

NOTE

1. The notion of a unilinear social development, like the one Friedrich Engels presented in *Anti-Dühring*, had already fallen into considerable disrepute among serious Marxists in the first half of this century, as I myself recall. One of the most troubling problems with this notion, I should note, was the "transition" from feudalism to capitalism. For my own part, I clearly challenged the idea that capitalism was the "inevitable" successor of feudalism in *Urbanization Without Cities*. There I argued that capitalism, from the fourteenth century until well into the eighteenth and early nineteenth, was merely *part* of "a mixed economy which was neither feudal, capitalist, nor structured around simple commodity production. Rather, it contained and combined elements of all three forms." Economically as well as culturally, an open situation, so to speak, existed that could quite conceivably have led to more benign social advances and avoided the horrors that capitalism brought into the world. See *Urbanization Without Cities* (originally published as *The Rise of Urbanization and the Decline of Citizenship* by Sierra Club Books in 1987; published in Canada by Montreal: Black Rose Books, 1992), pp. 198-201. In this book I consistently emphasize the significance of libertarian municipalist confederations in opposition to the state—historically as well as contemporaneously.

INTRODUCTION

A Philosophical Naturalism

What is nature? What is humanity's place in nature? And what is the relationship of society to the natural world?

In an era of ecological breakdown, answering these questions has become of momentous importance for our everyday lives and for the future that we and other life-forms face. They are not abstract philosophical questions that should be relegated to a remote, airy world of metaphysical speculation. Nor can we answer them in an offhand way, with poetic metaphors or unthinking, visceral reactions. The definitions and ethical standards with which we respond to them may ultimately decide whether human society will creatively foster natural evolution, or whether

we will render the planet uninhabitable for all complex life-forms, including ourselves.

At first glance, everybody "knows" what nature is. It is that which is all around us—trees, animals, rocks, and the like. It is that which "humanity" is coating with petroleum or destroying. But such *prima facie* definitions fall apart when we examine them with some care. If nature is indeed what is all around us, we may reasonably ask, then, is a carefully manicured suburban lawn not nature? Is the split-level house it surrounds not nature? Are its furnishings not natural?

Today, this sort of question is likely to elicit a heated avowal that only "wild," "primordial," or even nonhuman nature is authentically natural. Other people, no less thoughtful, will reply that nature is basically matter, or the materialized stuff of the universe in all its forms—what philosophers sweepingly call *Being*. The fact is that wide philosophical differences have existed for centuries in the West over the very definition of the word *nature*. These differences remain unresolved to this day, even as nature is making headlines in environmental issues that are of enormous importance for the future of nearly all life-forms.

Defining *nature* becomes an even more complex task when we include the human species as part of it. Is human society with its ensemble of technologies and artifacts—not to speak of such ineffable features as its conflicting social interests and institutions—any less part of nature than nonhuman animals? And if human beings are part of nature, are they merely one life-form among many others, or are they unique in ways that place major responsibilities on them with respect to the rest of the world of life, responsibilities that no other species shares or is even capable of sharing?

Whatever *nature* may mean, we must determine in what way humanity "fits" into it. And we must confront the complex and challenging question of the relationship of society—more specifically, the different social forms that appeared in the past, that exist today, and that may appear in the future—to nature. Unless we answer these questions with reasonable clarity—or at least fully discuss them—we will lack any ethical direction in dealing with our environmental problems. Unless we know what nature is and what humanity's and society's place in it is, we will be left with vague intuitions and visceral sentiments that neither cohere into clear views nor provide a guide for effective action.

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It is easy to try to escape answering these troubling questions by impatiently rejecting them, responding with pure emotion, or simply denigrating any effort to reason out a coherent reply—indeed, by attacking reason *itself* as "meddlesome" (to use William Blake's term). Today, even sensitive people in growing numbers feel betrayed by the centuries-long glorification of reason, with its icy claims to efficiency, objectivity, and freedom from ethical constraint—or the form of reason that has nourished particularly destructive technologies like nucleonics and weaponry. This negative popular reaction is understandable. But swerving away from a specific form of reason that is largely instrumental and coldly analytical creates problems that are no less disturbing than those questions from which we are seeking to escape.

In our aversion to an insensitive and unfeeling form of reason, we may easily opt for a cloudy intuitionism and

mysticism as an alternative. Unlike instrumental and analytical reason, after all, a surrender to emotion and mythic beliefs yields cooperative feelings of "interconnectedness" with the natural world and perhaps even a caring attitude toward it. But precisely because intuition and mystical beliefs are so cloudy and arbitrary—which is to say, so *unreasoned*—they may also "connect" us with things we really shouldn't be connected with at all—namely, racism, sexism, and an abject subservience to charismatic leaders.

Indeed, following this intuitional alternative could potentially render our ecological outlook very dangerous. Vital as the idea of "interconnectedness" may be to our views, it has historically often been the basis of myths and supernatural beliefs that became means for social control and political manipulation. The first half of the twentieth century is in great part the story of brutal movements like National Socialism that fed on a popular antirationalism and anti-intellectualism, and a personal sense of alienation, among other things. This movement mobilized and homogenized millions of people with an antisocial, perverted "ecologistic" ideology based on intuition, with an "interconnectedness" of earth, folk, and "blood and soil" that was militaristic and murderous rather than freely communitarian. Insulated from the challenge of rational critique by its anti-intellectualism and mythic nationalism, the National Socialist movement eventually turned much of Europe into a cemetery. Yet ideologically, this fascist totalitarianism had gained sustenance from the intuitional and mystical credo of the Romantic movement of the century before—something no one could have foreseen at the time.

Feeling, sentiment, and a moral outlook we surely need if instrumental and analytical reason are not to divest us of our *pas-*

sion for truth. But myths, mind-numbing rituals, and charismatic personalities can also rob us of the critical faculties that thought provides. Recently, a Green organization in Canada flippantly proclaimed that it seeks "cooperation" as part of its "new paradigm" rather than "confrontation," which it considers part of the rejected "old paradigm." In a more radical era, confrontation was the stated purpose of radical movements! The mythic and uncritical aspect of "interconnectedness" that rejects confrontation seems to have reduced this Canadian Green organization to the level of outright accommodation with the status quo. Here, the need not only to confront the evils of our time but to uncompromisingly oppose them has disappeared into a New Age quagmire of unthinking "good vibes." The "loving" path of compromises along which such "good vibes" leads us can easily end in sheer opportunism.

If our contemporary revolt against reason rests on the misguided belief that the only alternative to our present reality is mysticism, it also rests on the equally misguided belief that only one kind of reason exists. In reacting against instrumental and analytical forms of reason, which are usually identified with reason as such, we may well overlook *other forms of reason* that are organic and yet retain critical qualities; that are developmental and yet retain analytical insights; that are ethical and yet retain contact with reality. The "value-free" rationalism that we normally identify with the physical sciences and technology is in fact not the only form of reason that Western philosophy has developed over the centuries—I refer specifically to the great tradition of dialectical reason that originated in Greece some twenty-five centuries ago and reached its high point, but by no means its completion, in the logical works of Hegel.

What dialectical thinkers from Heraclitus onward have had in common, in varying degrees, is a view of reality as developmental—of *Being* as an ever-unfolding *Becoming*. Ever since Plato created a dualism between a supranatural world of ideal forms and a transient world of imperfect sensible copies, the perplexing question of identity amid change and change amid identity has haunted Western philosophy. Instrumental and analytical forms of reason—what I will here generically call *conventional reason*¹—rest on a fundamental principle, the famous “principle of identity,” or *A equals A*, which means that any given phenomenon can be only itself and cannot be other than what it is, or what we immediately perceive it to be, at a given moment in time. Without this principle, logical consistency in conventional reason would be impossible.

Conventional reason is based on an analysis of phenomena as precisely defined, and whose truth depends upon their internal consistency and practicality. It focuses on a thing or phenomenon as fixed, with clear-cut boundaries that are immutable for analytical purposes. We know an entity, in this widely accepted notion of reason, when we can analyze it into its irreducible components and determine how they work as a functioning whole so that knowledge of the entity will have operational applicability. When the boundaries that “define” a developing thing change—as, for instance, when sand becomes soil—then conventional reason treats sand as sand and soil as soil, much as if they were independent of each other. The *zone of interest* in this kind of rationality is a thing or phenomenon’s fixity, its independence, and its basically mechanical interaction with similar or dissimilar things and phenomena. The causality that conventional reason describes, moreover, is a matter of

kinetics: one billiard ball strikes another and causes them both to move from one position to another—that is to say, by means of *efficient cause*. The two billiard balls are not altered by the blow but are merely repositioned on the billiard table.

But conventional reason cannot address the problem of change at all. It views a mammal, for example, as a creature marked by a highly fixed set of traits that distinguish it from everything that is not mammalian. To “know” a mammal is to explore its structure, literally to analyze it by dismembering it, to reduce it to its components, to identify its organs and their functions, and to ascertain the way they operate together to assure the mammal’s survival and reproduction. Similarly, conventional reason views a human being in terms of particular stages of the life-cycle: a person is an infant at one time, a child at another, an adolescent at still another, a youth and finally an adult. When we analyze an infant by means of conventional reason, we do not explore what it is *becoming* in the process of developing into an adult. Doubtless, when developmental psychologists and anatomists study an individual life-cycle, few of them—however conventional their rationality may be—ignore the fact that every infant is in the process of becoming an adult and that the two stages in the life-cycle are in various ways related to each other. But the principle of *A equals A* remains a basic premise. Its logical framework is the authority of consistency, and deductions almost mechanically follow from premises. Conventional reason thus serves the practical function of describing a given entity’s identity and telling us how that entity is organized to be itself. But it cannot systematically explore processes of becoming, or how a living entity is patterned as a *potentiality* to phase from one stage of its development into another.

Dialectical reason, unlike conventional reason, acknowledges the developmental nature of reality by asserting in one fashion or another that *A equals not only A but also not-A*. The dialectical thinker who examines the human life-cycle sees an infant as a self-maintaining human identity while simultaneously developing into a child, from a child into an adolescent, from an adolescent into a youth, and from a youth into an adult. Dialectical reason grasps not only how an entity is organized at a particular moment but how it is organized to go beyond that level of development and become *other* than what it is, even as it retains its identity. The contradictory nature of identity—notably, that *A equals both A and not-A*—is an intrinsic feature of identity itself. The unity of opposites is, in fact, a unity qua the emerging “other,” what Hegel called “the identity of identity and nonidentity.”

The thinking of conventional reason today is exemplified—and disastrously reinforced—by the “true or false” questions that make up most standardized tests. One must darken a box to indicate that a statement is either “true” or “false”—and do so quickly, with minimal reflection. These tests, so commonplace today, allow for no nuanced thought or awareness of transitions. That a phenomenon or statement may well be *both true and false*—depending on its context and its place in a process of becoming other than what it is—is excluded by the logical premise on which these tests are based. This testing procedure makes for bad mental habits among young people, who are schooled to take such tests successfully, and whose careers and future lifeways depend on their scores. But the thought process demanded by such tests compartmentalizes and essentially computerizes otherwise rich minds, depriving young people of their native ability to think organically and to understand the developmental nature of the real world.

Another major presupposition of conventional reason—one that follows from its concepts of identity and causality—is that history is a layered series of separate phenomena, a mere *succession* of strata, each independent of the ones that precede and follow it. These strata may be cemented together by phases, but these phases are themselves analyzed into components and explored independently of each other. Thus, Mesozoic rock strata are independent of Cenozoic, and each stratum exists very much on its own, as do the ones that cement them together. In human history, the medieval period is independent of the modern, and the former is connected to the latter by a series of independent segments, each relatively autonomous in relation to the preceding and subsequent ones. From the standpoint of conventional reason, it is not always clear how historical change occurs or what meaning history has. Despite postmodernism and present-day historical relativism, which examine history using conventional reason and thereby ravage it, there was a time in the recent past when most historians, influenced by theories of evolution and by Marxism, regarded history as a developmental phenomenon and subsequent periods as at least depending upon prior ones. It is this tradition that dialectical reason upholds.

The intuitional approach to history is no improvement over that of conventional reason—indeed, it does the opposite: it literally dissolves historical development into an undifferentiated continuum and even into a ubiquitous, all-embracing “One.” The mystical counterpart of mechanico-materialistic stratification is the reductionism that says that everything is “One” or “interconnected,” that all phenomena originated from a pulse of primal energy, like the Victorian physicist who believed that when he pounded his fist on a table, Sirius trembled, however faintly. That

the universe had an origin, whatever it was, does not warrant the naïve belief that the universe still "really" consists of nothing but its originating source, any more than an adult human being can be explained entirely by reference to his or her parents. This way of thinking is not far removed from the kinetic cause-effect approach of conventional reason. Nor does the "interconnectedness" of all life-forms preclude the sharp distinctions between prey and predators, or between instinctively guided life-forms and potentially rational ones. Yet these countless differentiations reflect innumerable innovations in evolutionary pathways, indeed different kinds of evolution—be they inorganic, organic, or social. Instead of apprehending things and phenomena as both differentiated and yet cumulatively related, the mystical alternative to conventional reason tends to see them, to use Hegel's famous remark, as "a night in which all cows are black."

Conventional reason, to be sure, has its useful side. Its internal consistency of propositions, irrespective of content, plays an indispensable role in mathematical thinking and mathematical sciences, in engineering, and in the nuts-and-bolts activities of everyday life. It is indispensable when building a bridge or a house; for such purposes, there is no point in thinking along evolutionary or developmental lines. If we used a logic based on anything but the principle of identity to build a bridge or a house, a catastrophe would no doubt occur. The physiological operations of our bodies, not to speak of the flight of birds and the pumplike workings of a mammalian heart, depend in great part upon the principles we associate with conventional reason. To understand or design a mechanical entity requires a form of reason that is instrumental and an analysis of reality into its components and their functioning. The truths of conventional reason,

based on consistency, are useful in these areas of life. Indeed, conventional reason has contributed immeasurably to our knowledge of the universe.

For several centuries, in fact, conventional reason held out a promise to dispel the dogmatic authority of the church, the arbitrary behavior of absolute monarchs, and the frightening ghosts of superstition—and indeed, it did a great deal to fulfill this promise. But to achieve the consistency that constitutes its fundamental principle, conventional reason removes ethics from its discourse and concerns. And as an instrument for achieving certain ends, the moral character of those ends, the values, ideals, beliefs, and theories people cherish, are irrelevant to it, arbitrary matters of personal mood and taste. With its message of identity and consistency as truth, conventional reason fails us not because it is false as such but because it has staked out too broad a claim for its own validity in explaining reality. It even redefines reality to fit its claim, just as many mathematical physicists redefine reality as that which can be formulated in mathematical terms. It should come as no surprise, then, that in our highly rationalized industrial society, conventional reason has come to seem repellent. Pervasive authority, an impersonal technocracy, an unfeeling science and insensitive, monolithic bureaucracies—the very existence of all these is imputed to reason as such.

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Here we find ourselves in something of a quandary. It is obvious that we cannot do without the much-despised tenets of conventional reason in our everyday life; nor can we do without many technologies—including sophisticated binoculars to watch birds

and whales, and cameras to photograph them. This being the case, we conclude, let us turn to an irrational, mystical, or religious private world to support our moral and spiritual beliefs; let us seek communion with a mystical "One," even as we work for corporations to survive. Thus, even as we rail against dualism and plead for a greater sense of unity, we sharply dualize our own existence. Even as we may seek an elevated spirituality, communion, and connectedness, we turn to rather mundane gurus, charismatic personalities, and cultic figures who behave more like entrepreneurs in the vending of mystical nostrums than financially disinterested guides in attaining moral perfection. Even as we denounce a materialistic and consumeristic mentality, we ourselves become avid consumers of costly, supposedly spiritual or ecological products, "green" wares that bear lofty messages. Thus do the most vulgar attributes of what we regard as the realm of reason continue to invade our lives in the guise of irrational, mystical, and religious commodities.

Our mailboxes are flooded with catalogues, and our bookstores are filled with paperbacks that offer us new roads to mystical communion and a New Age into which we can withdraw and turn our backs to the harsh realities that constantly assail us. Often, this mystical withdrawal yields a state of social quietism that is more dreamlike than real, more passive than active. Preoccupied more with personal change than with social change, and concerned more with the symptoms of our powerless, alienated lives than with the root causes, we surrender control over the social aspects of our lives, even as they are so important in shaping our private lives.

But there can be no personal "redemption" without social "redemption," and there can be no ethical life without a rational

life. If metaphors with mystical connotations are not to replace understanding and if obscurantism is not to replace genuine insight—all in reaction to the limitations of conventional reason and its emphasis on value-free forms of thought—we must examine the alternative form of reason that I have already introduced. This, let me insist, is not a philosophically abstract issue. It has enormous implications for how we behave as ethical beings and for our understanding of the nature of nature and our place in the natural world. Moreover, it directly affects the kind of society, sensibility, and lifeways we choose to foster.

Let us grant that the principles of identity, of efficient causality, and of stratification do apply to a particular commonsensical reality that is rendered intelligible by their use. But when we go beyond that particular reality, we can no longer reduce the rich wealth of differentiation, flux, development, organic causality, and developmental reality to a vague "One" or to an equally vague notion of "interconnectedness." A very considerable literature dating back to the ancient Greeks provides the basis of an *organic* form of reason and a *developmental* interpretation of reality.

With a few notable exceptions, the Platonic dualism of identity and change reverberated in one way or another throughout Western philosophy until the nineteenth century, when Hegel's logical works largely resolved this paradox by systematically showing that identity, or self-persistence, actually expresses itself *through* change as an ever-variegated unfolding of "unity in diversity," to use his own words.² The grandeur of Hegel's effort has no equal in the history of Western philosophy. Like Aristotle before him, he had an "emergent" interpretation of causality, of how the implicit becomes explicit through the un-

folding of its latent form and possibilities. On a vast scale over the course of two sizable volumes, he assembled nearly all the categories by which reason explains reality, and educed one from the other in an intelligible and meaningful continuum that is graded into a richly differentiated, increasingly comprehensive, or "adequate" whole, to use some of his terms.

We may reject what Hegel called his "absolute idealism," the transition from his logic to his philosophy of nature, his teleological culmination of the subjective and objective in a god-like "Absolute," and his idea of a cosmic Spirit (*Geist*). Hegel rarefied dialectical reason into a cosmological system that verged on the theological by trying to reconcile it with idealism, absolute knowledge, and a mystical unfolding *logos* that he often designated "God." Unfamiliar with ecology, Hegel rejected natural evolution as a viable theory in favor of a static hierarchy of Being. By the same token, Friedrich Engels intermingled dialectical reason with natural "laws" that more closely resemble the premises of nineteenth-century physics than a plastic metaphysics or an organismic outlook, producing a crude dialectical materialism. Indeed, so enamored was Engels of matter and motion as the irreducible "attributes" of Being that a kineticism based on mere motion invaded his dialectic of organic development.

To dismiss dialectical reason because of the failings of Hegel's idealism and Engels's materialism, however, would be to lose sight of the extraordinary coherence that dialectical reason can furnish and its extraordinary applicability to ecology—particularly to an ecology rooted in evolutionary development. Despite Hegel's own prejudices against organic evolution, what stands out amid the metaphysical and often theological archaisms in his work is his overall eduction of logical categories

as the subjective anatomy of a developmental reality. What is needed is to free this form of reason from both the quasi-mystical and the narrowly scientific worldviews that in the past have made it remote from the living world; to separate it from Hegel's empyrean, basically antinaturalistic dialectical idealism and the wooden, often scientific dialectical materialism of orthodox Marxists. Shorn of both its idealism and its materialism, dialectical reason may be rendered naturalistic and ecological and conceived as a naturalistic form of thinking.

This *dialectical naturalism* offers an alternative to an ecology movement that rightly distrusts conventional reason. It can bring coherence to ecological thinking, and it can dispel arbitrary and anti-intellectual tendencies toward the sentimental, cloudy, and theistic at best and the dangerously antirational, mystical, and potentially reactionary at worst. As a way of reasoning about reality, dialectical naturalism is organic enough to give a more liberatory meaning to vague words like *interconnectedness* and *holism* without sacrificing intellectuality. It can answer the questions I posed at the beginning of this essay: what nature is, humanity's place in nature, the thrust of natural evolution, and society's relationship with the natural world. Equally important, dialectical naturalism adds an evolutionary perspective to ecological thinking—despite Hegel's rejection of natural evolution and Engels's recourse to the mechanistic evolutionary theories of a century ago. Dialectical naturalism discerns evolutionary phenomena fluidly and plastically, yet it does not divest evolution of rational interpretation. Finally, a dialectic that has been "ecologized," or given a naturalistic core, and a truly developmental understanding of reality could provide the basis for a living ecological ethics.

No general account of dialectical reason can be a substitute for reading Hegel's works on logic. For all its forced analyses and doubtful transitions in educing one logical category from another, Hegel's *Science of Logic* is dialectical reason in its most elaborate and dynamic form. This work, in many respects, absorbed the conventional logic of Aristotle's *Posterior Analytics* into the same Greek thinker's *Metaphysics*, with its bold view of the nature of reality. I shall therefore not pretend that a broad description of the dialectic can replace the detailed presentation Hegel advanced, nor try to force its theoretical unfolding into the brief "definitions and conclusions" that ordinarily pass for accounts of ideas. As Hegel himself observed in his *Phenomenology of Spirit*: "For the real issue is not exhausted by stating it as an aim, but by carrying it out; nor is the result the actual whole, but rather the result together with the process through which it came about. The aim by itself ["definitions and conclusions"] is a lifeless universal, just as the guiding tendency is a mere drive that as yet lacks an actual existence; and the bare result is the corpse which has left the guiding tendency behind it."³ Hegel's dialectic, in effect, defies the demand for dictionary-style definition. It can be understood only in terms of the working out of dialectical reason itself, just as an insightful psychology demands that we can truly know an individual only when we know his or her entire biography, not merely the numerical results of psychological tests and physical measurements.

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Minimally, we must assume that there is order in the world, an assumption that even ordinary science must make if it is to exist.

Minimally, too, we must assume the existence of growth and processes that lead to differentiation, not merely the kind of motion that results from push-pull, gravitational, electromagnetic, and similar forces. Finally, minimally, we must assume that there is some kind of directionality toward ever-greater differentiation or wholeness insofar as potentiality is realized in its full actuality. We need not return to medieval teleological notions of an unswerving predetermination in a hierarchy of Being to accept this directionality; rather, we need only point to the fact that there is a generally orderly development in the real world or, to use philosophical terminology, a "logical" development when a development succeeds in becoming what it is *structured* to become.

In Hegel's logical works, as in Aristotle's *Metaphysics*, dialectic is more than a remarkable "method" for dealing with reality. Conceived as the logical expression of a wide-ranging form of developmental causality, logic, in Hegel's work, joined hands with ontology. Dialectic is simultaneously a way of reasoning and an account of the objective world, with an ontological causality. As a form of reasoning, the most basic categories in dialectic—even such vague categories as "Being" and "Nothing"—are differentiated by their own inner logic into fuller, more complex categories. Each category, in turn, is a potentiality that by means of educative thinking, directed toward an exploration of its latent and implicit possibilities, yields logical expression in the form of self-realization, or what Hegel called "actuality" (*Wirklichkeit*).

Precisely because it is also a system of causality, dialectic is ontological, objective, and therefore naturalistic, as well as a form of reason. In ontological terms, dialectical causality is not merely motion, force, or changes of form but things and phenomena in

development. Indeed, since all Being is Becoming, dialectical causality is the differentiation of potentiality into actuality, in the course of which each new actuality becomes the potentiality for further differentiation and actualization. Dialectic explicates how processes occur not only in the natural world but in the social.

How the implicit qua a relatively undifferentiated form latent with possibility becomes a more differentiated form that is true to the way its potential form is constituted is clarified in Hegel's own words. "The plant, for example, does not lose itself in mere indefinite change," he writes. It has a distinct directionality—in the case of conscious beings, purpose as will. "From the germ much is produced when at first nothing was to be seen, but the whole of what is brought forth, if not developed, is yet hidden and ideally contained within itself." It is worth noting, in this passage, that what may be "brought forth" is not necessarily developed: an acorn, for example, may become food for a squirrel or wither on a concrete sidewalk, rather than develop into what it is potentially constituted to become—notably, an oak tree. "The principle of this projection into existence is that the germ cannot remain merely implicit," Hegel goes on to observe, "but is impelled towards development, since it presents the contradiction of being only implicit."⁴

What we vaguely call the "immanent" factors that produce a self-unfolding of a development, the Hegelian dialectic regards as the contradictory nature of a being that is unfulfilled in the sense that it is only implicit or incomplete. As mere potentiality, it has not "come to itself," so to speak. A thing or phenomenon in dialectical causality remains unsettled, unstable, in tension—much as a fetus ripening toward birth strains to be born because of the way it is constituted—until it develops itself into what it

"should be" in all its wholeness or fullness. It cannot remain in endless tension or "contradiction" with what it is organized to become without warping or undoing itself. It must ripen into the fullness of its being.

Modern science has tried to describe nearly all phenomena in terms of efficient cause or the kinetic impact of forces on a thing or phenomenon, reacting against medieval conceptions of causality in terms of *final cause*—notably, in terms of the existence of a deity who impels development, if only by virtue of "His" own "perfection." Hegel's notion of "imperfection"—more appropriately, of "inadequacy" or of contradiction—as an impelling factor for development partly went beyond both efficient and final notions of causality. I say "partly" for a specific reason: the philosophical archaisms that run through Hegel's dialectic weaken his position from a naturalistic viewpoint. From Plato's time until the beginning of the modern world, theological notions of perfection, infinity, and eternity permeated philosophical thought. Plato's "ideal forms" were the "perfect" and the "eternal," of which all existential things were copies. Aristotle's God, particularly as it was Christianized by the medieval Scholastics, was the "perfect" One toward which all things strove, given their finite "imperfection" and inherent limitations. In this way, a supranatural ideal defined the "imperfection" of natural phenomena and thereby dynamized them in their striving toward "perfection." There is an element of this quasi-theological thinking in Hegel's notion of contradiction: the whole course of the dialectic culminates in the "Absolute," which is "perfect" in its fullness, wholeness, and unity.

Dialectical naturalism, by contrast, conceives finiteness and contradiction as distinctly *natural* in the sense that things and phenomena are incomplete and unactualized in their develop-

ment—not “imperfect” in any idealistic or supranatural sense. Until they are what they have been constituted to become, they exist in a dynamic tension. A dialectical naturalist view has nothing to do with the supposition that things or phenomena fail to approximate a Platonic ideal or a Scholastic God. Rather, they are still in the process of becoming or, more mundanely, *developing*. Dialectical naturalism thus does not terminate in a Hegelian Absolute at the end of a cosmic developmental path, but rather advances the vision of an ever-increasing wholeness, fullness, and richness of differentiation and subjectivity.

Dialectical contradiction exists within the structure of a thing or phenomenon by virtue of a formal arrangement that is incomplete, inadequate, implicit, and unfulfilled in relation to what it “should be.” A naturalistic framework does not limit us to efficient causality with a mechanistic tilt. Nor need we have recourse to theistic “perfection” to explain the almost magnetic eliciting of a development. Dialectical causality is uniquely organic because it operates within a development—the degree of form of a thing or phenomenon, the way in which that form is organized, the tensions or “contradictions” to which its formal ensemble gives rise, and its metabolic self-maintenance and self-development. Perhaps the most subtle word for this kind of development is *growth*—growth not by mere accretion but by a truly immanent process of organic self-formation in a graded and increasingly differentiated direction.

A distinctive continuum emerges from dialectical causality. Here, cause and effect are not merely coexisting phenomena or “correlations,” to use a common positivist term; nor are they clearly distinct from each other, such that a cause externally impacts upon a thing or phenomenon to produce an effect mechani-

cally. Dialectical causality is cumulative: the implicit or “in itself” (*an sich*), to use Hegel’s terminology, is not simply replaced or negated by its more developed explicit or “for itself” (*für sich*); rather, it is absorbed into and developed beyond the explicit into a fuller, more differentiated, and more adequate form—the Hegelian “in and for itself” (*an und für sich*). Insofar as the implicit is *fully* actualized by becoming what it is constituted to be, the process is truly rational, that is to say, it is fulfilled by virtue of its *internal logic*. The continuum of a development is cumulative, containing the history of its development.

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Reality is not simply what we experience: there is a sense in which the rational has its *own* reality. Thus, there are existing realities that are irrational and unrealized realities that are rational. A society that fails to actualize its potentialities for human happiness and progress is “real” enough in the sense that it exists, but it is less than truly social. It is incomplete and distorted insofar as it merely persists, and hence it is irrational. It is less than what it should be socially, just as a generally defective animal is less than what it should be biologically. Although it is “real” in an *existential sense*, it is unfulfilled and hence “unreal” *in terms of its potentialities*.

Dialectical naturalism asks which is truly real—the incomplete, aborted, irrational “what-is,” or the most fully developed, rational “what-should-be.” Reason, cast in the form of dialectical causality as well as dialectical logic, yields an unconventional understanding of reality. A process that follows its immanent self-development to its logical actuality is more properly

"real" than a given "what-is" that is aborted or distorted and hence, in Hegelian terms, "untrue" to its possibilities. *Reason* has the obligation to explore the potentialities that are latent in any social development and educe its authentic actualization, its fulfillment and "truth" in a new and more rational social dispensation.

It would be philosophically frivolous to embrace the "what-is" of a thing or phenomenon as constituting its "reality" without considering it in the light of the "what-should-be" that would logically emerge from its potentialities. Nor do we ordinarily do so in practice. We rightly evaluate an individual in terms of his or her known potentialities, and we form understandable judgments about whether the individual has truly "fulfilled" himself or herself. Indeed, in privacy, individuals make such self-evaluations repeatedly, which may have important effects upon their behavior, creativity, and self-esteem.

The "what-is," conceived as the strictly existential, is a slippery "reality." Accepted empirically without qualification, it excludes the past because, strictly speaking, the past no longer "is." At the same time, it yields a discontinuity with the future that—again, strictly speaking—has yet to "exist." What is more, the "what-is," conceived in strictly empirical terms, excludes subjectivity—certainly conceptual thought—from any role in the world but a spectatorial one, which may or may not be a "force" in behavior.

In the logic of a strictly empirical philosophy, mind simply registers or coordinates experience. "Reality" is a given temporal moment that exists as an experienced segment of an assumed continuum. The "real" is a frozen "here and now" to which we merely *add* an adventitious past and *presume* a future in order to experience reality intelligibly. The kind of radical empiricism advanced by David Hume replaced the notion of Being as Becoming

with the experience of a given moment that renders thinking of the past as "unreal" in making inferences about the future. This kind of "reality," as Hume himself fully sensed, is impossible to live with in everyday life; hence he was obliged to define continuity, although he did so in terms of custom and habit, not in terms of causality. Conceiving immediate empirical reality as the totality of the "real" essentially banishes hindsight and foresight as little more than mere conveniences. Indeed, a strictly empirical approach dissolves the logical tissue that integrates the organic, cumulative continuity of the past with the present and that of both with the future.

By contrast, in a naturalistic dialectic, both past and future are part of a cumulative, logical, and objective continuum that includes the present. Reason is not only a means for analyzing and interpreting reality; it extends the *boundaries* of reality beyond the immediately experienced present. Past, present, and future are a cumulatively graded process that thought can truly interpret and render meaningful. We can legitimately explore such a process in terms of whether its potentialities have been realized, aborted, or warped.

In a naturalistic dialectic, the word *reality* thus acquires two distinctly different meanings. There is the immediately present empirical "reality"—or *Realität*, to use Hegel's language—that need not be the fulfillment of a potentiality, and there is the dialectical "actuality"—*Wirklichkeit*—that constitutes a complete fulfillment of a rational process. Even though *Wirklichkeit* appears as a projection of thought into a future that has yet to be existentially realized, the potentiality from which that *Wirklichkeit* develops is as existential as the world we sense in direct and immediate ordinary experience. For example, an egg patently and empirically ex-

ists, even though the bird whose potential it contains has yet to develop and reach maturity. Just so, the given potentiality of any process exists and constitutes the basis for a process that should be realized. Hence, the potentiality *does* exist objectively, even in empirical terms. *Wirklichkeit* is what dialectical naturalism *infers* from an objectively given potentiality; it is present, if only implicitly, as an existential fact, and dialectical reason can analyze and subject it to processual inferences. Even in the seemingly most subjective projections of speculative reason, *Wirklichkeit*, the "what-should-be," is anchored in a continuum that emerges from an objective potentiality, or "what-is."

Dialectical naturalism is thus integrally wedded to the objective world—a world in which Being is Becoming. Let me emphasize that dialectical naturalism not only grasps reality as an existentially unfolding continuum, but it also forms an *objective* framework for making ethical judgments. The "what-should-be" becomes an ethical criterion for judging the truth or validity of an objective "what-is." Thus ethics is not merely a matter of personal taste and values; it is factually anchored in the world itself as an objective standard of self-realization. Whether a society is "good" or "bad," moral or immoral, for example, can be *objectively* determined by whether it has fulfilled its potentialities for rationality and morality. Potentialities that are themselves actualizations of a dialectical continuum present the challenge of ethical self-fulfillment—not simply in the privacy of the mind but in the reality of the processual world. Herein lies the only meaningful basis for a truly ethical socialism or anarchism, one that is more than a body of subjective "preferences" that rest on opinion and taste.

One may well question the validity of dialectical reason by challenging the concept of *Wirklichkeit* and its claims to be more

adequate than *Realität*. Indeed, I am often asked: "How do you know that what you call a distorted 'untrue' or 'inadequate' reality is not the vaunted 'actuality' that constitutes the authentic realization of a potentiality? Are you not simply making a private moral judgment about what is 'untrue' or 'inadequate' and denying the importance of immediate facts that do not support your personal notion of the 'true' and the 'adequate'?"

This question is based on the purely conventional concepts of validity used by analytical logic. "Immediate facts"—or more colloquially, "brute facts"—are no less slippery than the empirical reality to which conventional reason confines itself. In the first place, it is not relevant to determine the validity of a process by "testing" it against "brute facts" that are themselves the epistemological products of a philosophy based on fixities. A logic premised on the principle of identity, *A equals A*, can hardly be used to test the validity of a logic premised on the principle *A equals A and not-A*. The two are simply incommensurable. For analytical logic, the premises of dialectical logic are nonsense; for dialectical logic, the premises of analytical logic ossify facticity into hardened, immutable logical "atoms." In dialectical reason, "brute facts" are distortions of reality since Being is not an agglomeration of fixed entities and phenomena but is always in flux, in a state of Becoming. One of the principal purposes of dialectical reason is to explain the nature of Becoming, not simply to explore a fixed Being.

Accordingly, the validity of a concept derived from a developmental process rather than from "brute facts" must be "tested" only by examining that developmental process, particularly the structure of the potentiality from which the process emerges and the logic that can be inferred from its potentialities.

The validity of conclusions that are derived from conventional reason and experience can certainly be tested by fixed "brute facts"; hence the great success of, say, structural engineering. But to try to test the validity of actualities that derive from a dialectical exploration of potentialities and their internal logic by using "brute facts" would be like trying to analyze the emergence of a fetus in the same way that one analyzes the design and construction of a bridge. Real developmental processes must be tested by a logic of *processes*, not by a logic of "brute facts" that is analytical, based on a *datum* or fixed phenomenon.

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I have emphasized the word *naturalism* in my account of dialectical reason not only to distinguish dialectic from its idealistic and materialistic interpretations but, more significantly, to show how it enriches our interpretation of nature and humanity's place in the natural world. To attain these ends, I feel obliged to highlight the overall coherence of dialectical reason as an abiding view of a developmental reality in its many gradations as a continuum.

If dialectical naturalism is to explain things or phenomena properly, its ontology and premises must be understood as more than mere motion and interconnection. A continuum is a more relevant premise for dialectical reason than either motion or the interdependence of phenomena. It was one of the failings of "dialectical materialism" that it premised dialectic on the nineteenth century's physics of matter and motion, from which development somehow managed to emerge. It would be just as limited to replace the entelechial processes involved in differentiation and the realization of potentiality with "interconnected-

ness." A dialectic based merely on a notion of "interconnectedness" would tend to be more descriptive than educative; it would not clearly explain how interdependencies lead to a graded entelechial development—that is, to self-formation through the self-realization of potentiality.

To assert that bison and wolves "depend" upon each other (in a seeming "union of opposites"), or that "thinking like a rock"—a vision borrowed from mystical ecology—will bring us into greater "connectedness" with the inorganic mineral world, explains little. But it explains a great deal to study how bison and wolves were differentiated in the course of evolution from a common mammalian ancestor, or how the organic world emerged from the inorganic. In the latter cases, we can learn something about how development occurs, how differentiation emerges from given potentialities, and what direction these developments follow. We also learn that a dialectical development is cumulative, namely that each level of differentiation rests on previous ones. Some developments enter directly into a given level, others are proximate to it, and still others are fairly remote. The old never completely disappears but is reworked into something new. Thus, as the fossil record tells us, mammalian hair and avian feathers are later differentiations of reptilian scales, while the jaws of all animals are a later differentiation of gills.

The nondialectical thinking that is rife in the ecology movement commonly produces such questions as "What if redwood trees have consciousness that compares with our own?" It is fatuous to challenge dialectical reason with promiscuous "what-ifs" that have no roots in a dialectical continuum. Every intelligible "if" must itself be a potentiality that can be accounted for as the product of a development. A hypothetical "if" that

floats in isolation, lacking roots in a developmental continuum, is nonsensical. As Denis Diderot's delightful character Jacques, in the picaresque dialogue *Jacques le Fataliste*, exclaimed when his master peppered him with random *if* questions: "If, if, if ... if the sea boiled, there would be a lot of cooked fish!"

The continuum that dialectical reason investigates is a highly graded, richly entelechial, logically eductive, and self-directive process of unfolding toward ever-greater differentiation, wholeness, and adequacy, insofar as each potentiality is fully actualized given a specific range of development. External factors, internal rearrangements, accidents, even gross irrationalities may distort or preclude a potential development. But insofar as order does exist in reality and is not simply imposed upon it by mind, reality has a rational dimension. More colloquially, there is a "logic" in the development of phenomena, a *general* directiveness that accounts for the fact that the inorganic did become organic, as a result of its *implicit capacity* for organicity; and for the fact that the organic did become more differentiated and metabolically self-maintaining and self-aware, as a result of potentialities that made for highly developed hormonal and nervous systems.

Stephen Jay Gould may luxuriate in the randomness—actually, the fecundity—of nature, and poststructuralists may try to dissolve both natural and social evolution into an aggregation of unrelated events, but directiveness of organic evolution unremittingly surfaces in even these rather chaotic collections of "brute facts." Like it or not, human beings, primates, mammals, vertebrates, and so forth back to the most elementary protozoans are a sequential presence in the fossil record itself, each emerging out of its preceding, if extinct, life-forms. As Gould asserts, the

Burgess Shale of British Columbia attests to a large variety of fossils that cannot be classified into a unilinear "chain of being." But far from challenging the existence of directionality in evolution toward greater subjectivity, the Burgess Shale provides extraordinary evidence of the fecundity of nature. Nature's fecundity rests on the existence of chance, indeed variety, as a *precondition* for complexity in organisms and ecosystems (as my essay "Freedom and Necessity in Nature" herein argues) and, by virtue of that fecundity, for the emergence of humanity from potentialities that involve increasing subjectivity.

Our ontological and eductive premise for dialectical naturalism, however, remains the graded continuum I have already described—and the Burgess Shale notwithstanding, human beings are not only patently *here*, but our evolution can be *explained*. Dialectical reason cuts across the grain of conventional ways of thinking about the natural world and mystical interpretations of it. Nature is not simply the landscape we see from behind a picture window, in a moment disconnected from those that preceded and will follow it; nor is it a vista from a lofty mountain peak (as I point out in my essay "Thinking Ecologically," also herein). Nature is certainly all of these things—but it is significantly more. Biological nature is above all the cumulative evolution of ever-differentiating and increasingly complex life-forms with a vibrant and interactive inorganic world. Following in a tradition that goes back at least to Cicero, we can call this relatively unconscious natural development "first nature." It is first nature in the primal sense of a fossil record that clearly leads to mammalian, primate, and human life—not to mention its extraordinary fecundity of other life-forms—and it is first nature that exhibits a high degree of orderly continuity in the actualiza-

tion of potentialities that made for more complex and self-aware or subjective life-forms. Insofar as this continuity is intelligible, it has meaning and rationality in terms of its results: the elaboration of life-forms that can conceptualize, understand, and communicate with each other in increasingly symbolic terms.

In their most differentiated and fully developed forms, these self-reflexive and communicative capacities are conceptual thought and language. The human species has these capacities to an extent that is unprecedented in any other existing life-form. Humanity's awareness of itself, its ability to generalize this awareness to the level of a highly systematic understanding of its environment in the form of philosophy, science, ethics, and aesthetics, and finally, its capacity to alter itself and its environment systematically by means of knowledge and technology places it beyond the realm of the subjectivity that exists in first nature.

By singling out humanity as a unique life-form that can consciously change the entire realm of first nature, I do not claim that first nature was "made" to be "exploited" by humanity, as those ecologists critical of "anthropocentrism" sometimes charge. The idea of a *made* world has its origin in theology, notably in the belief that a supernatural being created the natural world and that evolution is infused with a theistic principle, both in the service of human needs. By the same token, humans cannot "exploit" nature, owing to a "commanding" place in a supposed "hierarchy" of nature. Words like *commanding*, *exploitation*, and *hierarchy* are actually social terms that describe how people relate to each other; applied to the natural world, they are merely anthropomorphic.

Far more relevant from the standpoint of dialectical naturalism is the fact that humanity's vast capacity to alter first

nature is itself a product of natural evolution—not of a deity or the embodiment of a cosmic Spirit. From an evolutionary viewpoint, humanity has been *constituted* to intervene actively, consciously, and purposively into first nature with unparalleled effectiveness and to alter it on a planetary scale. To denigrate this capacity is to deny the thrust of natural evolution itself toward organic complexity and subjectivity—the potentiality of first nature to actualize itself in self-conscious intellectuality. One may choose to argue that this thrust was predetermined with inexorable certainty as a result of a deity, or one may contend that it was strictly fortuitous, or one may claim—as I would—that there is a natural *tendency* toward greater complexity and subjectivity in first nature, arising from the very interactivity of matter, indeed a *nisus* toward self-consciousness. But what is decisive here is the compelling fact that humanity's natural capacity to consciously intervene into and act upon first nature has given rise to a "second nature," a cultural, social, and political "nature" that today has all but absorbed first nature.

There is no part of the world that has not been profoundly affected by human activity—neither the remote fastnesses of Antarctica nor the canyons of the ocean's depths. Even wilderness areas require protection from human intervention; much that is designated as wilderness today has already been profoundly affected by human activity. Indeed, wilderness can be said to exist primarily as a result of a human decision to preserve it. Nearly all the nonhuman life-forms that exist today are, like it or not, to some degree in human custody, and whether they are preserved in their wild lifeways depends largely on human attitudes and behavior.

That second nature is the outcome of evolution in first nature and can thereby be designated as natural does not mean that

second nature is necessarily creative or even fully conscious of itself in any evolutionary sense. Second nature is synonymous with society and human internal nature, both of which are undergoing evolution for better or worse. Although social evolution is grounded in, indeed phases out of, organic evolution, it is also profoundly different from organic evolution. Consciousness, will, alterable institutions, and the operation of economic forces and technics may be deployed to enhance the organic world or carry it to the point of destruction. Second nature as it exists today is marked by monstrous attributes, notably hierarchy, class, the state, private property, and a competitive market economy that obliges economic rivals to grow at the expense of each other or perish. This ethical judgment, I may note, has meaning *only* if we assume that there is potentiality and self-directiveness in organic evolution toward greater subjectivity, consciousness, self-reflexivity; by inference, it is the *responsibility* of the most conscious of life-forms—humanity—to be the “voice” of a mute nature and to act to intelligently foster organic evolution.

If this tendency or *nisus* in organic evolution is denied, there is no reason why the human species, like any other species, should not utilize its capacities to serve its own needs or attain its own “self-realization,” to use the language of mystical ecology, at the expense of other life-forms that impede its interests and desires. To denounce humanity for “exploiting” organic nature, “degrading” it, “abusing” it, and behaving “anthropocentrically” is simply an oblique way of acknowledging that second nature is the bearer of moral responsibilities that do not exist in the realm of first nature. It is to acknowledge that if all life-forms have an “intrinsic worth” that should be respected, they have it only because human intellectual, moral, and aesthetic abilities have at-

tributed it to them—abilities that no other life-form possesses. Only human beings can even *formulate* the concept of “intrinsic worth” and endow it with ethical responsibility. The “intrinsic worth” of human beings is thus patently exceptional, indeed extraordinary.

It is essential to emphasize that second nature is, in fact, a very *unfinished*, indeed inadequate, development of nature as a whole. Hegel viewed human history as a slaughterbench. Hierarchy, class, the state, and the like are evidence—and, by no means, purely accidental evidence—of the unfulfilled potentialities of nature to actualize itself as a nature that is self-consciously creative. *Humanity as it now exists is not nature rendered self-conscious.* The future of the biosphere depends overwhelmingly on whether second nature can be *transcended* in a new system of social and organic conciliation, one that I would call “free nature”—a nature that would diminish the pain and suffering that exist in both first and second nature. Free nature, in effect, would be a conscious and ethical nature, an ecological society that I have explored in detail in my book *Toward an Ecological Society* and in the closing portions of *The Ecology of Freedom* and *Remaking Society*.

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The last quarter of the twentieth century has witnessed an appalling regression of rationality into intuitionism, of naturalism into supernaturalism, of realism into mysticism, of humanism into parochialism, and of social theory into psychology. Metaphors replace intelligible concepts and self-interest replaces a humanistic idealism. In increasing numbers people are more concerned with finding the motives that presumably underlie expressed

views than with the rational content of the views themselves. Argumentation, so necessary for the clarification of ideas, has given way to "mediation," notably the reduction of authentic intellectual differences and clashing social interests to the minimal, often trite points that all parties supposedly have in common. Accordingly, real differences are papered over with the lowest level of dialogue rather than elevated to a creative synthesis or a clear, open divergence.

To frivolously speak of "biocentrism," of "intrinsic worth," and even metaphorically, of a "biocentric democracy" (to use the deplorable verbiage of mystical ecology), as though human beings were equatable in terms of their "worth" to, say, mosquitoes—and then ask human beings to bear a moral responsibility to the world of life—is to degrade the entire project of a meaningful ecological ethics. In this book I contend that nature can indeed acquire ethical meaning—an *objectively grounded* ethical meaning. Rather than an amorphous body of personalized, often arbitrary values, this ethical meaning involves an expanded view of reality, a dialectical view of natural evolution, and a distinctive—albeit by no means hierarchical—place for humanity and society in natural evolution. The social can no longer be separated from the ecological, any more than humanity can be separated from nature. Mystical ecologists who dualize the natural and the social by contrasting "biocentrism" with "anthropocentrism" have increasingly diminished the importance of social theory in shaping ecological thinking. Political action and education have given way to values of personal redemption, ritualistic behavior, the denigration of human will, and the virtues of human irrationality. At a time when the human ego, if not personality itself, is threatened by homogenization and

authoritarian manipulation, mystical ecology has advanced a message of self-effacement, passivity, and obedience to the "laws of nature," which are held to be supreme over the claims of human activity and praxis. A philosophy must be developed that breaks with this deadening aversion to reason, action, and social concern.

I have called this book *The Philosophy of Social Ecology* because I believe that a dialectical naturalism forms the underpinning of social ecology's most fundamental message: that our basic ecological problems stem from social problems. It is devoutly to be hoped that the reader will use this book as a means of entering into my works on social ecology equipped with an organic way of thinking out the problems they raise and the solutions they offer. In fact, "Thinking Ecologically" forms a direct transition from the philosophical and ethical to the social and visionary. Decades of reflection on ecological issues and ideas have taught me that philosophy, particularly a dialectical naturalism, does not inhibit our understanding of social theory and ecological problems. To the contrary, it provides us with the rational means for integrating them into a coherent whole and establishes a framework for extending this whole in more fecund and innovative directions.

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