

Already it is Dusk: Thoughts on the Need for Nature in the 21st Century

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The tree which moves some to tears of joy is in the eyes of others only a green thing which stands in the way. Some see Nature all ridicule and deformity, and by these I shall not regulate my proportions; and some scarce see nature at all. But to the eyes of the man of imagination, Nature is imagination itself. As Man is, so he sees.

William Blake

Synopsis

With over half the world's population living in cities – human-made habitats, and technological innovations continually flowering from fertile minds, some have asked if the human species “needs” nature. They can be forgiven for asking the apocryphal question. We do, after all, live in an era of unprecedented technological innovation. And yet, despite our intellectual prowess, the gift that sets us apart from other species, we do not understand the world around us. Worse, we have begun to shred the tapestry of natural capital on which we depend. To arrest these changes and forge a new relationship with nature we must create novel partnerships among both experts and non-experts; champion transdisciplinary work that focuses on real world end points; and raise the nature “literacy” of people around the world. We must also, crucially, accept and rejoice that we *are* nature.

Setting the Stage

Can it really be over three decades since the inaugural Earth Day? As one who grew up in the modern environmental movement, I still hear echoes of Rachel Carson's voice directing us to protect the world around us, to move society onto a different road, a different trajectory. But these echoes are of a time that is a distant memory, part of our history. The intervening years have seen cause for celebration, fear and perhaps most urgently, confusion. Today there are those who fear ecological and social collapse as the too heavy price of “progress”, and others who question whether human society even needs nature – as if our ingenuity and technological prowess has allowed us to slip the bounds of all other species. Against this backdrop it seems timely to comment on the choices that face society at the beginning of this new century – choices about our attitude towards and relationship to nature that will define our legacy as a species.

Who Needs Nature When you've Got Human Ingenuity?

We live in an era of unprecedented technological innovation. Not coincidentally, we also live at a greater remove from nature than at any time in our history – more than half the world's population lives in cities, human-created habitats. We have the ability to create substitutes for scarce natural resources, develop more efficient products that allow existing resources to be stretched further, and perhaps most important, to institute new ways of thinking about nature. The reconstruction of the composition of the Earth's atmosphere using bubbles trapped in the Vostok ice core from Antarctica and its correlation with climate using proxy biological and chemical signals is a particularly exciting example of how technology can enhance our understanding of nature. Satellite imagery, remote sensing, and geographic information systems

are additional human creations that have made significant contributions in this regard. Rapid advances in artificial intelligence also allow different types of knowledge to be logically considered in the search for better, more sustainable decisions about resource use and environmental protection. Moving from understanding to application, heat pumps, space-conditioning control systems, high efficiency lighting, and advanced recycling technologies are already helping to steer society toward a more benign relationship with nature.

Counterpoint: to Neglect Nature is to Neglect Oneself

At the close of his eloquent disquisition on biodiversity, *The Diversity of Life*¹, E.O. Wilson recalls four lines from Virgil in which the Sibyl warns Aeneas of the Underworld:

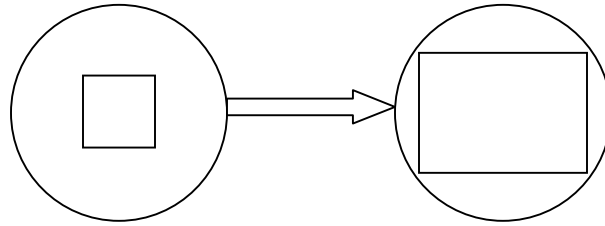
*The way downward is easy from Avernus.
Black Dis's door stands open night and day.
But to retrace your steps to heaven's air,
There is the trouble, there is the toil...*

These lines are freighted with melancholy because Wilson believes time is slipping away from us, and with it, the ability to arrest the loss of biodiversity and understand the world around us:

For the green prehuman earth is the mystery we were chosen to solve, a guide to the birthplace of our spirit, but it is slipping away. The way back seems harder every year. If there is danger in the human trajectory, it is not so much in the survival of our own species as in the fulfillment of the ultimate irony of organic evolution: that in the instant of achieving self-understanding through the mind of man, life has doomed its most beautiful creations. And thus humanity closes the door to its past.

While human ingenuity has flowered in such magnificence that one can almost be forgiven for asking “do we need nature?” the paradox of our evolution is that our progress has begun to imperil the “natural capital” on which we depend. Our capacity as individuals, firms and a society to create social and economic wealth, or well-being, is inextricably linked to the natural world. Human-made capital can offset some decreases in natural capital, but the two are not perfect substitutes. Where is the human-made analogue for photosynthesis that can maintain the balance of carbon dioxide and oxygen in the atmosphere, or a filtration device that mimics the roots of trees and other plants and filters heavy metals and other toxic contaminants from our water? I might add that reverence is equally important when thinking about our relationship to nature. We must feel something before we can do anything. We must loosen our grip on theory and science and seek a visceral connection with the world around us. Stand on the banks of a swollen river and you will learn more about hydraulics than any textbook can offer. Sail out of sight of land and you will learn about humility. Practice the art of beachcombing and you will learn something about the spiritual and symbolic meaning of nature. It provides the raw material that fuels our economy, and it performs life support services, but nature also provides what John Muir so aptly called a refuge from the roar of daily life.

Any discussion of our relationship to nature should not be viewed as anti-development; quite the contrary. The economy can, and should, continue to develop, but it must shift to conceptions of wealth that are not defined by conventional metrics but by a throughput of matter-energy that is within the regenerative and assimilative capacities of the ecosystem. A simple diagram illustrates the point².



Human Capital as Limiting Factor Natural Capital as Limiting Factor

The two circles represent the ecosystem and the two squares represent the economy. Solar energy is received by the ecosystem and heat is released from that same system. Matter and energy are taken from the ecosystem, used as raw material inputs to fuel economic growth, and despite recycling and other efficiency efforts, released back into the ecosystem as waste. This diagram represents the evolution of our economy, if not our world, from a time when human capital was the limiting factor in development to the current era where diminishing natural capital has become the limiting factor. The ecosystem (natural capital) has remained fixed in size while the economy (human and human-made capital) has grown. In the right half of the diagram, the era we live in now, the economy hits the “walls” of the containing ecosystem.

Making Smart Choices

The opening words of a church-song by the 16th century Polish composer Waclawz Szamotul, *Already it is Dusk*, describe a fervent prayer for deliverance from evil-doers and the powers of darkness. However much we might like to disagree, we are the evil-doers, those who have brought the Earth to its knees in our headlong rush along the evolutionary corridor to higher levels of consumption. The scientist, philosopher and scholar, Nicholas Georgescu-Roegen highlighted the dangers of this human trajectory³:

Once man expanded his biological powers by means of industrial artifacts, he became ipso facto not only dependent on a very scarce source of life support but also addicted to industrial luxuries. It is as if the human species were determined to have a short but exciting life.

In his poetic meditation on the Bella Coola River in British Columbia, *River of the Angry Moon*⁴, Mark Hume gives voice to a perspective on nature that should light the way ahead for us:

The river is fed by the sky. It runs over a bed of shattered mountains, through the dreams of a great forest and into the mouths of ancient fishes. It starts in clouds as gray and heavy as the sea and ends in a windswept estuary haunted by ghosts. It is a place where white swans dance on dark mud flats and salmon lay fragile eggs in nests of stone.

As we look to the future, let us lead with both our head and our heart and make the smart choices that define a new relationship with nature.

Our head should compel us to be smart; to make prudent decisions that are not irreversible and to try and improve our understanding of nature. This will require new forms of partnership among both expert and non-expert stakeholders. It will also require the intellectual leadership to champion transdisciplinary work, something that is too often marginalized if not punished in academia. It should be obvious that the complex patterns of interaction that characterize biological and human systems cry out for novel collaborations. They also cry out for novel forms of communication and education. Why is it that lifestyle aspirations and choices, particularly in the northern hemisphere, run against nature? The answer must be more than a failure to “get the price signals right”. On a global scale, we have failed as a society to make the

connections between social and economic well-being and nature both obvious and important to more than a green constituency. Yes, we should search for opportunities where our technological acumen is particularly well suited – the understanding of biophysical processes that operate over large scales, for example – as well as opportunities to use technology more creatively, but the larger objective must surely be to focus on dramatically increasing the “nature literacy” of people around the world. Put another way, as a society we must accept and rejoice that we *are* nature. We must think of Mary Oliver’s poem, *Fry*⁵, and celebrate the clarity of her vision: “I stare and stare into the water. I say to myself, which one am I?” Only then can we form the novel partnerships that might allow us to understand the whole system that is our Earth.

Our heart should compel us to honour the birthplace of our spirit and the children who will follow us. We may never solve the mystery that is the green prehuman Earth, but we must allow others to try.

¹ Wilson, E.O. 1992. *The Diversity of Life*. Cambridge, MA: Harvard University Press.

² I am grateful to Herman Daly and John Cobb Jr., who have done much to shape my thinking on the proper evolution of the economy. My crude diagram included here scarcely does justice to the depth of their thinking.

³ Cited in Daly, H. E. and Townsend, K.N. 1996. *Valuing the Earth: Economics, Ecology, Ethics*. Cambridge, MA: The MIT Press.

⁴ Hume, M. 1998. *River of the Angry Moon: Seasons on the Bella Coola*. Seattle: University of Washington Press.

⁵ Oliver, M. 1995. *Blue Pastures*. San Diego: Harcourt Brace & Company.