecological insights. In ecology, humans are but one of 150 million or so species on the planet made of the same earth elements, subject to the same cycles, interdependencies and linkages as every other species.

Riparian Forests

In my personal journey, if you will allow the conceit, I have been drawn to forests and their complexity, structure, diversity and their beauty. I am particularly interested in the linkages between forests and rivers - forested riparian corridors or as they are sometimes known, gallery forests. Charles Darwin wrote of riparian forests in his journeys in Brazil in 1832 in a passage I like:

"The vegetation is uncommonly strong and luxuriant. Thick interlacing of climbing plants, wreaths of flowers, glowing in the greatest diversity of colors, connect the gigantic trees, between which, scaly stems of ferns form majestic dark green cool avenues, through which the traveler passes in silent meditation, sometimes only disturbed by the screams of the parrots, the hammering of the woodpeckers, or the howling of the monkeys."

Riparian corridors can be abrupt, gradual, serene, dramatic and to me profoundly interesting and revealing. It is one way that I see, know and learn about the planet as an ecologist. The rivers and their adjacent forests don't make sense in isolation, they are weaved and linked together in space

and time, their ecology provides both deep fodder for scholarship and an opportunity to work, literally in the middle of the flow of the planet. Leonardo da Vinci noted that “when you put your hand in a flowing stream, you touch the last that has gone before and the first of what is still to come.” Studying riparian ecology is a great place to stick your hand in.

Humans have been studying, altering, celebrating and lamenting their relation to the environment and other species for millennia. Human survival has always depended on understanding the environment, ecological relationships and adapting to them. What we now call ‘traditional ecological knowledge’ in many societies is in fact, something every society at one time had to know and it is partially hardwired into our DNA, having been molded by centuries of environmental interactions. For many modern and particularly urban humans, this knowledge is atrophying and we are becoming shallow husks of our former ecologically aware selves. But we all have the capacity to think and learn ecologically, it is part of all our past and ultimately, in my mind, an integral part of all our futures.

Regardless of our varying levels of ecological awareness, humans have been and continue to be one of the great manipulators of, and experimenters with, the raw resources of the planet, both living and non-living. Humans have subconsciously and consciously been manipulating nature in discernible ways since they developed efficiency in hunting and fire, and profoundly with the development of agriculture some 11,000 years ago.

One of the ironies of the 21st centuries to an ecologist is the idea that the inhabitants of the earth have only recently entered into a period of globalization, whether it be the global economy or global society or global climate change, as if this globalization was a phenomenon of the late 20th century. Ecologists recognize that all life on the planet has always been part of global systems. Hydrology, ocean currents, the climate, the atmosphere, geology, shifting continents, biogeochemical cycles all have been global systems for billions of years. Before humans ever populated the savannas of East Africa, migratory birds, monarch butterflies, herds of hoofed beasts, whales and porpoises, marine and freshwater fishes have been flying, walking or swimming over every continent and every ocean for millennia connected by the global cycles and flows of nature. In ecology, globalization is simply part of the reality of life on earth.

Yet, hominids, first *Homo erectus* and then *Homo sapiens*, have been the agents that have taken globalization to entirely new levels of complexity, intensity and extent. Since the migration of humans out of East Africa, we have altered the physical and ecological landscapes of the planet, to the point where now, we not only threaten the integrity of many natural systems, we are poised to decimate them. This has been the one true hallmark of our species – we manipulate nature on grand scales. The current ecological configuration of the earth really only makes sense from that perspective. Human migrations, wars, conquests and civilizations have altered the ecology of continents wherever they have occurred, in some cases leading to cultural extinction. Jared Diamond in his book ‘Collapse’ provides examples of how human activity undermined the environmental underpinnings of many civilizations, including the decline of Angkor Wat, the Anasazi, the Easter Islands, Greater Zimbabwe, the Indus Valley and the Mayan civilization. Diamond refers to these collapses as “*self-inflicted ecological suicides.*”

Beyond the collapses noted by Diamond, one need only look at the so-called European conquest of the so-called new world by guns, germs, steel and avarice to see the horrific impacts of globalization long before the internet age. The grotesqueness and cruelty of the African slave trade and the African Diaspora serves as another reminder of our early evidences of human-based globalization. Even the iconic symbols of the American west, the horse, the cowboy, cattle, sheep, and fields of wheat, all are imports from our ancient brothers and sisters in the Fertile Crescent through European colonial intermediaries. We have always been a global and ecologically manipulative, if not flat out destructive species. Lynn Margulis hits this point hard in the conclusion of her book *Symbiotic Planet* where she posits: “*Our tenacious illusion of special dispensation belies our true status as upright mammalian weeds.*”

Well, while I am not ready yet to think of humanity entirely as mammalian weeds, the difference in the 21st century, compared to past centuries, is that we are now well aware of the consequences of our manipulations of nature and we no longer have the refuge of being ignorant or lacking knowledge of the consequences of our actions to hide behind. We are the cause and we know the effects.

There is much that ecological science and its interdisciplinary ancillaries have to teach us about our current manipulations and their impacts on the Earth and our civilization. The question is whether or not these lessons are heard, digested and assimilated into our decision-making and choices. The question is, are we willing to take knowledge and forge from its ore, wisdom. As the adage goes, those who fail to learn from the mistakes of their predecessors are destined to repeat them. It begs the question, what responsibilities do we have and what responsibilities emerge when we strive to enlighten minds, engage hearts and empower lives? From an ecological perspective, doing that seems absurd without cultivating a sense of stewardship and service to the planet and promoting the sustainable use of its natural resources.

Loss of Perspective and Knowledge without Wisdom

One of the real challenges in this new millennium is the focus of humanity on itself, at the individual, community and societal level. There is a pervasive sense that if we take care of each other, humanity, we will be able to make it through all crises and challenges that confront us. It sounds appealing but it is a flawed aspiration in and of itself.

It is not enough to care for one another. It is not enough to think we can cure cancer, alleviate poverty, end war or build socially just societies without realizing these endeavors are completely and utterly dependent on modifying our natural resource use, controlling the pollutants we produce and forging a sustainable relationship with the biosphere. Thinking otherwise is arrogant, it is misguided and it is ultimately futile. To save ourselves we need to look past ourselves and realize our dependence on this gorgeous orb that sustains us all.

Our need to break free from ourselves was highlighted by Albert Einstein in 1954 when he wrote: “We experience ourselves, our thoughts and feelings as something separate from the rest. A kind of optical delusion of consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from the prison by widening our circle of compassion to embrace all living creatures and the whole

of nature in its beauty. The true value of a human being is determined by the measure and the sense in which they have obtained liberation from the self. We shall require a substantially new manner of thinking if humanity is to survive.”

To move past the self requires a different perspective and different way of knowing and living. In traveling across the Midwest, as I have done and I’m sure many of you have on occasion, you often come across very long flat stretches of road. Corn fields and soy beans whiz by out the window and the cultivated land is flat and square and very two-dimensional. After awhile you long for perspective and the thought of an overpass becomes overly exciting.

On those rare occasions when you get to slowly rise above your circumstance, you finally can see past your immediate surroundings and put your journey in some context. You begin to see this landscape for what it is, a contrived agricultural creation. But the overpass recedes and you fall back down amongst the curved leaves of corn and the horizon once again becomes a blur of tassels seemingly compressed by the weight of the sky. Our perspective dissolves and we again are trapped in the immediate. Too often our educational, technological and economic journeys parallel this path. But they don’t have to.

Imagine that you continue from that overpass, and rather than descend, take the option, the risk, the choice of floating in a balloon up and over the landscape. Your perspective immediately changes and you see patterns of farms, private ownership, a tyranny of crop choices, the square matrices of roads, properties and townships that are the legacy of the Homestead Act. Go higher and you might see small town centers, larger cities, strip malls, industrial parks and coal-fired power plants, tiny remnants of prairies or savannas, you see the commercial veins of railroad tracks and interstate highways and swaths of electric transmission lines ferrying electrons. You suddenly have perspective and the landscape in context makes much more sense. At each level new textures and new realities emerge. You gain broader knowledge based on a changed perspective when you return back to your corn field and your journey.

Imagine again, floating up in the sky, but seeing **time unfold** beneath you instead of the landscape, you slip back into the past, past the Homestead Act and back before European settlement. You see seas of tall grass prairie playing in the wind, herds of bison and scattered human settlements and fields of corn along free flowing rivers. I’ve often wondered if our perspectives on the planet and nature would change if we lived longer, 200, 500, 1,000 years. To be able to see the cycles of nature run in fuller course, to see the change we impart, and recognize the cause and effect played out in full rather than in small, seemingly isolated acts of a great play. Our relatively short life-span, combined with an ever shortening attention span and continued widespread defection from experience with the cycles of nature means that we continue to lose ecological perspective in space and time. We are too often caught in a bubble of insularity and we have no frame of reference to identify where we are and what we have done let alone make wise choices for the future.

Jared Diamond in his book *Collapse*, notes that "A blueprint for disaster in any society is when the elite are capable of insulating themselves." I think that broad segments of our society, including higher education have, to a certain extent, insulated themselves through propagation of an asymmetry of knowledge coupled with an increasing tunnel vision. David Orr of Oberlin College notes there is a hubris buried in the *hidden* curriculum, embodying the prevailing socio-economic

views, “that assumes that human domination of nature is good, that the growth economy is natural that all knowledge, regardless of its consequences, is equally valuable, and that material progress is our right.”

Stan Rowe writes in his book *In Home Place: Essays on Ecology* that higher education has “shaped itself to an industrial ideal—the knowledge factory. It is overloaded and top-heavy with expertness and information. It has become a **know-how** institution when it ought to be a **know-why** institution.” We have an obsession with doing whatever is possible regardless of whether or not it is in the best interests of humanity or the planet. We search for the possibility of life on Mars or water on the moon, yet we don’t even know how many species there are on Earth at the same time we are losing 100 species a week to extinction. We mustn’t insulate ourselves or our students from the complexities and intricacies of our deep and pervasive environmental problems, we can no longer afford to know without direction or know without commitment.

We are wasting our increasing capacity to see how the threads of our consumption lead everywhere and to everything. We have become numb to the dizzying array of resource conversions that turn sand into microprocessors, volcanic ash into concrete, bauxite ore into beer cans, forests into greeting cards, gasoline into climate change. Information of all sorts is spewing out of every media, corporate and ideological faucet diluting the actual knowledge we need to make informed, ecologically-based decisions. The truth is, not all knowledge has equal value; calling something ‘fair and balanced’ does not make it so.

Stuck in the Corn Field

Students are early on in their journeys and have enormous potential to explore, but too often their potentials are thwarted by fear, fear generated, in part, by institutions of higher education. Students have hopes and aspirations but these are less spoken of than the nuts and bolts of building a major. This creates an ‘aspiration void’ and it is often filled with fear; a fear of failure, fear of unemployment, fear of making mistakes, fear of being different, fear of changing their mind, fear of speaking out, fear of questioning perceived authority, fear of not meeting parents’ expectations, fear of not being able to participate fully in the consumer culture.

Like warm liquid pouring into a shallow mold, fear can spread students thin, pushing them to take the paths of least resistance to fill a space, mark a competency, check off a skill on a matrix, get a job when they graduate. What students too often lack is empowerment to explore life from different perspectives, different cultures, different languages, different religious views and different modes of resource use. Without gaining these perspectives, their career and life decisions are made in a dangerous isolation.

“It’s Alright Ma, I’m Only Bleeding” – Bob Dylan

Too often, students in the sciences and elsewhere are taught in pieces and unconnected bits. They are given and accumulate knowledge without context and without perspective.

Students are left with isolated facts, factoids and data. They learn about surveys, polls and lasers, they know RNA, DNA and protein, benzene, atrazine and toluene, they know of herbicides,

insecticides, biomagnification and genetic modification, transmissions, incisions and remissions, cancer screens and modified genes, probability and instability, are taught about vaccinations, titrations and integrations, hypotheses and oily seas, resource use and coal's abuse, oils, plastics and PCBs, combustion, concentrations and the IPCC, about regulations and tolerances, drugs and prescriptions, that pharmaceuticals are indisputable. They remain unaware that our niches and half-lives and half-truths and disputes, are linked to disturbances and combustions and how we pollute. Is training without perspective something to which we want to submit?

But hopefully then a question in your nerves is lit,

Yet you know there is no answer fit

To satisfy, insure you not to quit,

To keep it in your mind and not forget, that it is not he or she or them or it that you belong to!

Students, don't get stuck in the metaphorical corn field, paralyzed with fear and timidity, break out and forge your own path, find a challenge, explore, grow, exceed your grasp, create!

Challenge Ourselves

It has often been said that we learn more about home by leaving, it is true of students, parents, refugees and astronauts. Students may be more capable than we, or they, expect. There is great risk and a near tragic sense of loss in setting the bar too low or catering to parent's or professor's desires to push for the common denominator of skills *du jour* to ensure employment. Emily Dickinson, captures this, I think in one of her poems which I am not ashamed to say I have been fond of, since it was first read to me by my third grade teacher, Mrs. Ketonen:

*We never know how high we are
Till we are called to rise
And then if we are true to plan
Our statures touch the skies.*

John Moore, Professor of Chemistry at the University of Wisconsin-Madison notes that "true education involves drawing out the innate qualities of students, helping them to develop their own understanding, and nourishing their minds to achieve the greatest possible stature." I could not agree more.

Students need to choose a challenge and we should enable them to do so in every conceivable manner. Part of that challenge must be to re-think, re-design and re-create how humans interact with all the major natural resource based systems on earth - soil, water, air, energy, minerals, agriculture, forests, fisheries and the biosphere. Take the challenge, the risk, the choice.

The Choice

Jared Diamond in his book 'Collapse' notes that our current level of globalization makes it impossible for modern societies to collapse in isolation, as did many societies in the past. For the first time in history, we face the risk of a global decline.

However, we also are the first people to enjoy the opportunity of assimilating information and learning quickly from developments in societies anywhere else in the world, and from what has unfolded in societies at any time in the past. There is a hopefulness that can emerge if we gain perspective and we dramatically and irreversibly break from the status quo.

Our major motivation should be to expand the Hippocratic Oath beyond ourselves to our environment in our pledge 'to keep it from harm or injustice'. It is a challenge, make no mistake, but a necessary one. David Orr writes:

“the great discovery of the modern era is not how to make nuclear fire, alter our genes or communicate at the speed of light but, rather, the discovery of our interconnectedness and implicatedness in the web of life. The great work of the 21st century will be to comprehend what that awareness means in every area of life in order to calibrate human demands with what the Earth can sustain.”

Students, during these undergraduate years you have the opportunity to explore and be curious, challenge yourselves, question assumptions, question authority, learn to discern, and ultimately to make wise choices. Why not learn how to grow your own food, learn how to wean yourselves from the electrical grid, reduce your carbon footprint, buy less for the rest of your lives, reduce, reuse, recycle, become an entrepreneur in a non-fossil-fuel-based economy, work to protect the natural resources of the planet, learn how to work for social justice, alleviate poverty and disease, develop new technologies, but do it with the perspective that you need to (as Orr suggests), calibrate your dreams, desires and demands with what we know the Earth can sustain.

H.T. Odum in the book *The Prosperous Way Down* notes that:

“Students of all ages will need the kind of education and skills appropriate to building a society with fewer cars but more bicycles and trains; fewer large power plants but more windmills and solar collectors; fewer supermarkets and more farmers' markets; fewer large corporations and more small businesses; this is a generation that must foster the regeneration of natural capital of soils, forests, watersheds and wild areas; clean up the toxic messes from the expansionist phase; restore sustainably habitable cities; relearn the practices of good farming; learn the arts of powering civilization on efficiency and sunlight.”

When I was an undergraduate at Beloit College in the early 1980's, there was talk of the coming information age when humans would have unprecedented access to information and be the most informed human beings in the history of the planet. There was an excitement that this new unfettered flow of information would be the catalyst and conduit for improving the human condition and that all humanity would finally be able to make informed, intelligent and sustainable decisions. The promise of this new age has yet to be realized. We have the knowledge; we have the capacity to learn from the mistakes and triumphs of the past, we have unprecedented capacity to make decisions with enormous depth of information.

What we are left with, what you and I are left with, is the choice as to what we do with this knowledge and information to sustain ourselves and this amazing planet. It really is the choice of our lives as individuals, families, communities, institutions, societies and as the dominant species in the biosphere. It will be a new journey and unlike much of what we now know and it is a damned interesting one.

I would like to end with a quote from Rachel Carson, from a speech she gave after receiving the National Book Award in 1963 for *Silent Spring*... it's message resonates 46 years later...

“We have a choice. We stand now where two roads diverge. But unlike the roads in Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road / the one less traveled by / offers our last, our only chance to reach a destination that assures the preservation of the earth.”

We all have that choice to make.

Thank you, and thank you all for coming and listening. I hope my schlock had some gravitas.