

Ecology-Coming-into-Being versus Eco-Data: A Goetheanistic View

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“She [Nature] is ever shaping new forms...
We live in her midst and know her not.
She is incessantly speaking to us, but betrays not her secret.
We constantly act upon her, and yet have no power over her.”

J.v. Goethe, from T.H. Huxley in *Nature*, Nov. 4, 1869.

“...there has rarely been a concept more abstract and devoid
of qualities than ‘environment’.”

Wolfgang Sachs, in *A Development Dictionary*, Zed Books 1994

Introduction

For many of us who work in the environmental field, it is increasingly problematic to imagine a way of knowing nature that can be different from modern science’s mode of data capture and information accumulation. It has become virtually a truism in the modern environmental field that “..if you can’t measure it, you can’t manage it”. Knowing nature seems to mean having more data about her. More than anything, our modern era of science has set into motion a *discovery modus operandi*, which holds that every stone in nature will be turned over analytically to gain, we are told, a complete understanding of “the mechanisms of natural processes.” In a sense, we have not come very far since Rene Descartes (1596-1650) first formulated the view of the universe as a gigantic clock-mechanism.

Ecologists and environmental scientists do have some problems with the technology of science in relation to their fields. Many are saying that there are sociological dimensions to the problem of the environment that can be ignored only to our peril (Brown, 1998). Others argue that only in developing a non-anthropocentric nature view- a transpersonal view- can we hope to realize a true understanding of nature (Fox, 1995). Each side possesses compelling evidence to support their approaches. Yet, none possess a world view on nature different enough from science reductionism to stay or change the course. Meantime, the ecological perspective in science merely strengthens the reductionistic direction since it provides important insights into relationships in nature, helping us to “fine tune” the existing mechanical model. From all of this arises the modern, very abstract view known as “environment.” Goetheanistic science of nature must indeed represent another path.

Modern science is taught by the simple, traditional rule of consistently reducing natural phenomena to measurable units. Indeed, the process of rendering phenomena into “hard-data” is closely tied to our modern sense of reality. It is not unusual within science to hear the expression: “...interesting idea- have you got any data to support it?” Without data, it seems, our ideas lack substance and without the substance of measurement we can not manage. Indeed, a poor joke holds that where early people once held world views, we moderns possess “data.”

This form of modern reductionism has lead directly to many successes while indirectly to many ills. Partly as a result of this, it is profoundly difficult to indict science itself, particularly where the

environment is concerned. This author personally is always recommending that more students study nature scientifically. Experience shows that it is rewarding and usually results in acquiring knowledge about things *we need to know*.

What makes the issues here truly complex and which seems to be the crux of developing a Goetheanistic approach, is that a dimension of mind is involved in constructing science's view of the universe in the first place. For the most part, modern alternative movements from ecology to organic farming have chosen not to go after the mind or cognitive component at all, but deal so to speak only with the parts re-arranged. As I said, much good can be done simply by more study. However, by over-looking the cognitive element implicit in how we know the world, it appears that we essentially remain in the same reductionistic flow, and we may thereby handicap our efforts to progress further.

From this, we can easily grasp what a very tall order it is to speak about and to teach a holistic Goetheanistic approach. By definition, this approach must discretely address the cognitive and sensory aspects of seeing nature. The dilemma of the modern age may be simply that in order to effect the needed change we must be far more comprehensive than we are prepared for or capable of being.

There is no doubt that new and significant shifts in awareness have taken root today, reflected in new approaches to business and environmental management. However, we need to be realistic about the roots of some these changes. Aspects of modern trends that would otherwise seem noteworthy from our perspective, seen in another light represent only distortions of the urge to become wholistic. I am personally at a loss to say whether or not some of these new developments are simply extensions of old-fashioned Cartesian mechanistic science masquerading as holism. How can we even get started if we can't see the playing field?

Science and Society Evolution

Science and society have always kept pace together, and it is difficult to imagine a new development within the sciences without significant corresponding social change. This fact is frequently overlooked. To see how much this is so we need only look back 150 years to see how captivating and important to "modern" people was mechanization and industry, and how much it shaped the science of the time (Adas, 1989; Marx, 1964). One almost can not today separate the concept of western dominance from science itself (much understanding could be gained from studying science from this vantage point). 150 years ago total fascination was invested in building the nuts and bolts of a manufacturing society. Whether you read Thomas Jefferson, Adam Smith or Charles Darwin, the message is the same. The basic principles of the accumulation of capital, the organization of labor and the details of mechanization, were all being clearly enunciated. In Desmond and Moore's comprehensive treatment of Darwin's life, it becomes evident that Darwin drew significant elements of his theory of nature's division of labor from studying the industry and factories which, it turns out, he and his family were large investors in (Desmond & Moore, 1992). Indeed, Darwin espoused that by accumulating capital we "rise above lower races" (Adas, 1989) and lays out such a competitive, bigoted, industrial view of the world that it is impossible in my view to derive ecology from it. Indeed, with few exceptions, leading individuals of this early era, if you really read them, hold views that in any modern view are clearly debilitating, racist and dominance-obsessed. Said differently, modern science bears within it logically and socially the legacy of an era of massive defamation of the human spirit and a distorted anthropocentric view of nature. It is hard to imagine successfully growing alternatives if we continue to imbibe this sour milk.

Noteworthy on the side, appreciation of the Goethe's cognitive approach to studying nature surfaced early, concurrent to Darwin, with the inception of the magazine *Nature*, now one of the world's hardest core science journals (see Figure 1). It was, however, short-lived.



A WEEKLY ILLUSTRATED JOURNAL OF SCIENCE

*"To the solid ground
Of Nature trusts the mind which builds for eye."*—WORDSWORTH

THURSDAY, NOVEMBER 4, 1869

NATURE: APHORISMS BY GOETHE

NATURE! We are surrounded and embraced by her: powerless to separate ourselves from her, and powerless to penetrate beyond her.

Without asking, or warning, she snatches us up into her circling dance, and whirls us on until we are tired, and drop from her arms.

She is ever shaping new forms: what is, has never been; what has been, comes not again. Everything is new, and yet nought but the old.

We live in her midst and know her not. She is incessantly speaking to us, but betrays not her secret. We constantly act upon her, and yet have no power over her.

The one thing she seems to aim at is Individuality; yet she cares nothing for individuals. She is always building up and destroying; but her workshop is inaccessible.

Her life is in her children; but where is the mother? She is the only artist; working-up the most uniform material into utter opposites; arriving, without a trace of effort, at perfection, at the most exact precision, though always veiled under a certain softness.

Each of her works has an essence of its own; each of her phenomena a special characterisation: and yet their diversity is in unity.

She performs a play; we know not whether she sees it herself, and yet she acts for us, the lookers-on.

Incessant life, development, and movement are in her, but she advances not. She changes for ever and ever, and rests not a moment. Quietude is inconceivable to her, and she has laid her curse upon rest. She is firm. Her steps are measured, her exceptions rare, her laws unchangeable.

She has always thought and always thinks; though not as a man, but as Nature. She broods over an

all-comprehending idea, which no searching can find out.

Mankind dwell in her and she in them. With all men she plays a game for love, and rejoices the more they win. With many, her moves are so hidden, that the game is over before they know it.

That which is most unnatural is still Nature; the stupidest philistinism has a touch of her genius. Whoso cannot see her everywhere, sees her nowhere rightly.

She loves herself, and her innumerable eyes and affections are fixed upon herself. She has divided herself that she may be her own delight. She causes an endless succession of new capacities for enjoyment to spring up, that her insatiable sympathy may be assuaged.

She rejoices in illusion. Whoso destroys it in himself and others, him she punishes with the sternest tyranny. Whoso follows her in faith, him she takes as a child to her bosom.

Her children are numberless. To none is she altogether miserly; but she has her favourites, on whom she squanders much, and for whom she makes great sacrifices. Over greatness she spreads her shield.

She tosses her creatures out of nothingness, and tells them not whence they came, nor whither they go. It is their business to run, she knows the road.

Her mechanism has few springs—but they never wear out, are always active and manifold.

The spectacle of Nature is always new, for she is always renewing the spectators. Life is her most exquisite invention; and death is her expert contrivance to get plenty of life.

She wraps man in darkness, and makes him for ever long for light. She creates him dependent upon the earth, dull and heavy; and yet is always shaking him until he attempts to soar above it.

Today, a new social fascination phenomena has emerged on the horizon which is shaping new trends. The frontier I speak about may be equivalent to the manufacturing obsession of 150 years ago. We are suddenly rediscovering nature in the guise of a brilliant bio-genetic network, a pervasive web of manipulable-life. Concurrently, at every turn in modern business and science we see a renewed if not heightened fascination with natural phenomena and we are witnessing unprecedented use of metaphors drawn from nature. As one biologist-writer recently commented “The 21st Century will be more like the 16th than like the 20th, with biology standing in for the discovery and exploration of the New World” (Gruber, 1998). If it is indeed true that nature and biology are achieving center stage in the economy and science, then there is extraordinary potential that a participatory science of nature can be developed.

Here, unfortunately, is where the blurring of boundaries so common to modern times becomes problematic. It is not only that we have on the one hand classical reductionism balancing against all shades of new holism. In the midst of this, the views and practice of science itself are changing. Suddenly so-called “natural laws” in nature are seen more as “potentialities.” Darwinian survival of-the-fittest and genetic determinism are slipping from their high status as iron clad laws. We are examining the notion that natural reproduction means organisms pass on genes *as well as* the environment the genes were imbedded in. Thusly, in nature-investigations, we are realizing that there are road signs pointing everywhere. “Nature rejoices in illusion” said Goethe. Here, instead of providing the ultimate groundwork of understanding, our modern reductionism is at best able to echo to Goethe “and how!”

Unless I am greatly mistaken, I believe there is no illusion anymore that nature is made better by modern scientific and technical advances. Environmental advances are at best slowing nature’s decline. Harvard’s E.O. Wilson, who is not known for flights of fancy, is considering whether through some oddity of evolution Humankind has become suicidal. Dr. Hubert Markl, director of Germany’s Max Plank Institute, replied recently when asked about science’s future “.. we need to continue manipulating nature simply to save us from ourselves” (*Der Spiegel* 1997). Stripped of romantic underpinnings, science as the Age-of-Discovery is rendered as Science-for-Survival. It is under these harsh circumstances that we are gathered to consider what gentler, more comprehensive routes exist for science and the practice of nature investigation.

My interest and concern is the potential for a new orientation to nature, consisting of a comprehensively wholistic approach in contrast to a reductionistic approach to the natural world. Not alone because this is interesting, but more because it is very necessary. Not only would a wholistic approach become a tool-of-seeing to be used to acquire deeper grasp of natural processes, possibly helping us to heal nature’s man-made ills, but it could provide a healing human expression to replace the racism, control-obsession and power-grasping motifs of the men who launched modern science- men I tell young people, you would not ever want to know.

This new approach must do something fundamentally different than the utilitarian role served by old-fashioned reductionism, yet the new approach should not attempt or purport to replace reductionism. While feeling committed, I am not terribly hopeful. Many are calling for a new holism, yet few have any idea what it will look like. Is the new holism similar to or compatible with reductionism? In a world where organic farming and environmentalism have been largely reduced to choosing the lesser among various evils, the case for a Goetheanistic approach is not much more than paper thin.

Information Technology vs. Holistic Sensing

Let’s make it even more difficult, and view the current state of affairs from another vantage point. Closely tied to the current era’s massive production of piecemeal data about Nature is the information technology age itself-- computers being central to it. Take a moment to consider that

this information technology gives us the opportunity-- for the first time ever-- to truly amass all the data produced by an atomistic world view. Indeed, we can say that Descartes who essentially expounded the entire world to be *mechanical* has been waiting in the wings all this time until the moment should arrive when we would be actually capable of gathering and storing the details he hypothesized. Goetheanistically, considering the historicity of science itself (see Bortoft, 1995), one can not overlook the problems encountered for early thinkers when introducing an atomistic world view in the absence of the requisite mechanisms to do something with it-- since clearly the human mind unaided is not capable of it. From this vantage point genetic science thus becomes an invention of the computer era-- we are mapping the human genome not because we understand the territory, but because we can finally comprehensively capture the billions of pieces of data so produced.

The point I make begs the question of the paradigmatic significance of information storage to the atomistic world view, and is meant as a warning about the good times ahead. Descartes and Newton-- and for that matter all of the early scientists-- certainly had no concept of data storage. At that time, the most advanced people had been reading from movable typed books for only about 150 years. Indeed, I imagine that Descartes postulation of the mechanical universe might not have been made or so fully acted upon prior to Johann Gutenberg's press- which after all, began the process of atomization in so far as it reduced the word to units of inserted letters. What these early revolutionists could not do, we can begin to do now: replace the experiential world around us with a stored, mechanical copy of that world in all its many details. It is this copy from which successive generations will draw their explanation if not experience of the world.

We need to appreciate the epistemology behind atomizing nature and the new twist on it that is emerging. Preceding generations of industrial reductionists concerned themselves with implanting the Machine in the Garden-- to use historian Leo Marx's term. Now it seems apparent that present and future generations will focus on "the Garden in the Machine"-- to use the bio-tech Claus Emmeche's term (1994). Tired of anthropomorphizing the world we will alter the course and attempt to "naturalize" the machine newly created. Ludwig Bertalanffy early pointed to science's "progressive deanthropomorphization," where he said "...human forms of cognition ... are modified and eliminated and ... replaced by constructs increasingly abstract, general and unvisualizable.." (1967). Thus, we may be only at the beginning of the information-atomistic data age.

What is cold and merciless may acquire warmth when the machine is re-embodied. In this grand new scheme, Nature becomes useful as a mere metaphor, enabling us to endlessly tweak the facsimile copies of her stored within the genetic-digital databanks. Sensing or rather half-sensing nature's profundity we extract her "bio-ness," her "gaia" her "web-ness" and merge it conceptually into our atomistic world perception, now held to be intractable. Notice how powerful data become if you prefix the words "bio" or "eco" in front of them. Indeed, there may be no limit to the new wave of nature-fueled machine euphemisms. In contrast to Ockham's Razor where simplification was the norm, today bio-fication is the basic stratagem. Everywhere you turn, modern persons are incorporating and accommodating to technology and its underlying atomistic world view, allied with powerful nature metaphors. To complete this thought, and with apologies to Wes Jackson, what I am saying is that the essential intent of our age is "becoming native to this machine" (see Jackson, 1994). Thus, to become wholists, to invest one iota into Goetheanism, we must become strangers to our country and to our age.

Postcript I: Observing Nature.

This paper is chiefly about developing new methods to observe nature. One should not undertake such a mission without knowing the obstacles. Goetheanism lights up for many as we become aware of *what we do not see* with the other approach. It may appear surprising that in this modern

data-rich era, we have developed such extraordinary handicaps. Environmental working must attempt to bring awareness of this to the forefront.

To develop a new field means to establish a conceptual framework for it. It requires considerable bootstrapping, since by definition the concepts needed don't yet exist. A space needs to be opened up, -- and we to become accustomed to that space. This requires new skills not previously glimpsed. When new concepts come into play, we begin to discover a world not previously seen.

We must above all else be alert! This is a key to participatory observation! Yet, obstacles stand in the path. For one, we must learn to mistrust data-- not all of it all at once, but some of it selectively, by practice. If it is true, as Spencer Brown points out, that modern science has produced its great advances by "selective blindness," the new Goetheanistic science will achieve its goals by something akin to wide-eyed but non-selective participation.

There is nothing more powerful and less liked in modern science than to presume your idea to be faulty from which you first launched an investigation. Yet, most scientists and educators I know are somehow prepared to do just this. Overthrowing customary views helps open us to new concepts which themselves permit us new seeing.

II: "Seeing New" : The Case of the Riparian-Buffer

If anything, Goetheanism is the art of being-in-what-is-seen. It is a participatory awareness that finds data co-mingled with the end-result, but never alone initially, as naive empiricism would have it. I chiefly like to take scenes from a landscape, and ask: what do we observe? With regard to nature and the landscape, I find modern persons to be observation-challenged, if you will. The depravity does not result from lack of potential data. We moderns in fact see less richly. Simple exercises can be developed to test and prompt the active participation which yields deeper insight.

Without the richness of context, what we observe outside in the world may be very difficult to "classify" and to make meaning of. It can be shown that it is actually difficult to identify objects correctly which are standing directly in front of the observer. The new environmentalism will teach this. This is so because much of what we observe in nature arises to recognition based on prevailing concepts, many of which have now been discovered to be faulty-- or aged. Thus, this farm scene may appear to be nostalgically beautiful until I inform you it is a potato farm in extreme decline, showing "typical" signs. Another scene in which the landscape appears to be on fire is found to be a farm with soil-eroding into the air because the modern machines don't work properly unless the soil is dry and contains no humus. Or, we must ask if you have had the experience of seeing a riparian-buffer. Here, in a sense, are a series of objects that constitute a riparian- buffer that you may not be able to "see." By learning to see it, if you will, you enable yourself to participate more deeply in nature. From here, the steps and progression into the future depend on persons enunciating new concepts and others seeing them.

By asking different questions, daring to disbelieve our own information, we can powerfully explore our own observations of nature, learning to find new meaning in scenes not typically entrusted with such. Each nature-scene contains many potentialities within it, each waiting to be seen when the next layer is peeled off, infused with conceptual participation that itself does some of the organizing. In this sense, it must be said that Goetheanism is most powerful when it is at work.

Thinkers, philosophers and physicists have shown us abstract vistas of a groundless world of eternal being. But closer and more real is what a true environmentalism can do: open before us a world that is unimaginably greater than we ever imagined. In the enriching relationship Nature- to-

Human, the cognitive human world gains ground and the substance acquires meaning, all at once. It is a shame that we accept so much less.

References

- Adas, M. (1989) *Machines as the Measure of Men*. Cornell Univ Press
Bortoft, H. (1997) *Wholeness in Nature*. Lindisfarne Press
Bertalanffy, L (1967) *Robots, Men and Minds*.. Braziller Press NY
Brown, L. (1998) *State of the World 1998*.. Worldwatch Institute, Wash DC
Brown, S. (1997) *Laws of Form*.. Bohmeier Verlag
Desmond, A and J. Moore (1991) *The Life of a Tormented Evolutionist*.. Norton Publishers
Der Spiegel, January 20, No.4, 1997
Emmeche, K. (1994) *The Garden in the Machine*. Princeton Univ. Press
Fox, W. (1995) *Towards a Transpersonal Ecology*. State University of NY Press
Gruber, M. (1998) Hack the Gene, Map the Gene. *Wired*.
-----.(1997) *Uncommon Ground*.
Isaacson, K. (1999) Riparian Corridors. *USDA-NRCS*. Spring Issue
Jackson, W (1994) *Becoming Native to This Place*. Counterpoint Press
Marx, L. (1964) *The Machine in the Garden*. Oxford Univ. Press
Sachs, W. (1992) *The Development Dictionary*. Zed Books, NJ

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