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Are Values in Nature Subjective or Objective?

Holmes Rolston, III*

Prevailing accounts of natural values as the subjective response of the human mind are reviewed and contested. Discoveries in the physical sciences tempt us to strip the reality away from many native-range qualities, including values, but discoveries in the biological sciences counterbalance this by finding sophisticated structures and selective processes in earthen nature. On the one hand, all human knowing and valuing contain subjective components, being theory-laden. On the other hand, in ordinary natural affairs, in scientific knowing, and in valuing, we achieve some objective knowing of the world, agreeably with and mediated by the subjective coefficient. An ecological model of valuing is proposed, which is set in an evolutionary context. Natural value in its relation to consciousness is examined as an epiphenomenon, an echo, an emergent, an entrance, and an education, with emphasis on the latter categories. An account of intrinsic and instrumental natural value is related both to natural objects, life forms and land forms, and to experiencing subjects, extending the ecological model. Ethical imperatives follow from this redescription of natural value and the valuing process.

I. HOW SHOULD WE VALUE NATURE?

"Conceive yourself, if possible, suddenly stripped of all the emotions with which your world now inspires you, and try to imagine it *as it exists,* purely by itself, without your favorable or unfavorable, hopeful or apprehensive comment. It will be almost impossible for you to realize such a condition of negativity and deadness. No one portion of the universe would then have importance beyond another; and the whole collection of its things and series of its events would be without significance, character, expression, or perspective. Whatever of value, interest, or meaning our respective worlds may appear embued with are thus pure gifts of the spectator's mind."[1] William James' stark portrayal of the utterly valueless world, suddenly transfigured as a gift of the human coming, has proved prophetic of a dominant twentieth-century attitude. Since he wrote, we have spent upwards of a century trying to conceive of ourselves as the sole entities bringing value to an otherwise sterile environ-

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[1] William James, *Varieties of Religious Experience* (New York: Longmans, Green, and Co., 1925), p. 150. Originally published in 1902.

ment. The effort has pervaded science and technology, humanism and existentialism, ethics and economics, metaphysics and analytic philosophy.

John Laird protested, "There is beauty… in sky and cloud and sea, in lilies and in sunsets, in the glow of bracken in autumn and in the enticing greenness of a leafy spring. Nature, indeed, is infinitely beautiful, and she seems to wear her beauty as she wears colour or sound. Why then should her beauty belong to us rather than to her?"[2] But Wilhelm Windelband agreed with James: value "is never found in the object itself as a property. It consists in a relation to an appreciating mind, which satisfies the desires of its will or reacts in feelings of pleasure upon the stimulation of the environment. Take away will and feeling and there is no such thing as value."[3] R. B. Perry continued with what became the prevailing opinion: "The silence of the desert is without value, until some wanderer finds it lonely and terrifying; the cataract, until some human sensibility finds it sublime, or until it is harnessed to satisfy human needs. Natural substances… are without value until a use is found for them, whereupon their value may increase to any desired degree of preciousness according to the eagerness with which they are coveted." "Any object, whatever it be, acquires value when any interest, whatever it be, is taken in it."[4]

But with the environmental turn, so surprising and pressing in the final quarter of our century, this subjectivism in values needs review. Ecology has a way of pulling into alternative focus the exchange between the organic self and the surrounding world. This can lead us to re-view what we have been learning in evolutionary biology and developmental biochemistry. I argue here that in the orientation of these recent sciences the subjective account of valuing becomes grossly strained. Living, as we say, "far from nature," it is remarkable to find as one of the insistent questions of our advanced civilization: how should we value nature? An ecological crisis has forced the question upon us. Environmental and evolutionary science suggest some different answers; and yet no science is quite prepared to handle the question.

Our valuational quandary is not merely a muddle into which philosophers have gotten us, although it is perhaps the last legacy of Cartesianism. Valuational incompetence is the soft underbelly of hard science. Something gone sour at the fact/value distinction is one of the roots of the ecological crisis. Values, it is typically said, form no part of nature, but only come with the human response to the world. This seems at once objective about nature and humane toward persons, but it also yields a value structure in the scientific West more anthropocentric by several orders of magnitude than were any of the value systems of the classical, Oriental, and primitive world views which

[2] John Laird, *A Study in Realism* (Cambridge, England: At the University Press, 1920), p. 129.
[3] Wilhelm Windelband, *An Introduction to Philosophy,* trans. Joseph McCabe (London: T. Fisher Unwin, 1921), p. 215.
[4] Ralph Barton Perry, *General Theory of Value* (Cambridge, Massachusetts: Harvard University Press, 1926, 1954), pp. 125, 115f.

have succumbed before it. But this more sophisticated view is, I think, wise in its own conceits.

My strategy in what follows is to fight a way through how we know what we know (what philosophers call epistemological issues surrounding the terms *subjective* and *objective)* in order to reach the state of affairs in the real world and to be able to defend the existence of value there (what philosophers call ontological issues surrounding subjectivity and objectivity). In doing this, I keep the whole discussion as close to science as I can, while demanding a full-blooded, no nonsense account of the phenomenon of value in, and valuing of, the natural world. Earlier on, I admit to some inescapable blending of the subjective and objective, but later on, after this admission, I defend all the objectivity I can for natural value.

II. PRIMARY, SECONDARY, AND TERTIARY QUALITIES

Galileo's astronomy forced us to convert from a literal to a perspectival understanding of the claim that the sun is setting. His physics gave us the distinction, elaborated by Locke, between *primary* and *secondary* qualities. A secondary quality is observer dependent, manufactured out of the primary motions of matter. Color is an experiential conversion of photon radiation; taste and smell are molecular operations. This account was problematic philosophically (as Berkeley quickly saw), but it nevertheless became entrenched. The colors and sounds which Laird found nature to wear seemed rather to go with the beholding of it, reducible in the world stripped of a perceiver to matter in motion. Coached by these theories, what was then to be said of value? If the sunset is not literally a setting sun, not even red, then surely it is not literally beautiful. Samuel Alexander proposed that values were *tertiary* qualities.[9] Humans agree about redness, owing to their having the same organs (apart from color blindness, etc.), but value appraisals require an interpretive judgment twice removed from the qualities actually there.

By this account, we have no organs to taste, touch, see, or smell value. So it must originate at a deeper mental level. We have no options in judging length or redness (although there are aberrations). Such experiences happen to us without any liberty to refuse them. The primary and secondary qualities are always there in the scope of consciousness. They perhaps fall into the background, but they never turn off during perception. Value judgments, by contrast, have to be decided. Beauty or utility are things we must attend to. When our minds turn aside to other thoughts, though still perceiving the object, such values entirely disappear from consciousness. We can use instruments—meter sticks, spectroscopes, thermometers, mass spectrometers—on primary and

[5] Samuel Alexander, *Beauty and Other Forms of Value* (New York: Thomas Y. Crowell Company, 1968), pp. 172-87. Originally published in 1933.

secondary qualities. Something there leaves records during photography, electrophoresis, or chromatography, puzzle though we may about the experiential translation of 6800 angstroms into redness, or how the shape of the fructose molecule, interlocked with receptors on the tongue, is experienced as sweetness. Both primary and secondary qualities are in this sense empirical, or natural. But valuational qualities do not show up on any instruments or organs devised or conceivable. This leads some, who still look for properties in the object, to think of value as an objective, but *nonnatural,* that is, *nonempirical,* quality. But, finding nothing that produces consensus or proves researchable, most judges become convinced that these tertiary qualities are overlays, not really there in the natural world. Rainbow-like, only more so, they are gifts of the spectator's mind.

But next the puzzle deepens. Just as philosophers were reaching this consensus, a revolution in physics threw overboard the primary, supposedly objective, qualities as well. Einstein showed length, mass, time, and motion to be observer dependent. They too are matters of perspective, although not so much of decision as of bodily relations. At the microlevel, Heisenberg's uncertainty principle forbade any precise hold on momentum and location. Quantum mechanics left a nonsubstantial nonpicture of nature as a gauzy haze of interpenetrating wave fields, where none of the common-sense qualities made much sense, and where even space and time grew vague. It was alarming to learn how much our mental constructions enter into the descriptions of physical science, how much the observer influences the natural phenomenon by his instrumentation or sense modality. Objectivity vanishes more and more as phenomena get smaller and smaller.

Summing this up, Einstein remarked that he had taken "the last remainder of physical objectivity" from the concepts of space and time.[6] John Wheeler wrote, "A much more drastic conclusion emerges ... *there is no such thing as spacetime in the real world of quantum physics.* ... It is an approximation idea, an extremely good approximation under most circumstances, but always only an approximation."[7] Werner Heisenberg wrote, "When we speak of a picture of nature provided us by contemporary exact science, we do not actually mean any longer a picture of nature, but rather a picture of our relation to nature … Science no longer is in the position of observer of nature, but rather recognizes itself as part of the interplay between man and nature."[8] Before this heady sort of runaway relativism, lost in a great and unspeakable plasma, the question about values being objectively "out there" hardly seems

[6] Quoted in Ernst Cassircr, *Substance and Function and Einstein's Theory of Relativity* (New York: Dover Publications, 1953), p. 356. Originally published in 1923.

[7] John Wheeler, "From Relativity to Mutability," in Jagdish Mehra, ed., *The Physicist's Conception of Nature* (Dordrecht, Holland: D. Reidel Publishing, 1973), pp. 202-47; citation on p. 227.

[8] Werner Heisenberg, "The Representation of Nature in Contemporary Physics," *Daedalus* 87, no. 3 (Summer 1958): 95-108; citation on p. 107.

discussable. The subjectivists have won all the chips. Even physics, that bedrock science which gave great promise of "telling it like it is," has withdrawn entirely from that kind of claim. What hope is there for value theory to do anything more than to record what appears and seems? Any bolder claim is primitive naiveté.

But when we regain our wits, such relativism can be kept under more logical control. Contrary to first appearances, it can even support certain objective aspects in value judgments. For all that we have yet said, there is just as little or as much reason to think that physics is objective as that value theory is. Judgments about what *is* (mass, space, color) have proved observer dependent and indistinguishable from judgments about what *is good* (pleasure, beauty, grandeur). Subjectivity has eaten up everything, even the fact/value distinction. But as a matter of fact, unless we are insane, we all believe that we know some nonsubjective things about the physical world. Our judgments are not free of perceptual modification of the incoming signals, but neither, *pace* Einstein, do they lack a very large "remainder of physical objectivity." At this everyday level, we do stand in some picturing relation to nature. The key is provided in Wheeler's qualification of "no such thing" with "an extremely good approximation."

"There is a hawk in the spruce beside that granite boulder." This judgment fades out on subatomic scales, diffusing away if we migrate far enough from our native range. Through optical microscopy we take photographs yet in color of garnet crystals from the granite. But on the shrinking scale of electron microscopy we begin to remind ourselves that the color (despite the black and white micrograph!) is no longer relevant, while the length and shape in crystal lattices is still pictorial. Smaller still, we become aware that we have only models of the electrons and protons which compose the granite. Shape and location dissolve into cloudy wave fields. We allow too that the weight and shape of the boulder would appear differently to an observer passing at nearly the speed of light. Even the data from the other physical levels shows up objectively, though. The space-time dilations affect clocks, cameras, meters, one's body, and everything that ages. The nonspecifiable fuzziness of electron momentum and location registers in the bands on paper recording charts. These things are not entirely inventions of the mind, although they reveal our perspectival and theoretical reach to the microscopic and astronomical levels.

But, if I restrict the scope of my claims, none of this affects the fact that we know something objectively, factually about hawks, spruce trees, and boulders. We do not know entirely all that is there at every level, nor with an objectivity which is free from subjective contribution. But agnosticism and relativism about the ultimate structure of matter does not prevent objective knowing in a middle-level sense. The breakdown of a concept, claim, or function when extrapolated does not prevent its being quite true in the restricted range which

it well serves. Our partial knowing need not be illusory or false, although it is approximate and perspectival. Here value judgments too can be short-scope claims about what is the case in the mundane world. The clue provided by Alexander's word *tertiary* is not something about twice-compounded observer dependence. It is about participation at the middle structural levels where we live. The ownership feature in value judgments is important, but we need to think of value judgments as genuine, involved, if limited, claims about the world. Afterwards, we can inquire how far they can be pressed away from our native range. They do not attach to bare primary or secondary levels, but to high level constructions of matter with which we are in exchange—initially in common experience and afterwards in the sciences of natural history. Just as we are getting incoming commands from "out there" about length, color, hawks, and trees, so too we are getting some commands about value. We start with these as native range judgments, not as absolute ones. They are phenomenal claims, not noumenal ones. This much makes them locally objective, although it leaves unresolved how deep they run.

III. JUDGMENTS ABOUT TYPES, FUNCTIONS, AND VALUES

A dose of candor from the biological sciences can help cure us of the dizzying revelations of physics. Notice, for instance, that before the panorama of an ecosystem, the primary, secondary, tertiary distinction cannot do much explanatory work. If one asks whether a thing is alive, whether it is a seed, or edible, a moss, or a microbe, and tries to answer with the vocabulary of primary, secondary, and tertiary qualities, however much compounded, he can only stammer. In order to get at the richness of the natural world, we need to make many judgments for which we have directly no organs and can make no instruments, judgments to which we must attend by decision and interpretation. Here most of our scientific judgments are third and higher order, but we nevertheless believe that through them we are accurately corresponding with the natural world. When we pass to judgments of value, we do not need to consider them radically different in kind. This erodes the dogma that factual judgments are objective while value judgments are subjective.

The *Picea* (spruce) and *Buteo* (hawk) genetic sets, for instance, are full of information. The information is long-lived, reproducing itself by means of amino acid replacement across millions of years, a kind of fire which outlasts the sticks that feed it. But is this a compounded primary, secondary, or tertiary quality? The self-maintaining know-how is there independently of our observation, unmodified by our sense perception, primary in Locke's sense. It is nonsubjective and nonsecondary. It is quite as real as atoms, if also a bit nonsubstantial and fluid. To deny reality to this information on the basis of anything learned in physics is like denying that a newspaper picture contains information, because, under the lens, it turns out to be nothing but black dots.

Objectively encapsulated in informational molecules, the spruce and hawk have a technique for making a way through the terrain they inhabit, pragmatic facts for their life projects. Yet these DNA-based facts are not aggregated primary, secondary, or even tertiary qualities, but involve advanced, emergent compositional levels.

Meanwhile, we humans who make these judgments begin with at-hand, uncontested experience, and via science move from our native experiential level to elaborate, often unsettled theories about structural levels and their histories. We say that the genetic information has accumulated in stages. Some of the earliest information was the code for glycolysis, evolving 3.5 billion years ago, before there was atmospheric oxygen. The citric acid cycle came later, cashing in on eighteen times as much energy as did glycolysis. Somewhere photosynthesis evolved so that *Picea* can capture directly the energy of sunlight, with oxidative phosphorylation subsequently arising to use the atmosphere as an electron sink, improving the efficiency of the citric acid cycle. The spruce and the hawk evolved under the pro-life pressures of a selective system operating over genetic mutations, fitting them into an ecological community. In all this, we are making highly educated guesses describing the objective facts, estimates which will be partly revised, partly conserved as science advances. But most of us do not believe that we inevitably become less objective and more subjective, less primary and more secondary or tertiary as we do this. World building does go on in the mind of the beholder, as we shape up theories over experience. But world building also takes place out there. We find the information or energy flow only by attending with deliberate focus of mind. But the mind does not contribute these features because it must model them by careful attention and decision. To the contrary, we discover richer qualities in nature.

What happens now if we introduce some value judgments? We might speak of the value of nutrients, of food pyramids, of the information keying glycolysis and photosynthesis, of the exploratory value of mutations, with the "good" ones conserved because they have survival value. We might speak objectively of the value of the hawk's protective coloration (even admitting the secondary nature of color). The word *value* easily attaches to life functions as these are known at and theorized for the middle ranges of experience. We need not yet speak of *human* values, not even of experienced values, but some notion of presubjective value seems to belong to these "going concerns" called living organisms as they move through the environment. Value here attaches to a whole form of life and is not just resident in the detached parts as elementary units. It overleaps although it is instantiated in the individual. It appears in a holistic cross play where neutral, lesser valued, and even disvalued parts may assume transformed value in a larger matrix. Value emerges in pronounced forms at advanced structural levels and may not be visible as a Lockean primary or secondary quality.

But as a "tertiary" quality, value can be embedded with the facts, quite as real as the information organisms contain, sometimes just the same thing differently described. Some will object that biological "value" ought to be kept in scare quotes, since this is not what we mean by value as a quality in experienced life. One then has to trace descriptively each of the natural selections culminating in the central nervous system. One can rejoice that value emerges epiphenomenally at the very last in consciousness, but he must judge value to be absent from all the incubating steps. In all the precedents we should speak more carefully, using the term *biofunction* instead.

The hemoglobin molecule is structurally evolved from and much advanced over the myoglobin molecule. It is very much "better" (equals: more functional) at oxygen transport, having allosteric properties which make it a sort of microcomputer in its capacities to respond to the oxygen exchange needs of the blooded organism, as with the hawk in flight. Lubert Stryer, a biochemist, says of it, emphatically, *"In the step from myoglobin to hemoglobin, we see the emergence of a macromolecule capable of perceiving information from its environment."*[9] But a cautious value theorist will warn this chemist not to attach any "importance" to this, not to say that this step is of any value. To be really hard-nosed here, this "information perceiving" is subjective poetry, only a read-back from our own experience. One might allow that it was "interesting," but not that any "interests" of the life forms in which hemoglobin evolved were at stake.

But all this careful reservation of value as a gift of the spectator's mind now seems arbitrary and narrow. As soon as we have described hemoglobin evolution, we are ready to judge it a vital and valuable step upward in the advance of life. The phenomenon of things "being important" does not arise with our awareness; it is steadily there in quantized discoveries all along the way. Galileo and Locke first subverted value theory with their mechanistic reduction of secondary to primary qualities, leaving us only an objective matter in motion. It was then compoundly subverted by Einstein's relativity, by quantum mechanics, indeterminancy, and nonpicturability. These sciences probe toward ultimacy with genius and skeptical rigor. They work in the substrata with simplicity, and so leave out all but the thousandth part of a historical eventfulness which we daily experience and which other sciences do teach us to appreciate. Only by the sort of gestalt switch which can be provided by sciences at the other end of the spectrum, such as evolutionary biochemistry or ecology, dealing with the richness of natural history, can we begin to get value theory recovered from its failure of nerve.

All judgments mix theory with fact. Even the simple cases close at hand involve elements of linguistic and conceptual decision about what to call what, and where to draw the lines. An Iroquois might view the hawk as his totem,

[B] Lubert Stryer, *Biochemistry* (San Francisco: W. H. Freeman and Co., 1975), p. 90.

or the tree and boulder as the haunt of a spirit. Certainly the scientific judgments about natural kinds (granite, *Picea, Buteo)* are theory-laden. It is admittedly difficult, as philosophers of science know, to say why we prefer science to superstition, but it has to do, at least in part, with our persuasion that the one is a better window into the way things are. The interpreter imports something of himself into the interpreted. But the fact that we use theory-laden decisions about natural operations does not stand in the way of description; it rather makes it possible. To know things as they objectively are, without observer bias, is a celebrated but elusive goal of natural science, a goal impossible of full attainment, but toward which we make progress. A physicist estimates the mass of a boulder, a mineralogist knows its composition; a biologist distinguishes spruce from fir; an ecologist describes an ecosystem. All are aided, not confused by their theories. *Mass, granite, Picea,* and *homeostasis* are technical terms which serve as descriptive forms. The mind answers to its object of study; with progressive reformation we more approximately understand what is there.

In this context, judgments of natural value hardly differ from judgments of natural fact. In one sense, the subjectivists are in full command again and can insist that none of our seemingly objective seeing is done without wearing cultural eyeglasses. But, as before, the objectivist can reassert the common world of experience and the impressive observational force of science. We all do believe that in our native ranges humans know something of the structural levels of nature. We believe that scientific progress gives further, if approximate, access into what these natural types and processes are like. We judge between science and folklore, between good and bad science. When we then pass to judge whether this natural kind is good, or that life process has value, we are merely continuing the effort to map reality. One has to decide whether this is a *Picea,* as one has to decide whether this is a *lovely Picea.* On occasion, the judgment about value may be easier than is the judgment about fact. One can need more theory to "see" the information and energy flow, or the phylogenetic relationships, than one does to "see" the utility or beauty. That such interpretive judgments are subject to revision does not mean that value, in distinction from other natural properties, lies only in the mental state and is not an event in the space-time track. The constructions we see always depend upon the instructions with which we look; yet the evolving mind is also controlled by the matter it seeks to investigate. This is true alike in science and in valuation.

We can be thrilled by a hawk in the wind-swept sky, by the rings of Saturn, the falls of Yosemite. We can admire the internal symmetry of a garnet crystal or appreciate the complexity of the forest humus. All these experiences come mediated by our cultural education; some are made possible by science. An Iroquois would have variant experiences, or none at all. But these experiences have high elements of givenness, of finding something thrown at us, of success-

full observation. The "work" of observation is in order to understand the better. In value theory too we have as much reason to think that our appreciative apparatus is sometimes facilitating, not preventing, getting to know what is really there.

Some natural values are of the common-sense kind and nearly universal to cultures, as with the taste of an apple, the pleasant warmth of the spring sun, the striking colors of the fall. Even though these experiences come culturally bound, some natural impact here is shared by Iroquois and Nobel prize winner. Experience is required, but something is there which one is fitted for and fitting into; some good is transmitted and is productive of the experience. The native enjoying, just because it is relational to nature, but so universal among humans, faithfully attests what is there. It is precisely our experiential position as humans-in-nature which gives us factual access to events. Other natural values are opened up to us by scientific culture, by lenses and experiments. It is precisely our advanced knowledge, setting us apart from nature in theoretical abstraction over it, which takes us deeper into nature. Sometimes the purest revelations of science put us in a better position to evaluate these things as they objectively are.

IV. NATURAL VALUING AS ECOLOGICAL-RELATIONAL

I next present an explanation sketch of valuing consistent with natural history. Our inquiry is about the kind of natural value met with in unlabored contexts, as in pure rather than applied science, in contemplative outdoor recreation rather than in industry, in ecology rather than in economics. We are not considering, for instance, how molybdenum has value as an alloy of steel, a use which it does not have in spontaneous nature. Further, we should be cautioned against thinking that nature has some few kinds of value, or no disvalue. Nature is a plural system with values unevenly distributed and counterthrusting. Like the meanings in life, values too may come piecemeal and occasionally. Still, they come regularly enough for us to wonder whether we are coping with some value-tending in the system.

Consider a causal sequence *(A, B, C, D)* leading to the production of an event associated with natural value (E_{nv}) which produces an event of experienced value (E_{xv}), perhaps of the beauty in a waterfall or the wealth of life in a tidal zone (figure 1).

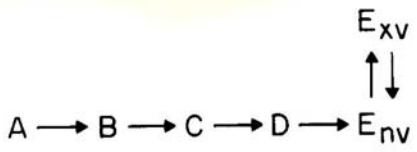

Figure 1.

Our consciousness also responds to the waterfall or estuary, so that we need a reverse arrow (↓) making the affair relational. One is first tempted to say that value does not lie in either polar part, but is generated in their relations. Like science or recreation, valuing before nature is an interactive affair.

But with this, more has been reallocated to the natural world than may at first be recognized. The act of responding has been ecologically grounded. We pass from abstract, reductionist, analytic knowledge to a participant, holistic, synthetic account of humans in nature. The subjective self is not a polar opposite to objective nature, not in the dyadic relation suggested by the paired arrows. It is rather enclosed by its environment, so that the self values in environmental exchange, in the diagrammed case and in myriads of others (E^{1}_{nv} E''_{nv}) here only suggested (figure 2). The self has a semipermeable membrane.

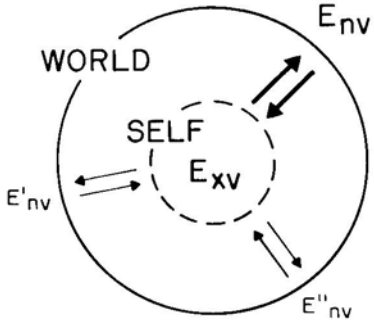

Figure 2.

The setting is a given, a datum of nature, even though the subject must respond in imaginatively resourceful ways. I see things out there in the "field" which I choose to value or disvalue. But on deeper examination I find myself, a valuing agent, located within that circumscribing field. I do not have the valued object in "my field," but find myself emplaced in a concentric field for valuing. The whole possibility is among natural events, including the openness in my appraising. John Dewey remarked that "experience is *of* as well as *in* nature."[10] I say that valuing is *in* as well as *of* nature. What seems a dialectical relationship is an ecological one. We must now consider how the whole happening, subject and its valued object, occurs in a natural ambiance (figure 3).

When an ecologist remarks, "There goes a badger," he thinks not merely of morphology, as might a skin-in taxonomist. He has in mind a whole mosaic of functions, interconnections, food chains, a way of being embedded in a niche where the badger is what it is environmentally. When a sociologist remarks,

[10] John Dewey, *Experience and Nature* (New York: Dover Publications, 1958), p. 4a. Originally published in 1929.

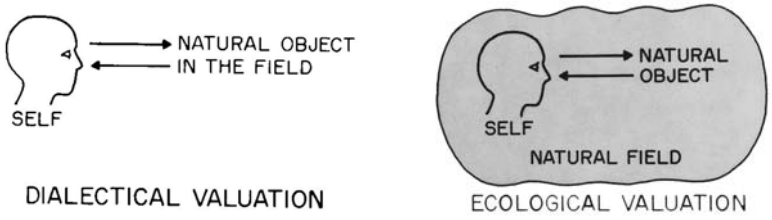

Figure 3.

There goes a vicar," he is not so much identifying a human as seeing a role in the community. The being of a vicar, like that of a badger, is a contextual affair. When a philosopher says, "There goes a valuer," he should not think of a happening inside the human in such a way as to forget how this is also an ecological event. The responsibility here is a response in our natural setting. Add the fact that the valuing subject has itself evolved out of these surroundings. All the organs and feelings mediating value—body, senses, hands, brain, will, emotion—are natural products. Nature has thrown forward the subjective experiencer quite as much as that world which is objectively experienced. On the route behind us, at least, nature has been a personifying system. We are where this track has been heading; we are perhaps its head, but we are in some sense tail. I next sketch a further productive sequence which generates the self *(S)* out of ancestral precedents *(O, P, Q R),* natural events in causal sequence, and here also place reverse, valuational arrows (←) indicating reactive elements which cultural and personal responses superadd to the natural basis of personality. I add an evolutionary time line to the holistic, ecological sketch (figure 4).

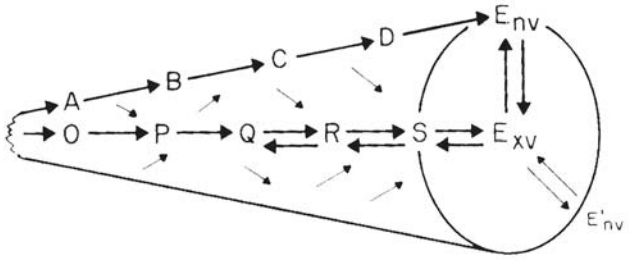

Figure 4

Seen in broad historical scale, these lines go back to common beginnings, from which they become richer eventually to reach the experiencing self embraced by its environment. Diverse, simple, complex forms are all maintained in and by the ecosystemic pyramid, and there are many coordinating connections

which we only suggest (↘). In such a picture, even though keeping the phenomenon of human valuing central, it is increasingly difficult to see valuing as isolated or even in dialectic. Values do not exist in a natural void, but rather in a natural womb.

The sudden switch in figure 1 from horizontal, merely causal arrows (→), to a vertical, valuational arrow (↑) now seems too angular a contrast. How far experienced value is a novel emergent we need yet to inquire, but there has been the historical buildup toward value, and there is presently surrounding us the invitation to value. The first series would have been better sketched in as it appears in figure 5.

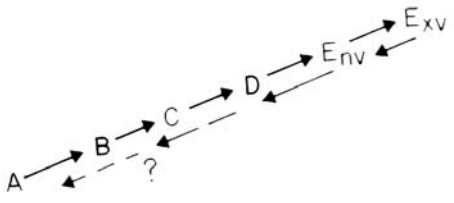

Figure 5.

The reason for the new sketch is that it is difficult to say why the arrows of valuational response should value only the immediately productive natural event and not include at least some of the precedents, with unshown coordinates as well. The last event is presently at hand, and we may have had no consciousness of value during former events. But in an evolutionary ecosystem nothing happens at all once and *per se;* everything is embedded in a developing process.

A critic might complain, and perhaps fiercely, that I have diagrammatically sketched out single sweep lines while the real world is a much more tumultuous affair, where the valuational and constructive lines are not vectors, but a near chaos of causes and happenstance, luck and struggle, serendipity and emergence, with much waste and little worth. The diagram screens off the heterogeneous and alien character of the ingredients of value. I have straightened out strands which do not lie straight in the actual world, as though I had never heard of Darwin and his jungle-like world.

There is truth in the complaint. We may wish conservatively to keep our judgments short-scope claims. Values immediately experienced might run back to some nonvaluable base out of which they have emerged. Analogously, living organisms once emerged out of lifeless nature. A present good might have come out of historically mixed values and disvalues, as when a little good comes from much evil. Natural values might be oddly occasional, though the causal sequence is continuous. Nature is not homogenized, but unevenly located, and so too with its values.

But meanwhile value is sometimes there before us, strikingly so, and we will sometimes be valuing contributors toward value, past or present, seen at whatever level. If ever we do extrapolate to try a systemic overview of what is going on, the likeliest account will find some programmatic evolution toward value, and this not because it ignores Darwin, but just because it heeds his principle of natural selection, and deploys this into a selection upslope toward higher values, at least along some trends within natural operations. How do we humans come to be charged up with values, if there was and is nothing in nature charging us up so? We prefer not to believe in the special creation of values, nor in their dumbfounding epigenesis. We let them evolve. Nor is our account merely a selection from the chaotic data of nature. Rather our interpretation notices how there is a world selection of events over evolutionary time (without denying other neutral or disvalued events) which builds toward the ecological valuing in which we now participate. Perhaps we will not want to say that this had to happen. But it did happen.

We can now view primary and secondary qualities holistically from above, drawn into an ecosystem at much higher structural levels, rather than viewing the ecosystem reductionistically from below as being merely aggregated lesser qualities. We have, so to speak, an ecology of atoms and molecules. These are not described as microparticles *per se,* but as events in their neighborhoods, valued in macroscopic waterfalls and tidal basins. Genetics and biochemistry are drawn into the drama of natural history.

Many evolutionary and ecological connections are shared between ourselves as experiences and the natural events we appraise. These bring a new orientation toward the presence of photosynthesis, the appearance of hemoglobin, or the genetic keying of information. We discover that decomposers and predators have value objectively in the ecosystem, and then realize that our own standing as subjective valuers atop the biotic pyramid is impossible except in consequence of decomposition and predation. An interlocking kinship suggests that values are not merely in the mind but at hand in the world. We start out valuing nature like land appraisers figuring out what it is worth to us, only to discover that we are part and parcel of this nature we appraise. The earthen landscape has upraised this landscape appraiser. We do not simply bestow value on nature; nature also conveys value to us.

V. NATURAL VALUE AND CONSCIOUSNESS

If the experience of valuing is relational, what do we say of the product, value? We must clarify the connection between experience and its objective base, since, under prevailing theories, it is widely held that the phrase "unexperienced value" is a contradiction in terms, with "experienced value" a tautology. This assumption fits the existential notice that value is not received as the conclusion of an argument, or by the indifferent observation of a causal

series. A value or disvalue is whatever has got some bite to it. In the case of bare knowing, the knower has an internal *representation* of what is there, perhaps calmly so. Valuing requires more, an internal *excitation.* That brings emoting, and perhaps this marriage of a subject to its object gives birth to value. It enters and exits with awareness.

Of course, if natural things have values, we cannot conceivably learn this without experiences by which we are let in on them. With every such sharing there comes a caring, and this may seem to proscribe objective neutrality. But it only prescribes circumspect inquiry. All natural science is built on the experience of nature, but this does not entail that its descriptions, its "facts," just are those experiences. All valuing of nature is built on experience too, but that does not entail that its descriptions, its "values," are just those experiences. Valuing could be a further, nonneutral way of knowing about the world. We might suppose that value is not empirical, since we have no organs and can make no instruments for it. But it could just as well be an advanced kind of experience where a more sophisticated, living instrument is required to register natural properties. Value must be lived through, *experienced,* but so as to discern the character of the surroundings one is living through.

I next work toward this conclusion by finding inadequate some lesser accounts.

(1) *Natural value as an epiphenomenon.* Pollen is not an allergen "by nature," for nasal irritation is no part of its reproductive role. But certain pollens "by accident" evoke mistakes in susceptible immunological systems. The allergy reaction is thus a disvalue which bears no meaningful connection with the natural operation. Analogously, some natural events can (to coin a term) be "valugens," evoking positive responses without meaningful basis in spontaneous nature. We react with a sense of beauty before the swirled flow in a pegmatite exposed in a rock cut. Again, we are enchanted by the mist sweeping in over the dell. But this is a kind of mis-taking of what is essentially there. Value is adventitious to nature, more fiction than fact, more dream than description, poetry, not prose, real in consciousness, unreal in the world.

But while partially useful, this account, if taken for the whole, leaves the human valuing subject eccentric to his world. Causal connections obtain and the relational context is required, but value is a fluke without intelligible support in its stimulus.[11] In causal cases, one may be content with any kind of *how* explanation which hooks up antecedent and subsequent events. But in the case of value one would hope for an explanation more or less logically adequate to the effect. Yet so far from enlightening us about *why* value appears, this is in fact a nonexplanation. Value is an epigenetic anomaly.

[11] This seems to be the view of George Santayana, *The Sense of Beauty* (New York: Modem Library, 1955) pp. 21-24, pp. 150-54. Originally published in 1896.

(2) *Natural value as an echo.* Strolling on the beach, I examine dozens of pieces of driftwood, discarding all but one. This I varnish and frame for its pleasing curvatures. I value this piece because it happened to mirror the sweep and line of my subjective preference; the rest did not. Nature once in a while chances to echo my tastes. We still have an element of accident, but we can make more sense of origins. Value does not come in pleasantly allergic reaction, but rather as a reflection of my own composition. This led Samuel Alexander to claim here that we, not nature, are the artists. "The nature we find beautiful is not bare nature as she exists apart from us but nature as seen by the artistic eye … We find nature beautiful not because she is beautiful herself but because we select from nature and combine, as the artist does more plainly when he works with pigment. … Nature does live for herself without us to share her life. But she is not beautiful without us to unpiece her and repiece. … Small wonder that we do not know that we are artists unawares. For the appreciation of nature's beauty is unreflective; and even when we reflect, it is not so easy to recognize that the beauty of a sunset or a pure color is a construction on our part and an interpretation."[12]

But the more we reflect the less easy it becomes to see value as nothing but a reflection. Perhaps this is sometimes so, but as a general theoretical account we have to reckon with the felicitous echoing capacity of nature, with its stimulus and surprise. Both the epiphenomenon and echo models are uneco logical, not sufficiently interactive and functional. To say that when enjoying blackberries or the spring sun we are participating in anomalous value seems biologically odd. The cardinal on the wing and the *Trillium* in bloom have grace, coloration, symmetry which are structurally related to flight, flowering, and life cycles. Is the beauty here only by our selecting, not in our sensing valuative overtones that go with biological function? If I am choosing shells rather than driftwood, the color, sweep, and vault is better realized in one than in another, but seems a nisus in them all. Each attempt is an architecture under genetic control.

We are endowed with naturally selected capacities to value such things. Is the whole evolution of valuing an irrational, serendipitous afterglow? Perhaps the immunological system makes mistakes, but its development is incredible except as a protection against hurts in the world. The valuational system may have fortuitous benefits, but its presence can best be accounted for in terms of an inclusive fitness to helps in the world. It would be an odd benefit indeed if it did not really better fit us to our home niche. The echoing is most often working the other way around; the human valuer is reflecting what is actually there.

[19] Alexander, *Beauty,* p. 30f. Alexander holds, however, that certain nonaesthetic values may exist in nature, pp. 285-99. See also *Space, Time, and Deity* (London: Macmillan and Co., 1920), 2:302-14.

(3) *Natural value as an emergent.* Emergent phenomena occur strikingly in nature, as when first life and afterwards learning appeared where none before existed. Perhaps the valuing capacity emerges to create value out of mere potential? Value is a kind of fiery excitement, and no natural scene, however complex and splendid, can have value until the precursors of value are supplemented and thickened by the arrival of human interest. Value cannot be said to have happened until present as an event in consciousness. There must be the delivery of some kind of "charge" into the valued experience. We may have little sense of manufacture or decision, but still we furnish the required awareness. Like knowing, the process of valuing goes on in the conscious mind. Like knowledge, the product, value, only exists there.

I can now give an intelligible account of the objective precedents. They are not flukes, but fuel. The valuing experience, like combustion, does indeed feed on natural properties and proceeds in keeping with their potential. Though emergent, it is not adventitious. The waterfall, the cardinal, the columbine, the blackberry, the warming sun, glycolysis, photosynthesis—all have indeed their stimulating properties, and thus are rightly valued when they are valued, but not until then does value appear. Perhaps too, valuing can fail. But everything is potential until clinched in experience. Consciousness ignites what before were only combustible materials, and value lights up. The precondition for value need not itself be a value.

To say that wood is combustible means that wood will burn if ignited, although it never nears fire. But this is a predicate of objective potential; wood might ignite in the spontaneous course of nature. But to say that wood is valuable is a predicate of subjective potential. If a human subject appears in relation, wood can be valued. This sort of dispositional predicate can be realized only in human experience. Some exception can here be made for subhuman experience. Animals may not have aesthetic, moral, philosophical, or religious sensibilities. They may be incapable of normative discourse. But they can undergo pain and pleasure; they have interested concerns. To this extent, they own values. Valuing thus dilutes across the simplifying of the central nervous system, but, if we rely entirely on the emergent account, value is never extraneural. Where there are no centers of experience, valuing ceases and value vanishes.

But neither will this account do in explanation of the main body of natural values. While it may be true that some ranges of value emerge, like the capacity for joy or aesthetic experience, these are capstone goods, but are built on valuable substructures. There are values that only come with consciousness, but it does not follow that consciousness, when it brings its new values, confers all value and discovers none.

(4) *Natural value as an entrance.* We can best appraise the emergent account in the light of another account where value is more generously allocated to the natural world. The arriving beholder enters into the surrounding scene;

it enters him. There is a two-way entrance and resulting fulfillment. Subjective experience emerges to appreciate what was before unappreciated. But such valuing is a partnership and the free-standing objective partner cannot enjoin value upon the subjective partner if it has nothing to offer. Emergence is not the whole story; there is a joining of situational value. If emergence is a *dispositional* account, we can call this a more ecological, *positional* account.

An ecologist might say that the eater realizes the potential in blackberries, but he will equally say that the eater captures nutrients instituted functionally into the ecosystem. The experienced taste is an overlay on objective food chains. The eater is waking up in the midst of events which precede and exceed his awareness. The eating of the berries, like the burning of the wood, is really a matter of formed energy throughput, a physical energy onto which life has been modulated. Initially received as solar input, nature has by photosynthesis locked this energy into cellulose and carbohydrates. When humans overtake it, energy previously there is transformed in the eating and ignition. This flow-through model is a more basic one than the model of emergence. The potential is to be conceived of as a kind of capital on which we can draw a check. But the check cashing does not entirely constitute the value, even though it may reconstitute it.

We ought not to forget the noblest step, but we ought not to mistake the last step for the whole history. Valuing is not apart from the whole; it is a part in the whole. Value is not isolable into a miraculous epiphenomenon or echo, even though some valued events may be happenstance. It is systemically grounded in major constructive thrusts in nature. The most satisfactory account is an ecocentric model, one which recognizes the emergence of consciousness as a novel value, but also finds this consciousness to make its entrance into a realm of objective natural value. This account works equally as well where we value things which we do not consume. When we value a thrush singing in the wild, we have a sense of entrance into events ongoing independently of our subjective presence. We cannot genuinely care here, unless we care what happens after we are gone.

(S) *Natural value as an education.* A natural object has no frame or pedestal; much depends on how I take it. The hawk flies past, and I can follow to admire his strength and speed, or let him pass and gaze into the blue expanse, pondering his fleeting smallness in the vast emptiness. Lying on my back, resting trailside, the stalwart ponderosa pine strikes me with its strength. It has stood the wintry storms. But then a hummingbird flits on scene, and how am I to interpret this interruption? By the contrast of great and small, mobile and immobile? Or by comparison of different strengths? The bird has stood the winter by flight from it and arrives after five thousand miles over land and sea. I remark to my companion that this is a strong flight for so tiny a creature. But she has seen nothing. With eyes closed, she has been wondering whether the Swainson's or the hermit thrush is the better singer.

The Fibonacci series in the spiral nebula in Andromeda can be drawn into association with that spiral in the chambered nautilus, in weather cyclones, and waterfall whirlpools. I can dwell on the galaxy's size and age, on the nautilus' age and smallness, on the local whirlpool's being driven by the global Coriolis force. Natural objects trigger imaginative musings of discovery and theoretical recombination, depending upon an active following of the show, on cultural preconditioning, and an adventurous openness.

Natural events thus educate us, leading out the beholder into self-expression. But it would be a mistake to conclude that all values derive entirely from our *composition* and none from our *position.* There are valued states of consciousness, but some are directed from the outside in essential, though not absolute, ways by the natural objects of consciousness. The situation remains a providing ground and catalyst, and also a check on experience. We can be deceived, as we could not if we were only composing. If, through the floating mists at evening, I am appreciating the moon hanging over the summit, only to discover with a bit of clearing that this was the disc of a microwave antenna, I judge the experience to have been false and cannot afterwards regain it. I may be deceived about strength in the ponderosa or hummingbird. Our value judgments have to be more or less adequate to the natural facts.

Nature presents us with superposed possibilities of valuing, only some of which we realize. It is both provocative source of and resource for value. Here fertility is demanded of us as subjects, but is also found in the objects which fertilize our experience. Nature does indeed challenge us to respond as artists, poets, philosophers, as evaluators. But rather than devaluing nature, this educational ferment deepens its valued dimensions. The self has its options where to take the experience nature launches, but only interactively with nature carrying the show forward. There is trailblazing by the conscious self, but also we go in the track of our surroundings, with consciousness a trailer of what lies around.

The notion that nature is a value carrier is ambiguous. Everything depends on a thing being more or less structurally congenial for the carriage. Promiscuous items—logs, rocks, horses—support the body and serve for a seat. Other values require rather specific carriers, for one cannot enjoy symmetry, display of color, or adventure everywhere in nature. Still others require pregnancy with exactly that natural kind, as when only the female body can carry a child. Nature both offers and constrains values, often surprising us. We *value* a thing to discover that we are under the sway of its *valence,* inducing our behavior. It has among its "strengths" (Latin: *valeo,* be strong) this capacity to carry value to us, if also to carry values we assign to it. This "potential" cannot always be of the empty sort which a glass has for carrying water. It is often a pregnant fullness. In the energy throughput model, nature is indeed a carrier of value, but just as it is also objectively a carrier of energy and of life.

In climax, the values which nature is assigned are up to us. But fundamentally there are powers in nature which move to us and through us. America became great, remarked Alfred North Whitehead, when the pioneers entered "an empty continent, peculiarly well suited for European races."[13] That suggests a vast, valueless continent, waiting to carry our imported values, although even this is belied by its being a "peculiarly well suited" emptiness. Wild America, said John Locke, was a "waste." "Nature and the earth furnished only the almost worthless materials as in themselves." The Europeans' labors added 999 parts of the value; hardly one part in a thousand is natural.[14] But under our model we ought to think of a majestic and fertile ecosystem, the natural values of which could blend with those of the immigrants. Only the ecologically naive would see the energy flow, the work done, the value mix on a farm in Locke's proportions. The farmer but redirects natural sources, soil fertility, sun and rain, genetic information, to his own advantage. Even the settlers could call it (borrowing a Biblical phrase) a land of promise. Indeed, we have sometimes found values so intensely delivered that we have saved them wild, as in the Yellowstone, the Sierras, and the Smokies. The cathedrals were the gems of Europe, left behind; but the national parks are the gems of America, left untouched and positively treasured for their natural value.

How shall we judge our theory that value is (in part) provided objectively in nature *(T_o)* against the counter-belief that value arises only as a product of subjective experience *(T_s),* albeit relationally with nature? Even in scientific theories, hard proof is impossible. All we can hope for is a theory from which we can logically infer certain experiences *(E).* If *T,* then E. Given these, our theory is corroborated by a kind of weak backtracking verification. Given counterevidence (not *E),* we have to estimate whether the anomaly is serious. No big theory even in science, much less in value theory, is trouble free, and the theory of objective value can be stung by our seeming incapacity to know anything whatsoever in naked objectivity. But value is not the sort of thing one would expect to know without excitement. If there is objective value in nature *(T_o),* then one would predict it to stir up experience *(E).* But sometimes too that experience fails (not *E),* and we must presume a faulty registration and/or valueless parts of nature.

If value arrives only with consciousness *(T_s),* we have no problem with its absence in nature (not *E).* But experiences where we do find value there *(E)* have to be dealt with as "appearances" of various sorts. The value has to be relocated in the valuing subject's creativity as he meets a valueless world, or even a valuable one, i.e., one *able* to be *valued,* but which before our bringing

[19] Alfred North Whitehead, 'The Study of the Past—Its Uses and Its Dangers," *Harvard Business Review* 11 (1932-33): 436-44; citation on p. 438.

[14] John Locke, *The Second Treatise of Civil Government* (Oxford: Basil Blackwell, 1948), secs. 42, 43, p. 22f. Originally published in 1690.

value ability contains only that possibility and not any actual value. This troubles the logic by hiding too much in words such as *epiphenomenon, echo, emergent* and *potential* They occasionally help, but in the end give us the valuing subject in an otherwise (yet) valueless world, an insufficient premise for our experienced conclusion.

Resolute subjectivists cannot, however, be defeated by argument, although they can perhaps be driven toward analyticity. One can always hang on to the claim that value, like a tickle or remorse, must be felt to be there. Its *esse* is *percipi.* Nonsensed value is nonsense. It is impossible by argument to dislodge anyone firmly entrenched in this belief. That theirs is a retreat to definition is difficult to expose, because here they seem to cling so closely to inner experience. They are reporting, on this hand, how values always touch us. They are giving, on that hand, a stipulative definition. That is how they choose to use the word *value.* At this point, discussion can go no further.

Meanwhile, the conversion to our view seems truer to world experience and more logically compelling. Here the order of knowing reverses, if it also enhances, the order of being. This too is a perspective, but it is ecologically better informed. Nor is it so stiffly humanist and antireductionist. Science has been steadily showing how the consequents (life, mind) are built on their precedents (energy, matter), however much they overleap them. We find no reason to say that value is an irreducible emergent at the human (or upper animal) level. We reallocate value across the whole continuum. It increases in the emergent climax, but is continuously present in the composing precedents.

VI. INTRINSIC NATURAL VALUE

Intrinsic contrasts with *instrumental; subjective* with *objective.* I next map these terms onto each other and the natural world.[16] *Intrinsic* value may be found in *human* experiences which are enjoyable in themselves, not needing further instrumental reference—an evening at the symphony, or one listening to loons call. Beyond this, *intrinsic natural* value recognizes value inherent in some natural occasions, without contributory human reference. The loons ought to continue to call, whether heard by humans or not. But the loon, while nonhuman, is itself a natural subject. There is something it is like to be a loon; its pains and pleasures are expressed in the call. Those who cannot conceive

[1C] I set aside a use *of subjective* which means "depending on personal judgment, difficult to get consensus on." By contrast, *objective* means "obvious to all, publicly demonstrable." Many instrumental, humanistic values in nature—our need for food—arc unarguable, while finding intrinsic natural value requires discretionary, subjective judgment. We here examine subjectivity in claim content, not that involved in verifying a claim. It is not surprising that humans reach the easiest consensus on values nearest those we subjects experience, nor that there is disagreement about objective value, since nonexperienced value is remote from the immediacy of personal life.

of nonexperienced value may allow nonhuman but not nonsubjective value. Value exists only where a subject has an object of interest. "The being liked, or disliked of the object is its value. … Some sort of a subject is always requisite to there being value at all—not necessarily a *judging* subject, but a subject capable of at least motor-affective response. For the cat the cream has value, or better and more simply, the cat values the cream, or the warmth, or having her back scratched, quite regardless of her probable inability to conceive cream or to make judgments concerning warmth."[16]

Centers of experience vanish with simpler animals. In the botanical realm, we find programs promoted, life courses generated and held to, steering cores which lock onto an individual centeredness. There is a kind of object-with-will even though the feeling is gone. Every genetic set is in that sense a normative set; there is some *ought-to-be* beyond the *is,* and so the plant grows, repairs itself, reproduces, and defends its kind. If, after enjoying the *Trillium* in a remote woods, I step around to let it live on, I agree with this defense, and judge that here is intrinsic objective value, valued *by me,* but *for* what it is *in itself.* Value attaches to a nonsubjective form of life, but is nevertheless owned by a biological individual, a thing-in-itself. These things count, whether or not there is anybody to do the counting. They take account of themselves. They do their own thing, which we enjoy being let in on, and which we care to see continue when we pass on. Even a crystal is an identifiable, bounded individual, a natural kind which I may wish to protect, although it has no genetic core.

But the "for what it is in itself" facet of *intrinsic* becomes problematic in a holistic web. It is too internal and elementary; it forgets relatedness and externality. We value the humus and brooklet because in that matrix the *Trillium* springs up. They supply nutrients and water for the lake on which the loons call. With concern about populations, species, gene pools, habitats, we need a corporate sense which can also mean "good in community." Every intrinsic value has leading and trailing *ands* pointing to values from which it comes and toward which it moves. Natural fitness and positioning make individualistic intrinsic value too system independent. Neither single subject nor single object is alone. Everything is good in a role, in a whole, although we can speak of intrinsic goodness wherever a point experience, as of the *Trillium,* is so satisfying that we pronounce it good without need to enlarge our focus. Here, while experience is indeed a value, a thing can have values which go unexperienced. Just as a human life can have meaning of which the individual is unaware (for indeed the lives of all great persons have more meaning than they know), biological individuals can play valuable genetic, ecological, evolutionary roles of which they are unaware. If the truth could be

[16] David W. Prall, *A Study in the Theory of Value,* University of California Publications in Philosophy, vol. 3, no. 2 (Berkeley: University of California Press, 1921), p. 227.

known, not only is much of value taking place in nonsentient nature, much of value is going on over our own heads as well.

For comprehensive scope, let us speak of natural *projects.* Some are *subjects* (loons); some are individual *organic objects (Trilliums);* some are individual *material objects* (crystals). Some are *communities* (the oak-hickory forest); some are *landforms* (Mount Rainier). Every natural affair does not have value, but there are "clots" in nature, sets of affinities with projective power, systems of thrust, counterthrust, and structure to which we can attach "natures" in the plural. There are achievements with beginnings, endings, cycles, more or less. Some do not have wills or interests, but rather headings, trajectories, traits, successions which give them a tectonic integrity. They are projective systems, if not selective systems. This inorganic fertility produces complexes of value —a meandering river, a string of paternoster lakes—which are reworked over time. Intrinsic value need not be immutable. Anything is of value here which has a good story to it. Anything is of value which has intense harmony, or is a project of quality. There is a negentropic constructiveness in dialectic with an entropic teardown, a mode of working for which we hardly yet have an adequate scientific, much less a valuational, theory. Yet this is nature's most striking feature, one which ultimately must be valued and of value. In one sense we say that nature is indifferent to planets, mountains, rivers, and *Trilliums,* but in another sense nature has bent toward making and remaking them for several billion years. These performances are worth noticing—remarkable, memorable—and they are not worth noticing just because of their tendencies to produce something else, certainly not merely because of their tendency to produce this noticing in our subjective human selves. All this gets at the root meaning of nature, its power to "generate" (Latin: *nasci, natus).*

Intrinsic natural value is a term which presides over a fading of subjective value into objective value, but also fans out from the individual to its role and matrix. Things do not have their separate natures merely in and for themselves, but they face outward and co-fit into broader natures. Value-in-itself is smeared out to become value-in-togetherness. Value seeps out into the system, and we lose our capacity to identify the individual, whether subject or object, as the sole locus of value. A diagram can only suggest these diverse and complex relationships in their major zones. The boundaries need to be semi-permeable surfaces, and there will "be arrows of instrumental value (↗, ↘) found throughout, connecting occasions of individual intrinsic value (o). Each of the upper levels includes and requires much in those below it. The upper levels do not exist independently or in isolation, but only as supported and maintained by the lower levels, though the diagram (figure 6), while showing this, inadequately conveys how the higher levels are perfused with the lower ones.

The subjectivist claim might seem safer in view of the breakout problem, that of knowing what nonexperienced value is like. But it is just as bold, for

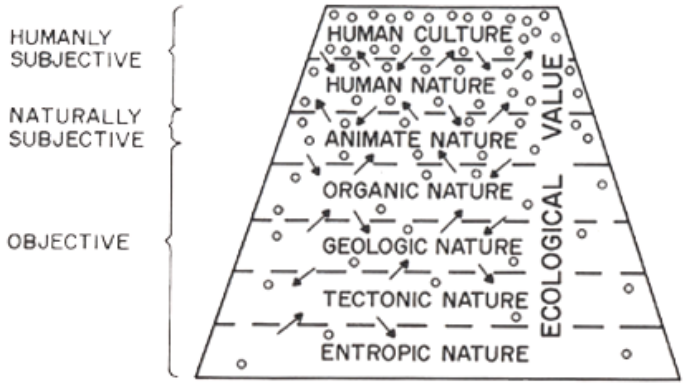

Figure 6. Levels of Value in Projective Nature

it too refuses to shut value judgments off at the boundaries of experience. It asserts a descriptive, cognitive truth about the external world of nonexperience. It too is a metaphysical claim, going beyond immediate experience to judge what is not there. Science, strictly speaking, brings a null result here, a nonanswer, not a negative answer. The subjectivist claim is certainly not simple, but rather an advanced judgment made with heavy theories replacing the primary fact of experience, where we move through a world of helps and hurts always coming at us. The logic by which one reads values out of nature is no less troublesome than the logic by which one finds values there and lets them stay.

The finding of objective value in nature is simpler and even more scientific if made with reserve. Neither native experience nor science pushes the dark back very far, but both let us in on workings which include but transcend our own existence. Immediate, middle-range experience enjoys many natural values, and one would expect this pragmatically to be locally competent. When science passes to the atomic or astronomical scales, we may wish to be agnostic. But the global sciences describe an evolutionary ecosystem where from an inchoate planet and seed of microscopic beginnings there progressively evolves the many-splendored panorama in which all our valuing takes place. We remain ignorant about many dynamisms and contingencies here, about what inevitability, if any, attaches to what actually did manage to happen. Nevertheless, whether rich by destiny or chance, or both, here we are embedded in it all.

Now it does not seem simple, scientific, or even safe to conceive of ourselves as subjects in metaphysical and valuational isolation from our natural launchings and underpinnings. Here value is a powerfully penetrant notion. It slips by the emergent steps back to the generating power, away from the subject over to the web and pyramid. We certainly interpret the show, experiencing redness out of wavelengths, beauty out of the patterned landscape. But we may be just

as certain that the world known in sensory and intellectual paraphrase is structurally more complex than what comes through to register as fact and value. In that sense, in our knowing we are simplifying what is there, not enriching it, though, in another sense, the coming of humans enriches the drama, because valuers arrive in whom nature becomes conscious of itself.

In an otherwise admirable account, C. I. Lewis hedges and grants that natural objects carry, objectively, *extrinsic* value, in effect, the standing possibility of valuation. They actually have a potential for value, even if this forever remains unexperienced or is mistakenly experienced. When an experiencer arrives, such objects do not refer us away from themselves, but we enjoy them for what they are. Nevertheless they cannot own any intrinsic value. *"No objective existent has strictly intrinsic value; all values in objects are extrinsic only. ... The goodness of good objects consists in the possibility of their leading to some realization of directly experienced goodness.*" Value judgments are based upon facts "obdurate and compelling" and in this sense 'Valuation is a form of empirical knowledge." The notion that values are only subjective is "one of the strangest aberrations ever to visit the mind of man."[17]

But the word *extrinsic* suggests that essentially value is still a result of the human coming, whereas in ecological fact the human often arrives to trail naturally rooted values. There is nothing extraneous or accidental about the food value in a potato. When we overtake it, we recycle and amplify a natural value.[18] In evolutionary fact, there is nothing inessential or adventitious about those projective, pro-life forces. They inhere in the earth itself and we latecomers inherit their work. The flow-through model of value does not find the objective side extrinsic and the subjective side intrinsic, but they are facets of one process. If, however, we revise Lewis to use *extrinsic* to refer to that contributory role which natural things have, to their outward facing as this complements an inner facing, then in spontaneous nature things regularly have extrinsic as well as intrinsic value.

We can test our intuitions here by driving them to moral extremes. Let us imagine, in thought experiment, a parable of the last judgment. Suppose, a century hence, that in a tragic nuclear war each side has loosed upon the other radioactive fallout which sterilizes the genes of humans and mammals but is harmless to the flora, invertebrates, reptiles, and birds. That last race of valu-

[17] Clarence Irving Lewis, *An Analysis of Knowledge and Valuation* (La Salle, Ill.: Open Court Publishing Co., 1946), pp. 387, 407, vii, 366.

[18] The apple, Lewis would reply, cannot realize its own value. If uneaten, it rots. So its value is extrinsic; the eater's pleasure is intrinsic. But this example is misleading unless ecologically understood. The carbohydrate stored in the overwintering potato will be used, although not experienced, by the plant in the spring. Eating it overtakes energy of value to the plant. But the apple functions as a gamble in seed dispersal. Its value is realized when birds, deer, or humans take the bait. The apple has been very successful; it has caught the man. While the apple takes care of the man, the man takes care of the apple. Its survival is assured as long as there are humans to care for it!

ers, if they had conscience still, ought not to destroy the remaining biosphere. Nor would this be for interest in whatever slight subjectivity might remain, for it would be better for this much ecosystem to continue, even if the principal valuers were taken out. That verdict would recall the Genesis parable of the first judgment, where, stage by stage, from lesser to higher forms, goodness is found at every level.

VII. THE ETHICAL IMPERATIVE

Future historians will find our century remarkable for its breadth of knowledge and narrowness of value judgments. Never have humans known so much about, and valued so little in, the great chain of being. As a result, the ecological crisis is not surprising. To devalue nature and inflate human worth is to do business in a false currency. This yields a dysfunctional, monopolistic world view. We are misfits because we have misread our life support system. We rationalize that the place we inhabit has no normative structures, and that we can do what we please. Afterwards, this view sinks down into the hinterlands of our minds, an invisible persuader which silently shapes an ethic.

One can blunder in the old, naive view that values are known in literal, uninterpreted simplicity. But there is folly also in swinging to the other extreme. In this arrogation of value to ourselves, there is what the theologians call *hubris,* overbearing pride. It is much easier to impose our wills on the world when we believe it is otherwise of no account. Nothing stays our libido; nothing demands any human-transcending concern. But ethics too, like all aspects of life, flourishes when operating in a system of checks and balances. What if, in truth, we are not only limited by the natural facts but also by natural values? What if living well is not merely a getting of what I value, but a negotiating of my values in a neighborhood of worth? In the former belief we would forever remain juvenile. In the latter we should gain moral maturity.

There is much nobility in being self-actualizing, and nature permits us to elect some values. But such dignity is not enhanced by living as lonesome selves in a void world. There is no joy in being freaks of nature, loci of value lost in a worthless environment. The doctrine of the sterility of nature is not a boon but an evil, for it throws humans into meaninglessness, into an identity crisis. It has made much in modern life sterile. At this point, there is something encouraging about the notion of relativity. Einstein introduced us, at the levels of time, space, mass, energy, to but one form of an ecosystemic principle. Subjectivity too is what it is in objective circumstances. The values we own are nested in a mother-matrix. To turn Bishop Butler on his head: everything is what it is in relation to other things.[19] This kind of relativity does not cause alienation and anthropocentrism; it rather cures it.

[10] "Everything is what it is, and not another thing." Joseph Butler, *Fifteen Sermons upon Human Nature,* London, 1726; 2nd ed., 1729, in the preface.

Seen in this way, it is not the objectivists but rather the thoroughgoing subjectivists who commit the naturalistic fallacy, for they must either derive value at a consummate stroke out of a merely factual nature, getting it as it were *ex nihilo,* or out of something available but to no avail without us. Or they have to bring value in by skyhook from some *a priori* source. But we do not commit this fallacy because we find fact and value inseparably to co-evolve. This does not deny the mystery of emerging value, but there is value in our premises as well as in our conclusion.

We humans do not play out our drama of epiphenomenal or emergent value on a valueless natural stage. The stage is the womb from whence we come, but which we really never leave. If the enduring drama has any value, that must somehow attach to the whole plot and plasma, span over from potential to persons, even though it may be diversely distributed across events. Nature is not barren of value; it is rather the bearer of value. That both constrains and ennobles the role we humans are called to play.