
Can We See with Fresh Eyes?

Beyond a Culture of Abstraction

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This essay is based in part on a talk Craig gave at the Land Institute's Prairie Festival in September, 2005. The essay will also appear as a chapter in a forthcoming book, In Defense of Ignorance: Prospects for a New World View, edited by Bill Vitek and Wes Jackson (see news item on page 8 of this issue).

The problem with biases is that we often don't know we have them or how strongly they inform the way we view and act in the world. I want to address one fundamental bias that infects modern Western culture: the strong propensity to take abstract conceptual frameworks more seriously than full-blooded experience. We all too naturally speak of the world in terms of genes, molecules, atoms, quarks, neural networks, black holes, survival strategies, or other abstract concepts. These are felt to be more "real" than the phenomena of nature we experience — the radiant, blue-shimmering Sirius in the winter sky or the deep blue chicory flower that opens at sunrise and fades away before noon.

I suggest that the more we place abstractions between ourselves and what we encounter in the world, the less firmly rooted we become in that world. The maize that feeds our cattle, pigs, and chickens — grown on immense fields of the Midwest, doused with fluid fertilizers that contaminate wells and contribute to oxygen deprivation and death in the lower water layers of the Gulf of Mexico — this maize is much more than a nutrient-generating genetic program modified by human artifice. Viewing maize in such restricted, abstract terms, isolated from its larger reality, is what leads us to overlook — at least for a time — the "unfortunate side-effects" of our approach. Is it any wonder that a culture caught in a web of abstractions becomes a culture disconnected from nature and destructive in its actions?

In this essay I want to show some ways to move beyond a culture of abstraction. Since the first step in overcoming a firm habit of mind is to acknowledge its existence, I will call attention to the problem of abstraction itself. Then I will describe how we can open up our perceptual field by trying to put the conceptual element in the background. This entails acknowledging our ignorance and maintaining an

ongoing sense of ignorance — and thereby intellectual modesty — in all our undertakings. Finally, since we cannot do without concepts, we also have to work on transforming them. This demands changing not only the content of our concepts, but also their form or style. I will describe how we can develop what I call living concepts through which we can become more connected to the rich fabric of the phenomenal world.

Captured by Abstractions

The capacity to abstract is what allows us to pull back from our perceptions and look at the world as if from a distance. We can form clear and distinct conceptions about things, form judgments, and then act. In this respect the ability to abstract is a central feature of being human. But like all gifts and strengths, our capacity to form abstract concepts is a double-edged sword when it becomes too dominant and habitual. If we do not consciously attend to how we form abstractions and then remain aware of their relation to experience, they tend to take on a life of their own. As a result, we run the danger of attending more to the abstractions themselves than to the world they are meant to illuminate. In this essay I focus on this shadow side of abstraction.

Here is an extreme description of the world in terms of abstractions by the contemporary philosopher Paul Churchland:

The red surface of an apple does not look like a matrix of molecules reflecting photons at certain critical wave lengths, but that is what it is. The sound of a flute does not sound like a compression wave train in the atmosphere, but that is what it is. The warmth of the summer air does not feel like the mean kinetic energy of millions of tiny molecules, but that is what it is. (Churchland 1988, p. 15)

For Churchland "reality" — the "is-ness" of things — consists of the high-level abstractions of science. The apples we see and taste, the melody we hear, and the warmth we sense are all only appearances, mere subjective semblances of true physical reality.

And what about our own inwardness? Neuroscientist Antonio Damasio, writing in *Nature*, has an answer:

An emotion, be it happiness or sadness, embarrassment or pride, is a patterned collection of chemical neural responses that is produced by the brain when it detects the presence of an emotionally competent stimulus. (Damasio 2001, p. 781)

So, on this view, the world we experience — all the colors and sounds, smells and tastes — are phantoms of moving molecules, and the joy of eating juicy grapes is “in reality” a chemical response of the brain. This way of viewing things is widely pervasive in science, science education, and science journalism. In one way or another it comes to inform the way most people today learn to think about the world.

When we raise abstractions onto the pedestal of “primary reality,” we have forgotten how such concepts arise. Concepts such as “molecule,” “atom,” or “chemical neural responses” develop as the thinking human mind questions the phenomenal world and interacts with it through the experimental method. These concepts are woven out of a rich fabric of theory and experience. When we focus our attention only on the end result, isolated from the rest of the process, we end up with thing-like concepts of atoms and molecules. The problem is that scientific training often does not teach us to pay attention to how concepts are formed. Rather, since we usually learn them as abstractions already separated from their genesis — from their actual scientific and human context — we view them as if they were object-like facts of the world, more real than everything else because they can be so clearly conceived.

This essentially unconscious process of reification is what the philosopher Whitehead called the fallacy of misplaced concreteness (Whitehead 1967, pp. 51 ff.). We treat our abstractions as concrete things of the world. I simply call it object thinking — thinking of the world in terms of objects (Holdrege 1996). The way most people — including scientists who could know better — talk about genes, molecules, hormones or brain function reveals such object-thinking.

So what’s the problem with such a way of viewing the world? First of all, it erroneously suggests that when scientists talk about the world-as-abstraction they are talking about the world as a whole. What we actually experience — which is not molecules, genes, and firing neurons — becomes a subjective phantasm: the blue of chicory is “only” a particular light wave, water is “only” H₂O, your feelings are “only” your hormones busily at work. Why, in the long run, should we take interest in a world that is “only”? What moral commitment can I have to genes, mol-

ecules, and hormones? So one problem with the abstract world view is that it disconnects us from the very world it sets out to explain.

As the physicist and educator Martin Wagenschein emphasizes, we all too easily ignore the fact that to take a reduced view of the world is a choice (Wagenschein 1975, pp. 135-53). Physicists have made the choice to view everything in terms of quantities and to mathematize the phenomena. Geneticists have chosen to view heredity in terms of particulate causal entities (“genes”). What these sciences end up with is not a description of the world but a description of one aspect of the world in highly abstract and reduced terms.

As a consequence, conventional modern science and the technologies derived from it address isolated aspects of a much richer fabric of reality. Since this limited perspective of science is often overlooked, we fall into believing that science is addressing *the* problems of *the world*. Nothing is more dangerous than the illusion of thinking you have a solution to a problem (a gene to cure a disease; a pesticide to kill a pest), when you have framed both the problem and the solution in overly narrow terms. Given that things play themselves out in complex relations, such solutions may even exacerbate the overall problem (the “cure gene” disrupts other physiological processes; the pests become resistant to the pesticide). As Amory Lovins puts it, “if you don’t know how things are connected, then often the cause of problems is solutions” (Lovins 2001).

David Bohm points out that since scientific concepts and theories lead to a fragmented view of the world (organisms consisting of molecules, molecules consisting of atoms, atoms consisting of elemental particles, and so on) we come to act upon the world in a fragmented way:

If we regard our theories as “direct descriptions of reality as it is,” then we will inevitably treat these differences and distinctions as divisions, implying separate existence of the various elementary terms appearing in the theory. We will thus be led to the illusion that the world is actually constituted of separate fragments and ... this will cause us to act in such a way that we do in fact produce the very fragmentation implied in our attitude to the theory.... So what is needed is for man to give attention to his habit of fragmentary thought, be aware of it, and thus bring it to an end. Man’s approach to reality may then be whole, and so the response will be whole. (Bohm 1980, p. 7)

Whether we speak of abstraction, fragmentation, isolation, or reductionism is not so important, since each of these terms points to a different nuance of the same habit of mind. What is important is to overcome the habit. If we don’t, we

will continue to produce myriad unintended effects that contribute to the ecological, social, and economic problems dominating our times.

The Conundrum of Knowledge

Recognizing the power of abstractions to catch us in their web, the philosopher Edmund Husserl — already nearly 100 years ago — made an impassioned cry for a “return to the things themselves.” But this return — or perhaps better said, forging ahead — to the things themselves is no easy task, as Husserl describes in *Ideas: General Introduction to Pure Phenomenology*:

That we should set aside all previous habits of thought, see through and break down the mental barriers which these habits have set along the horizons of our thinking ... these are hard demands. Yet nothing less is required. What makes ... phenomenology ... so difficult is that in addition to all other adjustments a new way of looking at things is necessary, one that contrasts at every point with the natural attitude of experience and thought. To move freely along this new way without ever reverting to the old viewpoints, to learn to see what stands before our eyes, to distinguish, to describe, calls ... for exacting and laborious studies. (Husserl 1969, p. 39)

So how can we learn to see with new eyes, to re-ground our knowing in the world of lived experience rather than in enticing but tenuous abstractions? We can begin by realizing the virtues of ignorance. Henry David Thoreau describes beautifully in his *Journals* the role of ignorance in knowing:

It is only when we forget all our learning that we begin to know. I do not get nearer by a hair's breadth to any natural object so long as I presume that I have an introduction to it from some learned man. To conceive of it with a total apprehension I must for the thousandth time approach it as something totally strange. If you would make acquaintance with the ferns you must forget your botany.... Your greatest success will be simply to perceive that such things are, and you will have no communication to make to the Royal Society. (October 4, 1859; in Thoreau 1999, p. 91)

I must walk more with free senses — It is as bad to study stars & clouds as flowers & stones — I must let my senses wander as my thoughts — my eyes see without looking.... Be not preoccupied with looking. Go not to the object let it come to you.... What I need is not to look at all — but a true sauntering of the eye. (September 13, 1852; in Thoreau 1999, p. 46)

To help us learn this “sauntering of the eye,” Thoreau, who was no reticent person, might well have taken us on walks and prodded us with his walking stick to just look, just smell, just hear — and rid ourselves of all our confounded knowledge. But, he was also not simple-minded; he knew there was more involved in knowing:

It requires a different intention of the eye in the same locality to see different plants, as, for example, Juncaceae [rushes] or Gramineae [grasses] even; i.e., I find that when I am looking for the former, I do not see the latter in their midst.... A man sees only what concerns him. A botanist absorbed in the pursuit of grasses does not distinguish the grandest pasture oaks. He as it were tramples down oaks unwittingly in his walk. (September 8, 1858; in Thoreau 1999, p. 83))

Thoreau realized that we don't see anything unless we have concepts, unless we have an intention that we bring to the world; otherwise we would just have confusion. I was once walking along and saw something black moving across the path in front of me. I couldn't “get it.” I saw something but had no idea what it was. That was disturbing. I tried the concept snake, but it didn't take, and then suddenly I saw it: a black plastic bag blowing over the path. The perceptual world, for a moment in disarray, had come together again. Only if I bring concepts to experience, do I see coherently.

So there is a problem: the openness and freshness — the ignorance — that allows us to perceive things that don't fit into our preformed ideas and thereby to see the unexpected, on the one hand; and on the other hand, the necessity to bring the fruits of previous experience to illuminate the phenomena we are perceiving. We need openness to take in something new, but only through applying concepts formed from previous experience — which are in this sense biases and can often be quite abstract — can we make sense of the world at all.

So there is a real tension between pre-formed concepts and openness. I would say that we need to live *actively* and *consciously* within this tension. We need the awareness that gaining knowledge is always a matter of our engaging in the world from a particular perspective. In this way we become more sensitive to the boundaries of our knowledge and more aware of the extent of our ignorance.

But there is the further question of the quality of our concepts, of what we bring to our experience. Can we transform our concepts so that they become less abstract and more vitally related to experience? Can we move from conceptual biases that color phenomena to more malleable concepts that become sensitive tools to illuminate the not-yet-seen? Can we

be just as interested in what does not fit into our scheme of things, as in what does? Can we continually stretch and remold our view of the world? Or to put it another way: Can we bring new life into our way of knowing?

Cultivating Openness

Over a number of years I studied a particular plant, the skunk cabbage. I was intrigued by its strangeness and wanted to get to know it better. So I went out regularly and observed it, and got to know its habitat, life cycle, and how it adapted to its environment. I'd often go out with a particular question and focus.

But I also made it a rule to occasionally go out with no fixed focus and try to perceive with Thoreau's sauntering eye. Sometimes it didn't work because my attention would wander inward and I'd start thinking about all sorts of other things. Although I was out in the woods, I was in my head and hardly seeing anything. But sometimes it worked, and I could tell that repeated practice makes it possible to cultivate a kind of open, receptive awareness infused with an animated expectation of what might come toward me.

One March afternoon I went down to the wetland where skunk cabbage grows. In upstate New York where I live it often is still wintry at this time of year. On this day the sun was shining through the leafless shrubs and it warmed my face. My eyes were wandering over the skunk cabbage flowers I knew so well that were just emerging from the cool muck. Then I saw a few bees. I watched those bees fly into the flowers and fly out again into other blossoms. In a flash I realized, I hadn't seen any bees yet that year. The first bees of the year were visiting this plant — this strange plant that warms up to over 60 degrees when it comes out of the ground, even though the air temperature is often at or below freezing. Skunk cabbage warms up, and on a first somewhat warm and sunny afternoon, the bees come.

I'm pretty sure I would have overlooked this wonderful meeting of bee and skunk cabbage had I not been practicing a "sauntering of the eye." I know myself well as a not-so-open observer and as someone who usually has to focus intently to see. But that very focus can prevent me — and certainly often does prevent me — from seeing the unexpected. So, by going out purposefully with the broad focus of open expectation, I overcome my limitations and invite the world in.

Another exercise to heighten openness is to pause during the evening and think back over the day. "What did I experience today that I wasn't expecting?" It can be disheartening to realize how much of what I experienced was actually expected. Biases were supported: the colleague who is usu-

ally a jerk was once again a jerk, and so on. To cherish those few moments when something new and unexpected appeared, and then to vividly and concretely re-picture those experiences to myself can lead me to cultivate an interest in and sensitivity to the unexpected. So I can reflect back on my troublesome colleague's actions and words that *did not* fit my expectations. I try to create a field of openness. It actually does bear fruit. I can begin to see another person, a landscape, or a social problem — whatever it may be — with fresh eyes.

Beyond Abstraction to Living Concepts

Most people think giraffes have long necks. I used to teach, as many biology teachers do, about how the giraffe got its long neck through evolution. The giraffe — as long as I considered it solely in terms of the "fact" of its long neck — was a straightforward illustration of how Darwinian evolution via variation and natural selection works. I was disseminating "knowledge," but did this knowledge really illuminate the giraffe?

Later I studied the giraffe and its neck in more detail. Since I wasn't interested in any particular theory or explanation and just wanted to get to know the giraffe better, I was open to what the wealth of phenomena had to show me. They showed my ignorance and the poverty of the concepts I'd been using. As a result, the concept of the giraffe's "long neck" increasingly became an abstraction to be overcome.

The first step in overcoming this abstraction was to view the neck both within the context of the whole animal and in comparison with other mammals (Holdrege 2005). I discovered that the neck is not the only long thing in the giraffe. The giraffe has very long and straight legs. Since the foot and leg bones are not only long but also arranged more vertically than in other hoofed mammals, the overall leg length is increased significantly. Moreover, the giraffe is the only hoofed mammal that has longer front legs than hind legs. It has a long head, a very long tongue and long eyelashes too (and at the other end the tail hairs are the longest hairs you'll find in mammals).

Since the giraffe has a markedly short body in relation to its height — a beautiful instance of what morphologists call compensation — both the neck and the legs appear even longer. I realized the giraffe's neck is part of an overall tendency in the animal toward vertical lengthening, especially in the front part of the body. All the limb-like parts of the body — the four legs, the neck as a limb for the head, the jaw of the head, and then, of course, the tongue — are long

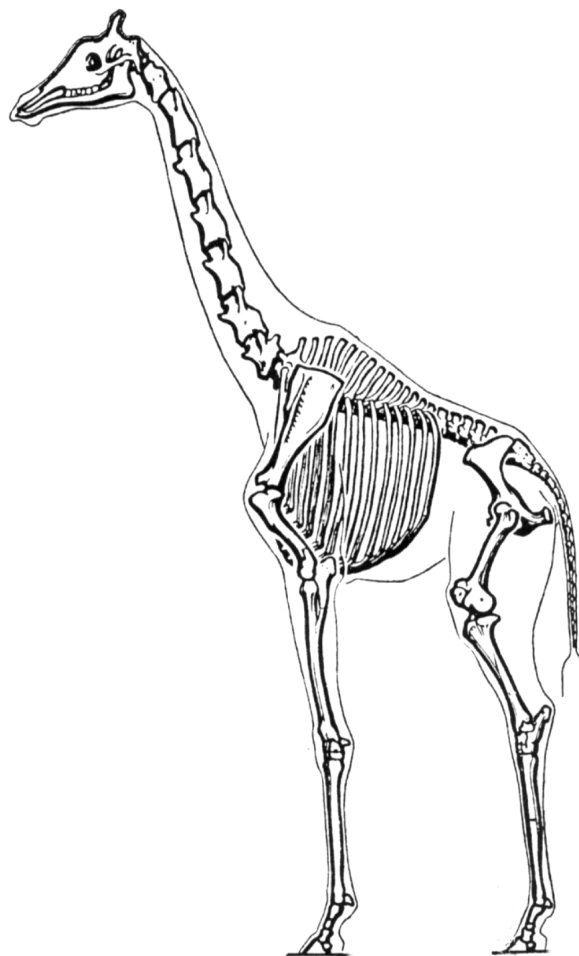
and through their particular configuration allow the animal, for example, to reach high into trees to browse.

So what is the matter of fact about the giraffe's long (or short) neck? We come back to what I said before: if a fact is to be more than an isolated abstraction, we need to view it within a context. And in the case of the giraffe's neck, the context is the organism itself. Morphologically, the long neck is an exemplary feature of its unique body in which all parts speak long and skywards. But when the giraffe lowers itself to the terrestrial level, its neck becomes short — an expression of the long-legged animal whose neck attaches so far up on the trunk that its head can no longer reach the ground. But this all has consequences. A giraffe is not only concerned with the world from six to sixteen feet up, where it feeds and browses. It sometimes lowers its head to drink and graze. Then it does something quite strange. It must spread its forelegs awkwardly far apart, making it more vulnerable to predators. Only then can its mouth reach earth or water. The giraffe has a manifestly short neck! What other hoofed mammal has a neck so short that it cannot reach the ground without spreading its legs?

When we frame our questions in abstract ways — what is the cause of the giraffe's long neck? — we have already decided that there is *one* cause and that the giraffe's neck *is* long. We have a terribly oversimplified framework in which we study the animal. The trouble is that we usually don't make the effort to view things within their dynamic, changing contexts. There are lots of stories about how characteristics of organisms evolved, but these stories "work" only as long as you treat the beak, the fin, the feather or the stomach in isolation from the whole animal. So becoming sensitive to how our concepts inform what we see is important. Without this awareness we end up explaining schemas and not addressing the things themselves.

What we can do is become more playful with our concepts. When I see the giraffe both in terms of its "long neck" and its "short neck" I overcome a predilection to look at it in just one way and don't get stuck within a too-narrow conceptual framework. And at the same time I begin to appreciate more deeply the organism's complexity. To do justice to this complexity I need to take multiple perspectives. I might not end up with a neat, unified explanation of the animal, but at least I have met the richness of the creature rather than having created an abstract phantom.

As the German poet and scientist Goethe remarked, "If we want to achieve a living understanding of nature we must follow her example and become as mobile and flexible as nature herself" (Goethe 1995, p. 64). I have come to realize how organisms can teach us about a living, dynamic way of thinking. If I'm willing to pay attention I can learn from life



how to think in a living way. For me the study of the growth and development of plants has become an especially vivid and rich model for what I would call living thinking.

A growing plant sends roots spreading intimately through the soil, taking in and exchanging with the earth. These are qualities we, too, possess when, as sensory beings, we explore and meet the world with fresh eyes. Always growing, always probing, meeting things anew, we become rooted in the perceptible experiential world.

As a flowering plant grows, it unfolds leaf after leaf (a process you can see most vividly in annual wildflowers). When the plant grows up toward flowering, the lower leaves die away. So a plant lives by unfolding something very important at that moment, then moves on to make new structures while past forms fall away. What a wonderful guiding image of how we can work with our concepts: instead of falling in love with a particular conception and holding on to it at all costs — object-thinking — we could learn to form a concept, use it, and then let it die away as our experience evolves. Our deeply felt sense of our own boundaries and ignorance allows us to keep knowledge alive, open, and growing. A plant shows us what it means to

be undogmatic. Or to put it positively: how to stay dynamic and adaptable.

You can also read the environment by studying a plant's form. A plant develops differently in drier or richer soil, in shady or brighter light. A plant is always in context. If we were to think plantlike, our concepts would stay closely connected to the context they arose from, and if that context changed, we would drop or metamorphose our ideas to stay within the stream of life.

In practicing this kind of knowing we can experience ourselves as active, but also receptive participants in an ongoing, evolving conversation with nature. We participate even as knowers in the world. We are no longer distant onlookers gazing coolly at a world of objectified things. While gaining this re-connection and rootedness in the world is exhilarating, it is not necessarily comfortable. One of the comfortable things about object-thinking is that because we view the world as consisting of things and have taken on the task of getting at the underlying mechanisms, we can manipulate things at will. Science becomes a kind of value-free zone. But the moment we become aware of the participatory, interactive nature of knowing, everything changes. Entangled in the world at every moment, we know that we bear responsibility for our way of knowing and its externalization in our technologies and actions. A living thinking is a thinking that knows itself as embedded in the world. It is also a thinking that knows it does not have "the answer."

Conclusion

If we are interested in a new kind of culture, then it won't do to simply tweak the old forms. We need a revolution. Just as the scientific revolution has radically changed the way people view and relate to the world over the past four hundred years, so do we now need a new revolution in world view that increasingly bears fruit over the next four hundred years.

Seeds of this transformation are created every time we catch ourselves considering a problem or phenomenon through some pre-formed conceptual lens and then drop that lens and turn back, in openness, to the things themselves. In this act we acknowledge our ignorance and show ourselves ready to engage in the concrete situation. With heightened awareness we can begin forming concepts out of interaction with the world rather than imposing them upon the world. This is living thinking.

Imagine more and more people cultivating this approach — which is modeled after concrete, living phenomena — rather than striving toward ever greater abstraction in

thought (the goal of goals being a unified theory of everything). It will be, at first, a quiet revolution, taking root in the minds of individuals and unfolding in small organizations. But what else would we expect from a revolution modeled after plants? They make no great stir as they go about their radical work of enlivening the world we live in. The shift from abstraction and object-thinking to a plantlike dynamic thinking would help us develop the capacities we need to truly root our understanding and our interactions with nature in nature.

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